



## **Microsoft 70-315**

Developing and Implementing Web Applications  
with Microsoft Visual C# .NET

Version 12.0

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# SECTION 1

## PART I: Creating User Services (55 questions)

### SECTION 1: Create ASP.NET pages.

#### SUBSECTION A: Add and set directives on ASP.NET pages. (3 questions)

#### QUESTION NO: 1

**You create an ASP.NET application for TestKing's intranet. All employee on the intranet use Internet Explorer.**

**A page named UserAccount.aspx contains several controls that require postback to the server for event processing. The event handlers for these controls require access to a database in order to complete their processing.**

**Each time UserAccount.aspx performs a postback, there is a brief period of time in which the browser window is blank while the page is refreshed. The control that had the focus prior to the postback does not have the focus after the page is re-rendered. This factor results in confusion and invalid data entry by some of the users.**

**You need to modify UserAccount.aspx to prevent the browser window from going blank after a postback and to maintain the correct control focus after events are processed. You need to accomplish this task with the minimum amount of development effort.**

**What should you do?**

- A. Add the following attribute to the HTML code for the controls that cause the postbacks:  
`RunAt="client"`
- B. Add the following attribute to the HTML code for the controls that cause the postbacks:  
`EnableViewState="True"`
- C. Add the following attribute to the **Page** directive for **UserAccount.aspx**:  
`SmartNavigation="True"`
- D. Add the following attribute to the **OutputCache** directive for **UserAccount.aspx**:  
`Location="client"`

**Answer: C**

**Explanation:** When a page is requested by an Internet Explorer 5 browser, or later, smart navigation enhances the user's experience of the page by performing the following:

- eliminating the flash caused by navigation.
- persisting the scroll position when moving from page to page.
- persisting element focus between navigations.

- retaining only the last page state in the browser's history.

Smart navigation is best used with ASP.NET pages that require frequent postbacks but with visual content that does not change dramatically on return.

**Reference:** .NET Framework Class Library, Page.SmartNavigation Property [C#]

## QUESTION NO: 2

You are a Web developer for a TestKing bookstore. You create a Web user control named **TkBookTopics** that is defined in a file named **TkBookTopics.ascx**. **TkBookTopics** displays a list of book topics based on an author's profile identification number. The profile identification number is stored in a public property of **TkBookTopics** named **AuthorProfile**.

You create an ASP.NET page named **AuthorPage.aspx** that contains an instance of the **TkBookTopics** Web user control. **AuthorPage.aspx** is opened by an HTTP-GET request that has two parameters. The parameters are named **publisherID** and **authorProfileID**. The value of **authorProfileID** is a profile identification number.

You want to enable output caching for the **TkBookTopics** Web user control. You need to ensure that the cached control is varied only by an author's profile identification number.

What should you do?

- A. Add the following element to the **OutputCache** directive for **AuthorPage.aspx**:  
`VaryByParam="TkBookTopics.AuthorProfile"`
- B. Add the following element to the **OutputCache** directive for **AuthorPage.aspx**:  
`VaryByControl="TkBookTopics.AuthorProfile"`
- C. Add the following element to the **OutputCache** directive for **TkBookTopics.ascx**:  
`VaryByParam="none"`
- D. Add the following element to the **OutputCache** directive for **TkBookTopics.ascx**:  
`VaryByControl="authorProfileID"`

**Answer: D**

**Explanation:** You can vary user control output to the cache in two ways:

1. With the user control name and the parameter. The **VaryByParam** attribute of the **@ OutputCache** directive must be used. A) and C) are inadequate since both the control name and the parameter must be specified.
2. With the **VaryByControl** attribute just the parameter should be supplied. This is the case in D), but not in B).

**Reference:** .NET Framework Developer's Guide, Caching Multiple Versions of a User Control, Based on Parameters [C#]

## QUESTION NO: 3

**You are maintaining an ASP.NET application named TestKingSalesForecast. The application is written in Visual C# .NET. The application includes a page named FirstQuarter.aspx that resides within the Sales namespace. The page class is named FirstQuarter.**

**You discover that another developer inadvertently deleted the Page directive for FirstQuarter.aspx. You want to create a new Page directive to allow FirstQuarter.aspx to work properly.**

**Which directive should you use?**

- A. `<%@ Page Language="c#" Codebehind="FirstQuarter.aspx.cs" Inherits="FirstQuarter"%>`
- B. `<%@ Page Language="c#" Codebehind="FirstQuarter.aspx.cs" ClassName="Sales.FirstQuarter"%>`
- C. `<%@ Page Language="c#" Codebehind="FirstQuarter.aspx.cs"> Inherits="Sales.FirstQuarter"%>`
- D. `<%@ Page Language="c#" Codebehind="FirstQuarter.aspx.cs" ClassName="Sales.FirstQuarter" Inherits="FirstQuarter"%>`

**Answer: C**

**Explanation:** The Inherits attribute in the @ Page directive defines a code-behind class for the page to inherit. As FirstQuarter.aspx resides within the Sales namespace we should use  
`Inherits="Sales.FirstQuarter"`

**Note:** The @ Page directive defines page-specific (.aspx file) attributes used by the ASP.NET page parser and compiler.

**Reference:** .NET Framework General Reference, @ Page

#### **Incorrect Answers**

- A:** As FirstQuarter.aspx resides within the Sales namespace we should use  
`Inherits="Sales.FirstQuarter"`
- B, D:** The ClassName attribute specifies the class name for the page that will be automatically compiled dynamically when the page is requested. We should not use ClassName here.

SUBSECTION B: Separate user interface resources from business logic. (1 question)

**QUESTION NO: 1**

You are creating an ASP.NET application for the mortgage services department of TestKing Inc. The application will be used for generating documents required during the closing process of a home purchase.

TestKing already has a component written in Visual C# .NET that identifies which forms are required to be printed based on a set of criteria specified by the closing agent. The name of the component namespace is TestKing.Mortgage. The name of the class is Closing.

You create an ASP.NET page named Purchase.aspx. You add a reference to the assembly that contains the TestKing.Mortgage namespace. The code behind file for Purchase.aspx includes the following code:

```
using TestKing.Mortgage;
```

You add a method to the code-behind file to instantiate the Closing class.

Which code segment should you include in the method to instantiate the class?

- A. `Closing TKClosing = new Closing();`
- B. `Closing TKClosing =  
Server.CreateObject("TestKing.Mortgage.Closing");`
- C. `object TKClosing =  
Server.CreateObject("closing");`
- D. `Type TKType =  
Type.GetTypeFromProgID("TestKing.Mortgage.Closing",  
"localhost", true);`

**Answer: A**

**Explanation:** We simply instantiate an object with the class with the New constructor.

**Note:** Web Forms pages have code-behind files associated with them. These files are created automatically when you create a new Web form. They have the same base name as the Web form with the .vb or .cs filename extension added

**Incorrect Answers**

- B, C:** The CreateObject function creates and returns a reference to a COM object. CreateObject cannot be used to create instances of classes in Visual Basic unless those classes are explicitly exposed as COM components.
- D:** The Type.GetTypeFromProgID method is provided for COM support. Program IDs are not used in Microsoft .NET Framework because they have been superseded by the concept of namespace.

## SECTION 2: Add Web server controls, HTML server controls, user controls, and HTML code to ASP.NET pages.

### SUBSECTION A: Set properties on controls. (4 questions)

#### QUESTION NO: 1

**You create a class named TKFormat that has two public properties. One of the properties is named Size, and the other property is named Color. You want to use the TKFormat class in custom server controls to expose format properties to container pages.**

**You add the following statements to a custom server control named MessageRepeater:**

```
private TKFormat _formatter = new TKFormat();  
public TKFormat Format  
{  
    get { return _formatter; }  
}
```

**You create a container page named MessageContainer.aspx to test your custom control. You register the control as follows:**

```
<%# Register Tagprefix="testkctl" Namespace="MessageControls"  
Assembly="MessageControls" %>
```

**You want to add an instance of the control to a test page so that the size property is set to 10 and the color property is set to red.**

**Which code should you use?**

- A. <testkctl:MessageRepater Format-Color="red" Format-Size="10" />
- B. <testkctl:MessageRepater Format-Color="red" Format-Size="10" runat="server" />
- C. <testkctl:MessageRepater Color="red" Size="10" runat="server" />
- D. <testkctl:MessageRepater Format="Color:red;size:10" />

**Answer: B**

**Explanation:** ASP.NET has a special syntax for setting subproperties. The "-" syntax denotes a subproperty. The Format.Color and Format.Size properties are denoted by Format-Color and Format-Size respectively. We should also specify that the control should run at the server.

### Incorrect Answers

**A:** As this is a custom server control we should specify that it should run at the server.

**C, D:** We must use the "-" syntax denotes a subproperties

### QUESTION NO: 2

You create an ASP.NET page named **Location.aspx**. **Location.aspx** contains a Web user control that displays a drop-down list box of counties. The Web user control is named **CountyList** and is defined in a file named **CountyList.ascx**. The name of the **DropDownList** control in **CountyList.ascx** is **TKCounty**. You try to add code to the **Page.Load** event handler for **Location.aspx**, but you discover that you cannot access **TKCounty** from mode in **Location.aspx**. You want to ensure that code within **Location.aspx** can access properties of **TKCounty**.

**What should you do?**

- A. In the code-behind file for **CountyList.ascx** add the following line of code:  
`protected DropDownList TKCounty;`
- B. In the code-behind file for **CountyList.ascx**, add the following line of code:  
`public DropDownList TKCounty;`
- C. In the code-behind file for **Location.aspx**, add the following line of code:  
`protected DropDownList TKCounty;`
- D. In the code-behind file for **Location.aspx**, add the following line of code:  
`public DropDownList TKCounty;`

**Answer: B**

**Explanation:** We must declare the **TKCounty** as public in the file in which it is defined (**CountyList.ascx**).

**Note:** The **Public** keyword in the Dim statement declares elements to be accessible from anywhere within the same project, from other projects that reference the project, and from an assembly built from the project.

**Reference:** Visual Basic Language Concepts, Accessibility

### Incorrect Answers

**A, C:** The Protected keyword in the Dim statement declares elements to be accessible only from within the same class, or from a class derived from this class. However, do not want to protect **MyCount**, at the contrary we must make it public.

**D:** We must declare it public in the files, in which it is defined, not **Location.aspx** where it is only used.

### QUESTION NO: 3

You create an ASP.NET page that uses images to identify areas where a user can click to initiate actions. The users of the application use Internet Explorer.

**You want to provide a pop-up window when the user moves the mouse pointer over an image. You want the pop-up window to display text that identifies the action that will be taken if the user clicks the image.**

**What should you do?**

- A. For each image, set the AlternateText property to specify the text you want to display, and set the ToolTip property to **True**.
- B. For each image, set the ToolTip property to specify the text you want to display.
- C. In the onmouseover event handler for each image, add code that calls the RaiseBubbleEvent() method of the System.Web.UI.WebControls.Image class.
- D. In the onmouseover event handler for each image, add code that calls the ToString() method of the System.Web.UI.WebControls.Image class.

**Answer: B**

**Explanation:** WebControl.ToolTip property gets or sets the text displayed when the mouse pointer hovers over the Web server control. The use of the ToolTip property meets the requirement of this scenario.

**Reference:** .NET Framework Class Library, WebControl.ToolTip Property [C#]

**Incorrect Answers**

- A:** The AlternateText property is used to specify the text to display if the image is not available.
- C:** The RaiseBubbleEvent is not useful here.  
**Note:** ASP.NET server controls such as the Repeater, DataList and DataGrid Web controls can contain child controls that raise events. Rather than each button raising an event individually, events from the nested controls are "bubbled"—that is, they are sent to the control's parent.
- D:** The ToStringMethod() would not by itself provide the functionality required.

**QUESTION NO: 4**

**You create a user control named Address that is defined in a file named Address.ascx. Address displays address fields in an HTML table.**

**Some container pages might contain more than one instance of the Address user control. For example, a page might contain a shipping address and a billing address. You add a public property named TKCaption to the Address user control. The caption property will be used to distinguish the different instances.**

**You want the caption to be displayed in the first <td> element of the table of address fields. You need to add code to the <td> element of the table to display the caption.**

**Which code should you use?**

- A. `<td><%=TKCaption%></td>`
- B. `<td><script runat="server">TKCaption</script></td>`

- C. `<td><script>document.write("TKCaption");</script></td>`
- D. `<td>=TKCaption</td>`

**Answer: A**

**Explanation:** TKCaption is a public property contained on the Web server. We reference it with the `<%=TKCaption%>` element

**Incorrect Answers**

**B, C:** Scripts are not called for. We just want to display a property.

**D:** To access the public property we must use an `<% %>` element.

SUBSECTION B: Load controls dynamically. (3 questions)

**QUESTION NO: 1**

You create an ASP.NET page named `Subscribe.aspx` for users to subscribe to e-mail lists. You include an existing user control named `ListSubscribe` in your page. `ListSubscribe` has two constituent controls. One control is a `TextBox` control named `listNameText`, and the other control is a `Button` control named `subscribeButton`. `ListSubscribe` is defined in the `ListSubscribe.ascx` file.

To add `ListSubscribe` to `Subscribe.aspx`, you add the following tag:

```
<email:ListSubscribe id="ctlSubscribe" runat="server"/>
```

You add a `Label` control named `listNameLabel` to the container page. When a user subscribes to a list by entering a list name in `listNameText` and clicking the `subscribeButton` button, you want the page to display the list name in `listNameLabel`.

Which two actions should you take? (Each correct answer presents part of the solution. Choose two)

- A. Add the following statement to the declaration section of `ListSubscribe.ascx`:  
`public TextBox listNameText;`
- B. Add the following statement to the declaration section of `Subscribe.aspx`:  
`public TextBox listNameText;`
- C. Add the following statement to the `Page.Load` event handler for `Subscribe.aspx`:  

```
if (!Page.IsPostBack)
{
    listNameLabel.Text = ctlSubscribe.listNameText.Text;
}
```

D. Add the following statement to the Page.Load event handler for Subscribe.aspx:

```
if (Page.IsPostBack)
{
    listNameLabel.Text = ctlSubscribe.listNameText.Text;
}
```

E. Add the following statement to the Page.Load event handler for ListSubscribe.ascx:

```
if (!Page.IsPostBack)
{
    listNameLabel.Text = listNameText.Text;
}
```

F. Add the following statement to the Page.Load event handler for ListSubscribe.ascx:

```
if (Page.IsPostBack)
{
    listNameLabel.Text = listNameText.Text;
}
```

**Answer: A, D**

**Explanation:**

**A:** We must expose the listNameText control by declaring it as public. The ListSubscribe.ascx file contains the listNameText control so we expose it in this file.

**Note:** The controls that make up a user control are called constituent controls. These controls are normally declared private, and thus cannot be accessed by the developer. If you want to make properties of these controls available to future users, you must expose them to the user.

**D:** If the control is reloaded in the Subscribe.aspx file due to a response to a client postback we should set the listNameLabel.Text property.

**Note:** The UserControl.IsPostBack property gets a value indicating whether the user control is being loaded in response to a client postback, or if it is being loaded and accessed for the first time.

**Reference:**

Visual Basic and Visual C# Concepts, Exposing Properties of Constituent Controls  
.NET Framework Class Library, UserControl.IsPostBack Property

**Incorrect Answers**

**B:** The listNameText control is defined in ListSubscribe.aspx, not in Subscribe.aspx.

**C:** This would only copy the text when the page is initially loaded.

**E, F:** We should use the Page.Load event of Subscribe.aspx, not for ListSubscribe.aspx.

**QUESTION NO: 2**

**You create an ASP.NET server control to display date and time information. You want to enable other programmers who use your control to customize the style properties of a Label control named timeTKLabel. The timeTKLabel control displays the date and time.**

**You create two custom property procedures to accomplish this goal. One procedure modified the BackColor property of the constituent controls. The other procedure modifies the ForeColor property of the constituent controls.**

**In addition to these two custom property procedures, you want to allow users to apply one of two predefined styles. The predefined styles are created in the following function:**

```
public Style GetStyle(int styleType)
{
    Style myStyle = new Style();
    switch (styleType)
    {
        case 1:
            myStyle.ForeColor = System.Drawing.Color.White;
            myStyle.BackColor = System.Drawing.Color.Black;
            break;
    }
    return myStyle;
}
```

**You want to write a public method that will apply these styles. You do not want to overwrite the ForeColor property and BackColor property if the Label control of these properties are already set by using the custom property procedures.**

**Which code segment should you use for this method?**

- A. 

```
public void PickStyle(int styleType)
{
    Style myStyle = GetStyle(styleType);
    timeTKLabel.ApplyStyle(myStyle);
}
```
- B. 

```
public void PickStyle(int styleType)
{
    Style myStyle = GetStyle(styleType);
    timeTKLabel.MergeStyle(myStyle);
}
```
- C. 

```
public void PickStyle(int styleType)
{
    Style myStyle = GetStyle(styleType);
    timeTKLabel.ForeColor = myStyle.ForeColor;
    timeTKLabel.BackColor = myStyle.BackColor;
}
```
- D. 

```
public void PickStyle(int styleType)
{
```

```
Style myStyle = GetStyle(styleType);
timeTKLabel.CssClass = myStyle.CssClass;
}
```

**Answer: B**

**Explanation:** The WebControl.MergeStyle method copies any nonblank elements of the specified style to the Web control, but will not overwrite any existing style elements of the control. This method is used primarily by control developers.

**Reference:** .NET Framework Class Library, WebControl.MergeStyle Method [C#]

**Incorrect Answers**

- A:** WebControl.ApplyStyle Method copies any nonblank elements of the specified style to the Web control, overwriting any existing style elements of the control. We don't want to overwrite any existing style elements however.
- C:** We don't want to overwrite any existing style elements.-
- D:** The WebControl.CssClass Property gets or sets the Cascading Style Sheet (CSS) class rendered by the Web server control on the client. It not useful in this scenario though.

**QUESTION NO: 3**

**You are a Web developer for a travel company called TestKing travels. You are developing a Web site for customers who participate in the company's frequent flyer program.**

**The frequent flyer program includes three levels of award for customers. The levels are named Emerald, Ruby, and Diamond. For each award level, the page contains content specific to that award level. The page contents are contained in three user controls, which are named Emerald.ascx, Ruby.ascx, and Diamond.ascx.**

**You want to dynamically load and display the proper page header based on the value contained in a variable named awardLevel. The awardLevel variable is a property of the page. In addition, you want to minimize the mount of memory resources each page uses.**

**Which code should you use in the Page.Load event handler?**

```
A. UserControl headerUserControl;
   switch(awardLevel)
   {
   case "Emerald":
   headerUserControl =
   (UserControl)LoadControl("Emerald.ascx");
   break;
   case "Ruby":
   headerUserControl =
   (UserControl)LoadControl("Ruby.ascx");
```

```

break;
case "Diamond":
headerUserControl =
(UserControl)LoadControl("Diamond.ascx");
break;
Controls.Add(headerUserControl);
}

```

```

B. UserControl headerUserControl;
switch(awardLevel)
{
case "Emerald":
headerUserControl =
(UserControl)LoadControl("Emerald.ascx");
break
case "Ruby":
headerUserControl =
(UserControl)LoadControl("Ruby.ascx");
break;
case "Diamond":
headerUserControl =
(UserControl)LoadControl("Diamond.ascx");
break;
}

```

```

C. emeraldheaderUserControl.Visible = false;
rubyheaderUserControl.Visible = false;
diamondheaderUserControl.Visible = false;
switch(awardLevel)
{
case "Emerald":
emeraldHeaderControl.Visible = true;
break;
case "Ruby":
rubyHeaderControl.Visible = true;
break;
case "Diamond":
diamondHeaderControl.Visible = true;
break
}

```

```

D. UserControl emeraldHeaderControl;
UserControl rubyHeaderControl;
UserControl diamondHeaderControl;
emeraldHeaderControl =
(UserControl)LoadControl("Emerald.aspx");
rubyHeaderControl =

```

```

(UserControl)LoadControl("Ruby.aspx");
diamondHeaderControl =
(UserControl)LoadControl("Diamond.aspx";
switch(awardLevel)
{
case "Emerald":
Controls.Add(emeraldHeaderControl);
break;
case "Ruby":
Controls.Add(rubyHeaderControl);
break;
case "Diamond":
Controls.Add(diamondHeaderControl);
break;
}

```

**Answer: A**

**Explanation:** The TemplateControl.LoadControl method obtains a UserControl object from a user control file.

**Reference:** .NET Framework Class Library, TemplateControl.LoadControl Method [C#]

#### Incorrect Answers

- B:** We must add the control in order to display it.
- C:** We must load the user controls.
- D:** Loading all three controls increase the demand on the system resource.

SUBSECTION C: Apply templates. (1 question)

#### QUESTION NO: 1

**You are creating an ASP.NET application for TestKing's Internet Web site. You want to create a toolbar that will be displayed at the top of each page in the Web site. The toolbar will contain only static HTML code. The toolbar will be used in only your application.**

**Your plan to create the toolbar as a reusable component for your application. You need to create the toolbar as quickly as possible.**

**What should you do?**

- A. Create a new Web Control Library project.  
Create the toolbar within a Web custom control.
- B. Add a new Web user control to your ASP.NET project.  
Create the toolbar within the Web user control.

- C. Add a new Web Form to your ASP.NET project.  
Use HTML server controls to design the toolbar within the Web Form and save the Web Form with an .ascx extension.
- D. Add a new component class to your ASP.NET project.  
Use HTML server controls to design the toolbar within the designer of the component class.

**Answer: B**

**Explanation:** Web user controls enable you to easily define controls as you need them for your applications, using the same programming techniques that you use to write Web Forms pages.

**Reference:** Visual Basic and Visual C# Concepts, Introduction to Web User Controls

**Incorrect Answers**

- A:** You can use the Web Control Library project template to author custom Web server controls. However, since the toolbar is only going to be used in this application there is no need of the complexity of a Web customer control.
- C:** An HTML server control would be inadequate.
- D:** The Component class provides the base implementation for the IComponent interface and enables object-sharing between applications. It does not fit in this scenario.

SUBSECTION D: Set styles on ASP.NET pages by using cascading style sheets. (0 questions)

SUBSECTION E: Instantiate and invoke an ActiveX control. (0 questions)

### SECTION 3: Implement navigation for the user interface.

SUBSECTION A: Manage the view state. (0 questions)

SUBSECTION B: Manage data during postback events. (2 questions)

#### QUESTION NO: 1

**You create an ASP.NET page that displays customer order information. This information is displayed in two separate DataGrid controls on the page. The first DataGrid control displays the current year orders, and the second DataGrid control displays all orders from previous years. The page uses both the System.Data.SqlClient namespace and the System.Data namespace.**

The information is stored in a Microsoft SQL Server database named TestKingSQL1. A customer's complete order history information is obtained from the database by calling a stored procedure named GetOrders and passing the customer's identification number as a parameter.

The Page.Load event handler populates a DataView object named tkDataView with the result of calling the GetOrders stored procedure. The following code segment in the Page.Load event handler is then used to bind the two DataGrid controls to myData view:

```
tkDataView:
dataGridCurrentYear.DataSource = tkDataView;
tkDataView.RowFilter = "OrderDate >= #01/01/" +
Now.Year + "#";
dataGridCurrentYear.DataBind();
dataGridPreviousYears.DataSource = tkDataView;
tkDataView.RowFilter = "OrderDate < #01/01/" +
Now.Year + "#";
DataGridPreviousYears.DataBind();
Page.DataBind();
```

During testing, you discover that both DataGrid controls are displaying order information for the previous years only.

What should you do to correct this problem?

- A. Remove the Page.DataBind() statement.
- B. Remove the dataGridPreviousYears.DataBind() statement.
- C. Add a Response.Flush() statement immediately before the Page.DataBind() statement.
- D. Add a Response.Flush() statement immediately before the dataGridPreviousYears.DataBind() statement.

**Answer: A**

**Explanation:** Both datagrids use the same DataView. The Page.Databind method binds a data source to the invoked server control and all its child controls. We should remove this statement.

**Reference:** .NET Framework Class Library, Control.DataBind Method [C#]

**Incorrect Answers**

**B:** We must bind each data grid control to its data source

**C, D:** The HttpResponse Flush method sends all currently buffered output to the client. It is not useful in this scenario.

**QUESTION NO: 2**

You are creating an e-commerce site for TestKing. Your site is distributed across multiple servers in a Web farm.

**Users will be able to navigate through the pages of the site and select products for purchase. You want to use a DataSet object to save their selections. Users will be able to view their selections at any time by clicking a Shopping Cart link.**

**You want to ensure that each user's shopping cart DataSet object is saved between requests when the user is making purchases on the site.**

**What should you do?**

- A. Create a StateBag object.  
Use the StateBag object to store the DataSet object in the page's ViewState property.
- B. Use the HttpSessionState object returned by the Session property of the page to store the DataSet object.  
Use the Web.config file to configure an out-of-process session route.
- C. Use the Cache object returned by the page's Cache property to store a DataSet object for each user.  
Use an HttpCachePolicy object to set a timeout period for the cached data.
- D. Use the Session\_Start event to create an Application variable of type DataSet for each session.  
Store the DataSet object in the Application variable.

**Answer: B**

**Explanation:** An HttpSessionState object provides access to session-state values as well as session-level settings and lifetime management methods. We should use an out-of-process session to ensure that each user's shopping cart DataSet object is saved between requests

**Note:** ASP.NET provides three distinct ways to store session data for your application: in-process session state, out-of-process session state as a Windows service, and out-of-process session state in a SQL Server database. The out-of-process solutions are primarily useful if you scale your application across multiple processors or multiple computers, or where data cannot be lost if a server or process is restarted.

**Reference:**

.NET Framework Class Library, HttpSessionState Class [C#]

.NET Framework Developer's Guide, Developing High-Performance ASP.NET Applications [C#]

**Incorrect Answers**

- A:** A StateBag object manages the view state of ASP.NET server controls, including pages. This object implements a dictionary. It would not be useful in this scenario however.
- C:** A cache is not a secure storage location.
- D:** As multiple servers are going to be used an Application variable is not the best solution.

SUBSECTION C: Use session state to manage data across pages. (3 questions)

**QUESTION NO: 1**

You are creating a new ASP.NET page named `ItemList` that displays item and price information for many different items. When a user logs on to the Web site, the page retrieves the current list of prices from a database. `ItemList` will be accessed by several thousand registered users.

When a price list is retrieved for a user, the prices remain valid for as long as the user continues to access the page. Users are allowed to keep the same price list for several days.

When `ItemList` is posted back to the server, you want to ensure that the price list was not altered on the user's computer. You also want to minimize the memory resources consumed on the Web server.

Which three parameters should you add to the Page directive in `ItemList`? (Each correct answer presents part of the solution. Choose three)

- A. `EnableSessionState="True"`
- B. `EnableSessionState="False"`
- C. `EnableSessionState="ReadOnly"`
- D. `EnableViewState="True"`
- E. `EnableViewState="False"`
- F. `EnableViewStateMac="True"`
- G. `EnableViewStateMac="False"`

**Answer: B, D, F**

**Explanation:**

To minimize the memory resources consumed on the Web server we need to use view state instead of session state. Setting `EnableViewState` to true will only cost us bandwidth, not memory resources.

**B:** Disable session state

**D:** Enable view state

**F:** A view state MAC is an encrypted version the hidden variable that a page's view state is persisted to when sent to the browser. When you set this attribute to true, the encrypted view state is checked to verify that it has not been tampered with on the client.

**Reference:**

.NET Framework Developer's Guide, Developing High-Performance ASP.NET Applications

.NET Framework General Reference, @ Page

.NET Framework Developer's Guide, Session State

**Incorrect Answers**

**A:** An enabled Session state would require additional server resources.

**C:** A readonly Session state would still require additional server resources.

**E:** We need view state to be enabled.

**G:** To ensure that client has not changed the data we set `EnableViewStateMac`

**QUESTION NO: 2**

You create an ASP.NET page named `TestKingCalendar.aspx` that shows scheduling information for projects in your company. The page is accessed from various other ASP and ASP.NET pages hosted throughout the company's intranet. All employees on the intranet use Internet Explorer. `TestKingCalendar.aspx` has a Calendar control at the top of the page. Listed below the Calendar control is detailed information about project schedules on the data selected. When a user selects a date in the calendar, the page is refreshed to show the project schedule details for the newly selected date. Users report that after viewing two or more dates on `TestKingCalendar.aspx`, they need to click the browser's Back button several times in order to return to the page they were viewing prior to accessing `TestKingCalendar.aspx`.

You need to modify `TestKingCalendar.aspx` so that the users need to click the Back button only once. What should you do?

- A. Add the following statement to the Page.Load event handler for `TestKingCalendar.aspx`:  
`Response.Expires(0);`
- B. Add the following statement to the Page.Load event handler for `TestKingCalendar.aspx`:  
`Response.Cache.SetExpires(DateTime.Now());`
- C. Add the following attribute to the Page directive for `TestKingCalendar.aspx`:  
`EnableViewState="True"`
- D. Add the following attribute to the Page directive for `TestKingCalendar.aspx`:  
`SmartNavigation="True"`

**Answer: D**

**Explanation:** the user's experience of the page by performing the following:

- retaining only the last page state in the browser's history.  
This is what is required in this scenario.
- eliminating the flash caused by navigation.
- persisting the scroll position when moving from page to page.
- persisting element focus between navigations.

**Reference:** .NET Framework Class Library, Page.SmartNavigation Property [C#]

#### Incorrect Answers

- A:** This is not a page expiration problem.
- B:** This is not a caching problem.
- C:** The Page.EnableViewState property Gets or sets a value indicating whether the page maintains its view state, and the view state of any server controls it contains, when the current page request ends.

#### QUESTION NO: 3

You are creating an ASP.NET application for TestKing. Customers will use the application to file claim forms online.

You plan to deploy the application over multiple servers. You want to save session state information to optimize performance.

**What are two possible ways to achieve this goal? (Each correct answer presents a complete solution. Choose two)**

- A. Modify the Web.config file to support StateServer mode.
- B. Modify the Web.config file to support SQLServer mode.
- C. Modify the Web.config file to support InProc mode.
- D. In the Session\_Start procedure in the Global.asax file, set the EnableSession property of the WebMethod attribute to true.
- E. In the Session\_Start procedure in the Global.asax file, set the Description property of the WebMethod attribute to sessionState.

**Answer: A, B**

**Explanation:**

- A** With StateServer mode session state is using an out-of-process Windows NT Server to store state information. This mode is best used when performance is important but you can't guarantee which server a user will request an application from. With out-of-process mode, you get the performance of reading from memory and the reliability of a separate process that manages the state for all servers. As this scenario requires that we should optimize performance, not reliability, StateServer mode is the preferred solution.
- B:** Indicates that session state is stored on the SQL Server. In SQL mode, session states are stored in a SQL Server database and the worker process talks directly to SQL. The ASP.NET worker processes are then able to take advantage of this simple storage service by serializing and saving (using .NET serialization services) all objects within a client's Session collection at the end of each Web request.

**Note:** HTTP is a stateless protocol, which means that it does not automatically indicate whether a sequence of requests is all from the same client or even whether a single browser instance is still actively viewing a page or site. As a result, building Web applications that need to maintain some cross-request state information (shopping carts, data scrolling, and so on) can be extremely challenging without additional infrastructure help.

ASP.NET provides the following support for sessions:

A session-state facility that is easy to use, familiar to ASP developers, and consistent with other .NET Framework APIs.

A reliable session-state facility that can survive Internet Information Services (IIS) restarts and worker-process restarts without losing session data.

A scalable session-state facility that can be used in both Web farm (multicomputer) and Web garden (multiprocess) scenarios and that enables administrators to allocate more processors to a Web application to improve its scalability.

A session-state facility that works with browsers that do not support HTTP cookies.

A throughput equivalent to that of ASP (or better) for core session-state scenarios (50/50 read/write when putting items into shopping carts, modifying last page visited, validating credit card details, and so on)

**Reference:**

.NET Framework Developer's Guide, Session State

**Incorrect Answers**

- C:** With InProc mode session state is in process with an ASP.NET worker process. InProc is the default. However, since we are using multiple servers, we cannot use InProc mode.
- D:** This will not allow session information to be stored over multiple servers
- E:** The Description property of the WebMethod attribute supplies a description for an XML Web service method that will appear on the Service help page.

## SECTION 4: Validate user input. (3 questions)

### QUESTION NO: 1

**You are creating an ASP.NET page to enroll new members in a health care program for TestKing employees. One of the requirements for membership is that a participant must be at least 65 years old. You need to ensure that each prospective member enters a name in a TextBox control named `nameTextBox` and a date of birth in a TextBox control named `birthdayTextBox`. In addition, you need to verify that prospective members meet the age requirement. What should you do?**

- A. Add a CustomValidator to the page.  
In the Properties window, set the ControlToValidate property to **`birthdayTextBox`**.  
Write code to validate the date of birth.  
Add a RegularExpressionValidator control to the page.  
In the Properties window, set the ControlToValidate property to **`nameTextBox`**, and create a regular expression to validate the name.
- B. Add a CompareValidator control to the page.  
In the Properties window, set the ControlToValidate property to **`birthdayTextBox`**.  
Write code that sets the Operator and ValueToCompare properties to validate the date of birth.  
Add a RequiredFieldValidator control to the page.  
In the Properties window, set the ControlToValidate property to **`nameTextBox`**.
- C. Add a RangeValidator control to the page.  
In the Properties window, set the ControlToValidate property to **`birthdayTextBox`**.  
Write code that sets the MinimumValue and MaximumValue properties to validate the date of birth.  
Add a CompareValidator control to the page.  
In the Properties window, set the ControlToValidate property to **`nameTextBox`**.  
Add a second CompareValidator control to the page.  
In the Properties window, set the ControlToValidate property to **`birthdayTextBox`**.  
Write code that sets the Operator and ValueToCompare properties of the two CompareValidator controls to validate the name and date of birth.
- D. Add a CustomValidator control to the page.  
In the Properties window, set the ControlToValidate property to **`birthdayTextBox`**, and write code to

validate the date of birth.

Add a RequiredFieldValidator control to the page.

In the Properties window, set the ControlToValidate property to **nameTextBox**.

Add a second RequiredFieldValidator control to the page.

In the Properties window, set the ControlToValidate property to **birthdayTextBox**.

**Answer: D**

**Explanation:** To check the data of the **birthdayTextBox** we can use a CustomValidator control page and add appropriate program code to validate that the birth date is in the correct range.

We use two RequiredFieldValidators to ensure that both textboxes are non-empty.

**Note:** The CustomValidator Control evaluates the value of an input control to determine whether it passes customized validation logic.

The RequiredFieldValidator Control evaluates the value of an input control to ensure that the user enters a value.

**Reference:** .NET Framework General Reference, RequiredFieldValidator Control

**Incorrect Answers**

**A:** The RegularExpressionValidator control evaluates the value of an input control to determine whether it matches a pattern defined by a regular expression. It is not useful in this scenario.

**B:** We should use two RequiredFieldValidator, one for each textbox.

**C:** It would be hard to use a RangeValidator for the **birthday TextBox**. It is better to use a CustomerValidator control.

**QUESTION NO: 2**

You are creating an ASP.NET page for recording contact information for TestKing Inc. The page contains a TextBox control named emailTextBox and a TextBox control named phone TextBox. Your application requires users to enter data in both of these text boxes.

You add two RequiredFieldValidator controls to the page. One control is named emailRequired, and the other control is named phoneRequired. You set the ControlToValidate property of emailRequired to emailTextBox. You set the ControlToValidate property of phoneRequired to phoneTextBox. In addition, you add a ValidationSummary control at the bottom of the page.

If the user attempts to submit the page after leaving emailTextBox blank, you want the word 'Required' to appear next to the text box.

If the user leaves phoneTextBox blank, you also want the "Required" to appear next to the text box.

If the user attempts to submit the page after leaving emailTextBox or phoneTextBox blank, you also want to display a message at the bottom of the page. You want to display a bulleted list, showing which required entries are missing. If emailTextBox is blank, you want the bulleted list to include the following phrase: "E-mail is a required entry". "If phoneTextBox is blank, you want the bulleted list to include the following phrase: "Telephone number is a required entry".

What should you do?

- A. Set the InitialValue property of each RequiredFieldValidator control to “Required”.  
Set the ErrorMessage property of emailRequired to “E-mail is a required entry.”  
Set the ErrorMessage property of phoneRequired to “Telephone number is a required entry.”
- B. Set the Display property of each RequiredFieldValidator control to Dynamic.  
Set the ErrorMessage property of emailRequired and phoneRequired to Dynamic.  
Set the Text property of emailRequired to “E-mail is a required entry.”  
Set the Text property of phoneRequired to “Telephone number is a required entry.”
- C. Set the InitialValue property of each RequiredFieldValidator control to “Required”.  
Set the Text property of emailRequired to “E-mail is a required entry.”  
Set the Text property of phoneRequired to “Telephone number is a required entry.”
- D. Set the Text property of each RequiredFieldValidator control to “Required”.  
Set the ErrorMessage property of emailRequired to “E-mail is a required entry.”  
Set the ErrorMessage property of phoneRequired to “Telephone number is a required entry.”

**Answer: D**

**Explanation:** The Text property of the RequiredFieldValidator is used to specify the text to display in the validation control. We want to display “Required”.

The ErrorMessage property is used to specify the text to display in the validation control when validation fails.

**Reference:**

Visual Basic and Visual C# Concepts, Validating Required Entries for ASP.NET Server Controls  
.NET Framework Class Library, RequiredFieldValidator Members

**Incorrect Answers**

- A:** We should use the Text property, not the InitialValue property, to specify the text to display in the validation control.
- B:** The ErrorMessage property should be set to the text to display in the validation control, not to dynamic.
- C:** We must use the ErrorMessage property.

**QUESTION NO: 3**

**You create an ASP.NET page that allows a user to enter a requested delivery date in a TextBox control named requestTKDate. The date must be no earlier than two business days after the order date, and no later than 60 business days after the order date. You add a CustomValidator control to your page. In the Properties window, you set the ControlToValidate property to requestTKDate.**

**You need to ensure that the date entered in the requestDate TextBox control falls within the acceptable range of values. In addition, you need to minimize the number of round trips to the server.**

**What should you do?**

- A. Set the AutoPostBack property of requestDate to False.  
Write code in the ServerValidate event handler to validate the date.
- B. Set the AutoPostBack property of requestDate to True.  
Write code in the ServerValidate event handler to validate the date.
- C. Set the AutoPostBack property of requestDate to False.  
Set the ClientValidationFunction property to the name of a script function contained in the HTML page that is sent to the browser.
- D. Set the AutoPostBack property of requestDate to True.  
Set the ClientValidationFunction property to the name of a script function contained in the HTML page that is sent to the browser.

**Answer: C**

**Explanation:** Set CustomValidator.ClientValidationFunction property to the name of the function that performs the client-side validation. Because the client validation function runs on the target browser, the function must be written using a scripting language supported by the browser, such as JScript or VBScript.

The AutoPostBack property gets or sets a value indicating whether an automatic postback to the server will occur whenever the user changes the content of the text box. We should set it to false as we want to avoid server round trips.

**Reference:**

.NET Framework Class Library, CustomValidator.ClientValidationFunction Property [C#]

.NET Framework Class Library, TextBox.AutoPostBack Property [C#]

**Incorrect Answers**

**A, B:** We want to validate the control with client side script to save a server round-trip.

**D:** If the AutoPostBack is set to true an automatic postback to the server will occur whenever the user changes the text in the text box. This is what we want to avoid.

## SECTION 5: Implement error handling in the user interface.

SUBSECTION A: Configure custom error pages. (3 questions)

### QUESTION NO: 1

**You deploy an ASP.NET application. When an error occurs, the user is redirected to a custom error page that is specified in the Web.config file.**

**Users report that one particular page is repeatedly generating errors. You need to gather detailed error information for the page. You need to ensure that users of the application continue to see the custom error page if they request pages that generate errors.**

**What should you do?**

- A. In the Web.config file, set the mode attribute of the customErrors element to RemoteOnly and access the page from a browser on your client computer.
- B. In the Web.config file, set the mode attribute of the customErrors element to RemoteOnly and access the page from a browser on the server.
- C. Modify the Page directive so that the Trace attribute is set to True and the LocalOnly attributes is set to true, and then access the page from a browser on the server.
- D. Modify the Web.config file to include the following element:  
`<trace enabled="true" LocalOnly="false"  
PageOutput="true"/>`  
Access the application from a browser on your client computer.

**Answer: B**

**Explanation:** The RemoteOnly option specifies that custom errors are shown only to remote clients and ASP.NET errors are shown to the local host. This meets the requirements since you will be able to see the ASP.NET errors while the users still will see the custom error page.

**Reference:** .NET Framework General Reference, <customErrors> Element

#### **Incorrect Answers**

- A:** If you use the RemoteOnly option and access the page from a client computer you would only see the custom error page, not see the detailed error information.
- C:** The LocalOnly Trace attribute indicates that the trace viewer (trace.axd) is available only on the host Web server. This is not relevant in this scenario.
- D:** The LocalOnly attribute only affects the availability of the Trace.vxd tool.

#### **QUESTION NO: 2**

**You create an ASP.NET application for TestKing. You create an exception class named DataCollisionEx. The exception class is defined in TkNamespace. You want the exception to be thrown from any page in which a user attempts to edit data that has been changed by another user during the edit. You want to use centralized error handling.**

**You need to write code for the Application\_Error event handler of your application. You want the event handler to direct the user to a page named DataCollision.aspx when DataCollisionEx exception is thrown. You want the DataCollision.aspx page to retrieve error information from the server object and format the message for the user. You want other exceptions to direct the user to the default error page that is enabled by the Web.config file.**

**Which code should you include in the Application\_Error event handler?**

- A. 

```
Type argExType;  
Exception ex;  
argExType = Type.GetType("TkNamespace.DataCollisionEx");  
ex = Server.GetLastError();
```

```

if (ex.GetType().Equals(argExType))
{
Response.Redirect("DataCollision.aspx");
}
Else
{
Server.ClearError();
}

```

B. Type argExType;  
Exception ex;  
argExType = Type.GetType("TkNamespace.DataCollisionEx");  
ex = Server.GetLastError();  
if (ex.GetType().Equals(argExType))  
{  
Response.Redirect("DataCollision.aspx");  
}

C. Type argExType;  
Exception ex;  
argExType = Type.GetType("TkNamespace.DataCollisionEx");  
ex = Server.GetLastError().InnerException;  
if (ex.GetType().Equals(argExType))  
{  
Response.Redirect("DataCollision.aspx");  
}

D. Type argExType;  
Exception ex;  
argExType = Type.GetType("TkNamespace.DataCollisionEx");  
ex = Server.GetLastError().InnerException;  
if (ex.GetType().Equals(argExType))  
{  
Response.Redirect("DataCollision.aspx");  
}  
Else  
{  
Server.ClearError();  
}

**Answer: C**

**Explanation:** We use the GetLastError method to retrieve the last error. We use the InnerException property to catch the earlier exception.

**Note:** When an exception X is thrown as a direct result of a previous exception Y, the InnerException property of X should contain a reference to Y.

The `HttpServerUtility.ClearError` method clears the previous exception.

**Reference:**

.NET Framework Class Library, `Exception.InnerException` Property [C#]

.NET Framework Class Library, `HttpServerUtility.ClearError` Method [C#]

**Incorrect Answers**

- A:** We should retrieve the previous error with the `InnerException` property. Furthermore, we should not clear the previous exception.
- B:** We should retrieve the previous error with the `InnerException` property.
- D:** We should not clear the previous exception.

**QUESTION NO: 3**

You create an ASP.NET application that will run on TestKing's Internet Web site. Your application contains 100 Web pages. You want to configure your application so that it will display customized error messages to users when an HTTP code error occurs.

You want to log the error when an ASP.NET exception occurs. You want to accomplish these goals with the minimum amount of development effort.

Which two actions should you take? (Each correct answer presents part of the solution. Choose two)

- A. Create an `Application_Error` procedure in the `Global.asax` file for your application to handle ASP.NET code errors.
- B. Create an `applicationError` section in the `Web.config` file for your application to handle ASP.NET code errors.
- C. Create a `CustomErrors` event in the `Global.asax` file for your application to handle HTTP errors.
- D. Create a `CustomErrors` section in the `Web.config` file for your application to handle HTTP errors.
- E. Add the `Page` directive to each page in the application to handle ASP.NET code errors.
- F. Add the `Page` directive to each page in the application to handle HTTP errors.

**Answer: A, D**

**Explanation:**

- A:** Any public event raised by the `HttpApplication` class is supported using the syntax `Application_EventName`. For example, a handler for the `Error` event can be declared `protected void Application_Error(Object sender, EventArgs e)`.
- D:** The `<customErrors>` element, which is used in the `Web.config` file, provides information about custom error messages for an ASP.NET application.

**Reference:**

.NET Framework Developer's Guide, Handling Public Events

.NET Framework General Reference, `<customErrors>` Element

**Incorrect Answers**

- B:** There is no such thing as an applicationError section in the Web.config file.  
**C:** There is no such thing as CustomErrors event in the Global.asax file.  
**E, F:** It is not necessary to add a Page Directive to each page.

SUBSECTION B: Implement Global.asax, application, page-level, and page event error handling. (0 questions)

SECTION 6: Implement online user assistance. (0 questions)

SECTION 7: Incorporate existing code into ASP.NET pages. (1 question)

**QUESTION NO: 1**

**You are creating an ASP.NET application for TestKing. An earlier version of the application uses ActiveX components that are written in Visual Basic 6.0. The new ASP.NET application will continue to use the ActiveX components.**

**You want the marshaling of data between your ASP.NET application and the ActiveX components to occur as quickly as possible.**

**Which two actions should you take? (Each correct answer presents part of the solution. Choose two)**

- A. Use ODBC binding.
- B. Use late binding.
- C. Use early binding
- D. Set the AspCompat attribute of the Page directive to true.
- E. Set the AspCompat attribute of the Page directive to false.

**Answer: C, D**

**Explanation:**

- C:** Early binding is a better choice for performance reasons.  
**D:** When using single-threaded (STA) COM components, such as components developed using Visual Basic, from an ASP.NET page, you must include the compatibility attribute aspcompat=true in an <%@Page > tag on the ASP.NET page.

**Reference:** .NET Framework Developer's Guide, COM Component Compatibility

**Incorrect Answers**

- A:** ODBC is set of legacy database drivers. OleDb and SQL should be used. Furthermore, database drivers are irrelevant in this scenario.
- B:** While late binding to components is still supported, early binding is a better choice for performance reasons.
- E:** The ascompat attribute must be set to **true**.

## SECTION 8: Display and update data.

### SUBSECTION A: Transform and filter data. (3 questions)

#### QUESTION NO: 1

**You are creating an ASP.NET application that delivers customized news content over the Internet. Users make selections from an ASP.NET page. Your code creates a DataSet object named TkNewsItems, which contains the news items that meet the criteria selected by the user.**

**You create a style sheet named NewsStyle.xsl that renders the data in TkNewsItems in HTML format.**

**You write the following code segment:**

```
XmlDataDocument doc = new XmlDataDocument(TkNewsItems);  
XslTransform tran = new XslTransform();  
tran.Load("NewsStyle.xsl");
```

**You want to display the transformed data as HTML text.**

**Which line of code should you add to the end of the code segment?**

- A. `tran.Transform(doc, null, Response.OutputStream);`
- B. `tran.Transform(doc, null, Request.InputStream);`
- C. `TkNewsItems.WriteXml(Response.OutputStream);`
- D. `TkNewsItems.WriteXml(tran.ToString());`

**Answer: A**

**Explanation:** The XslTransform.Transform method transforms the XML data in the XPathNavigator using the specified args and outputs the result to a Stream. We should use the Response.OutputStream to enable output of text to the outgoing HTTP response stream.

**Reference:** .NET Framework Class Library, XslTransform.Transform Method (XPathNavigator, XsltArgumentList, Stream) [C#]

#### Incorrect Answers

- B:** We want to display data, not read data, so we must use Response.OutputStream not Request.InputStream.

**C, D:** We want to generate HTML, not XML data. We should use the `XslTransform.Transform` method, not the `DataSet.WriteXml` method.

#### **QUESTION NO: 2**

You create an ASP.NET application to display a sorted list of products in a **DataGrid** control. The product data is stored in a Microsoft SQL Server database named **TestKingDB**. Each product is identified by a numerical value named **ProductID**, and each product has an alphabetic description named **ProductName**. You write ADO.NET code that uses a **SqlDataAdapter** object and a **SqlCommand** object to retrieve the product data from the database by calling a stored procedure.

You set the **CommandType** property of the **SqlCommand** object to **CommandType.StoredProcedure**. You set the **CommandText** property of the object to **procProductList**. Your code successfully fills a **DataTable** object with a list of products that is sorted by **ProductID** in descending order.

You want the data to be displayed in reverse alphabetic order by **ProductName**.

What should you do?

- A. Change the **CommandType** property setting of the **SqlCommand** object to **CommandType.Text**.  
Change the **CommandText** property setting of the **SqlCommand** object to the following:  
`SELECT * FROM procProductList ORDER BY ProductName DESC;`  
Bind the **DataGrid** control to the **DataTable** object.
- B. Create a new **DataView** object based on the **DataTable** object.  
Set the **Sort** Property of the **DataView** object to `"ProductName DESC"`.  
Bind the **DataGrid** control to the **DataView** object.
- C. Set the **AllowSorting** property of the **DataGrid** control to **True**.  
Set the **SortExpression** property of the **DataGridColumn** that displays **ProductName** to `"ProductName DESC"`.  
Bind the **DataGrid** control to the **DataTable** object.
- D. Set the **DisplayExpression** property of the **DataTable** object to `"ORDER BY ProductName DESC"`.  
Bind the **DataGrid** control to the **DataTable** object.

**Answer: B**

**Explanation:** We can create a **DataView** object, set the appropriate **Sort** Property and bind the **DataGrid** control to the **DataView**, and not the **DataTable** object.

**Reference:** .NET Framework Developer's Guide, Sorting and Filtering Data Using a **DataView** [C#]

#### **Incorrect Answers**

**A:** `procProductList` is a stored procedure. It cannot be used in the **FROM** clause of a **SELECT** statement.

- C:** The `DataGrid.AllowSorting` property gets or sets a value that indicates whether sorting is enabled. The `DataGridColumn.SortExpression` property gets or sets the name of the field or expression to pass to the `OnSortCommand` method when a column is selected for sorting. However, the sorting only occurs when a user clicks the column header.
- D:** The `DataTable.DisplayExpression` gets or sets the expression that will return a value used to represent this table in the user interface. This is only a display string. We cannot use it to sort the `DataTable`.

### QUESTION NO: 3

**You are a Web developer for an online research service TestKing Research Inc. You are creating an ASP.NET application that will display research results to users of the TestKing Web site.**

**You use a DataGrid control to display a list of research questions and the number of responses received for each question. You want to modify the control so that the total number of responses received is displayed in the footer of the grid. You want to perform this task with the minimum amount of development effort.**

**What should you do?**

- A. Override the `OnPreRender` event and display the total when the footer row is created.
- B. Override the `OnItemCreated` event and display the total when the footer row is created,
- C. Override the `OnItemDataBound` event and display the total when the footer row is bound.
- D. Override the `OnLayout` event and display the total in the footer row.

**Answer: C**

**Explanation:** The `ItemDataBound` event is raised after an item is data bound to the `DataGrid` control. This event provides you with the last opportunity to access the data item before it is displayed on the client. After this event is raised, the data item is nulled out and no longer available.

**Reference:** .NET Framework Class Library, `DataGrid.ItemDataBound` Event [C#]

### Incorrect Answers

- A:** The `OnPreRender` method notifies the server control to perform any necessary prerendering steps prior to saving view state and rendering content.
- B:** The `ItemCreated` event is raised when an item in the `DataGrid` control is created, both during round-trips and at the time data is bound to the control.
- D:** The `OnLayout` Method raises the `Layout` event that repositions controls and updates scroll bars.

SUBSECTION B: Bind data to the user interface. (1 question)

### QUESTION NO: 1

**You are a Web developer for TestKing. You create an ASP.NET application that accesses sales and marketing data. The data is stored in a Microsoft SQL Server 2000 database on a server named TestK01. The company purchases a factory automation software application. The application is installed on TestK01, where it creates a second instance of SQL Server 2000 named Factory and a database named FactoryDB. You connect to FactoryDB by using Windows Integrated authentication.**

**You want to add a page to your ASP.NET application to display inventory data from FactoryDB. You use a SqlConnection object to connect to the database. You need to create a connection string to FactoryDB in the instance of SQL Server named Factory on TestK01.**

**Which string should you use?**

- A. `"Server=TestK01;Data Source=Factory;Initial Catalog=FactoryDB;Integrated Security=SSPI"`
- B. `"Server=TestK01;Data Source=Factory;Database=FactoryDB;Integrated Security=SSPI"`
- C. `"Data Source=TestK01\Factory;Initial Category=Factory;Integrated Security=SSPI"`
- D. `"Data Source=TestK01\Factory;Database=FactoryDB;Integrated Security=SSPI"`

**Answer: D**

**Explanation:** The Data Source attribute of the connection string contains the name, instance or network address of the instance of SQL Server to which to connect. In this scenario we are to connect to the Factory Instance on TestK01 so we use TestK01\Factory as data source.

To specify the database we should either use the Database or the Initial Catalog attribute. Here we use Database=FactoryDB.

**Note:** The SQL Server .NET Data Provider provides connectivity to Microsoft SQL Server version 7.0 or later using the SqlConnection object. The connection string includes the source database name, and other parameters needed to establish the initial connection.

**Reference:**

.NET Framework Class Library, SqlConnection.ConnectionString Property [C#]

**Incorrect Answers**

- A, B:** There is no Server attribute in the connection string. Instead we should use the Data Source attribute to specify the server and the instance.
- C:** There is no Initial Category attribute in the connection string. We can use Database or the Initial Catalog attribute to specify the database.

SUBSECTION C: Use controls to display data. (3 questions)

**QUESTION NO: 1**

**You create an ASP.NET page that contains a DataGrid control. The control displays data that is retrieved from a database named TestKingDB. You want your users to be able to sort the data in either ascending or descending order.**

**You write code to sort the data in the DataGrid control by using the SortOrder property when a user clicks in a column. The values stored for the SortOrder property are “ASC” for ascending order, and “DESC” for descending order. You want to preserve the value during postbacks.**

**A user selects descending order. Which code should you use to save and retrieve the value?**

- A. 

```
// Save
Application["SortOrder"] = "DESC";
// Retrieve
string val = (string) Application["SortOrder"];
```
- B. 

```
// Save
Cache["SortOrder"] = "DESC";
// Retrieve
string val = (string) Cache["SortOrder"];
```
- C. 

```
// Save
ViewState["SortOrder"] = "DESC";
// Retrieve
string SortOrder = (string) ViewState["SortOrder"];
```
- D. 

```
// Save
Cache["SortOrder"] = "SortOrder";
// Retrieve
string val = (string) Cache["DESC"];
```

**Answer: C**

**Explanation:** An ASP.NET server control inherits a property named ViewState from Control that enables it to participate easily in state management. ViewState is persisted to a string variable by the ASP.NET page framework and sent to the client and back as a hidden variable. Upon postback, the page framework parses the input string from the hidden variable and populates the ViewState property of each control.

**Reference:** .NET Framework Developer's Guide, Maintaining State in a Control [C#]

**Incorrect Answers**

**A:** The application state is not adequate here since only a single application would apply to all users.

**B, D:** A cache would not be a secure place to save this information. Caching is used for performance reasons.

#### QUESTION NO: 2

You are creating an ASP.NET page for a travel service. The page contains a **CheckBoxList** control that contains travel destinations. Customer can select favorite destinations to receive weekly e-mail updates of travel packages.

The **CheckBoxList** control is bound to a database table of possible destinations. Each destination is ranked according to its popularity. You modify the page to sort the destination list by rank, from the most popular to the least popular. The list has three columns.

You want the most popular destination to be on the top row of the check box list at run time.

Which property setting should you use for the **CheckBoxList** control?

- A. Set the **RepeatDirection** property to **Vertical**.
- B. Set the **RepeatDirection** property to **Horizontal**.
- C. Set the **RepeatLayout** property to **Flow**.
- D. Set the **RepeatLayout** property to **Table**.

**Answer: B**

**Explanation:** The **DataList.RepeatDirection** property is used to get or select whether the **DataList** control displays vertically or horizontally. If this property is set to **RepeatDirection.Horizontal**, the items in the list are displayed in rows loaded from left to right, then top to bottom, until all items are rendered.

**Reference:**

.NET Framework Class Library, **DataList.RepeatDirection** Property [C#]

.NET Framework Class Library, **DataList.RepeatLayout** Property [C#]

#### Incorrect Answers

- A:** If the **DataList.RepeatDirection** property is set to **RepeatDirection.Vertical**, the items in the list are displayed in columns loaded from top to bottom, then left to right, until all items are rendered.
- C, D:** **DataList.RepeatLayout** Property gets or sets whether the control is displayed in a table or flow layout. It does not affect the order in which the items are displayed.

#### QUESTION NO: 3

You are creating an ASP.NET application to track TestKing sales orders. The application uses an **ADO.NET DataSet** object that contains two **DataTable** objects. One table is named **Orders**, and the other table is named **OrderDetails**. The application displays data from the **Orders** table in a list box. You want the order details for an order to be displayed in a grid when a user selects the order in the list box. You want to modify these objects to enable your code to find all the order details for the selected order.

What should you do?

- A. Add a DataRelation object to the Relations collection of the DataSet object.
- B. Use the DataSet.Merge method to connect the Orders table and the OrderDetails table to each other.
- C. Add a ForeignKeyConstraint to the OrderDetails table.
- D. Add a keyref constraint to the DataSet schema.

**Answer: A**

**Explanation:** In order to enable the DataGrid to display from multiple tables we need to relate the tables with DataRelation.

**Reference:** Visual Basic and Visual C# Concepts, Introduction to the Windows Forms DataGrid Control

**Incorrect Answers**

- B:** We don't want to merge the two datasets into a single dataset.
- C:** A foreignKeyConstraint represents an action restriction enforced on a set of columns in a primary key/foreign key relationship when a value or row is either deleted or updated. However, a foreign key constraint does not create a relation between the tables.
- D:** We need to define a relation not a constraint.

**SECTION 9: Instantiate and invoke Web services or components.**

**SUBSECTION A: Instantiate and invoke a Web service. (3 questions)**

**QUESTION NO: 1**

**You are creating an ASP.NET application for TestKing. The company deploys an XML Web service that returns a list of encyclopedia articles that contain requested keywords.**

**You want to create a class that calls the XML Web service.**

**What should you do?**

- A. Select Add Web Service from the Project menu in Visual Studio .NET and browse to the XML Web service.
- B. Select Add Reference from the Project menu in Visual Studio .NET and browse to the XML Web service.
- C. Select Add Web Reference from the Project menu in Visual Studio .NET and browse to the XML Web service.
- D. Run the Type Library Importer (Tlbimp.exe) and provide it with the URL for the XML Web service.
- E. Run the Web Services Discover tool (Disco.exe) and provide it with the URL for the XML Web service.

**Answer: C**

**Explanation:** You can add a Web reference to projects that use XML Web services that are published on the Internet or on your local Web servers.

**To add a Web reference to a project**

1. In **Solution Explorer**, select a project that supports adding Web references.
2. On the **Project** menu, choose **Add Web Reference**.
3. In the **Add Web Reference** dialog box, type the URL for the XML Web service in the **Address** text box, and then choose the **Arrow Icon**.
4. Verify that the items in the **Available References** box are the items you want to reference in your project, and then choose **Add Reference**.
5. In **Solution Explorer**, expand the **Web References** folder to note the namespace for the Web reference classes that are available to the items in your project.

**Reference:** Visual Studio, Adding and Removing Web References

**Incorrect Answers**

**A, B:** We should use the **Add Web reference** command, not **Add Web Service** or **Add Reference**.

**D:** The Type Library Importer converts the type definitions found within a COM type library into equivalent definitions in a common language runtime assembly.

**E:** The Web Services Discovery tool discovers the URLs of XML Web services located on a Web server and saves documents related to each XML Web service on a local disk.

**QUESTION NO: 2**

**You are creating an ASP.NET application for an online payment service. The service allows users to pay their bills electronically by using a credit card.**

**The application includes a payment page named Payment.aspx. This page contains a form for entering payee, payment amount, and credit card information. When a user needs to submit a new billing address to a payee, the page form allows the user to provide the new address information.**

**If the user indicates a change of address, the application needs to provide the information to the ProcessAddressChange.aspx page for processing as soon as the user submits the payment page information. The ProcessAddressChange.aspx page processes the request for a change of address but does not provide any display information for the user.**

**When the requested processing is complete. Payment.aspx displays status results to the user.**

**You need to add a line of code to Payment.aspx to perform the functionality in ProcessAddressChange.aspx. Which line of code should you use?**

- A. `Response.Redirect("ProcessAddressChange.aspx");`
- B. `Response.WriteFile("ProcessAddressChange.aspx");`
- C. `Server.Transfer("ProcessAddressChange.aspx", True);`
- D. `Server.Execute("ProcessAddressChange.aspx");`

**Answer: D**

**Explanation:** The `HttpServerUtility.Execute` method executes a request to another page using the specified URL path to the page. The `Execute` method continues execution of the original page after execution of the new page is completed.

**Reference:**

.NET Framework Class Library, `HttpServerUtility.Execute Method (String) [C#]`

**Incorrect Answers**

- A:** The `HttpResponse.Redirect` method Redirects a client to a new URL and specifies the new URL.
- B:** The `HttpResponse.WriteFile` method writes the specified file directly to an HTTP content output stream.
- C:** The `HttpServerUtility.Transfer` method Terminates execution of the current page and begins execution of a new page using the specified URL path to the page.

**QUESTION NO: 3**

**You are creating an ASP.NET application for TestKing. Your application will call an XML Web service run by Wide World Importers. The XML Web service will return an ADO.NET DataSet object containing a list of companies that purchase wine.**

**You need to make the XML Web service available to your application.**

**What should you do?**

- A. On the .NET tab of the Reference dialog box, select `System.Web.Services.dll`.
- B. In the Web References dialog box, type the address of the XML Web service.
- C. Add a using statement to your `Global.asax.cs` file, and specify the address of the XML Web service.
- D. Write an event handler in the `Global.asax.cs` file to import the `.wsdl` and `.disco` files associated with the XML Web service.

**Answer: B**

**Explanation:** Web references differ from traditional references and components in that they refer to XML Web services published on either a local intranet or the Internet.

Procedure to add a Web reference to a project

1. In **Solution Explorer**, select a project that supports adding Web references.
2. On the **Project** menu, choose **Add Web Reference**.
3. In the **Add Web Reference** dialog box, type the URL for the XML Web service in the **Address** text box,
4. Verify that the items in the **Available References** box are the items you want to reference in your project, and then choose **Add Reference**.
5. In **Solution Explorer**, expand the **Web References** folder to note the namespace for the Web reference classes that are available to the items in your project.

**Reference:** Visual Studio, Adding and Removing Web References

SUBSECTION B: Instantiate and invoke a COM or COM+ component. (2 questions)

**QUESTION NO: 1**

**You are a Web developer for TestKing Publishing. You are performing a migration of your company's ASP-based Web page named Booklist.asp to ASP.NET. You want to deploy the ASP.NET version of your Web page with the minimum amount of development effort. You also want the migration to be accomplished as quickly as possible.**

**The page contains a COM component named TestKing.BookList. The component is written in Microsoft Visual Basic 6.0. When you open the new page, you receive the following error message: "Server error – The component 'TestKing.BookList' cannot be created."**

**You need to ensure that you can open the Web page successfully.**

**What should you do?**

- A. Write a manage component to perform the tasks that the Lucerne.BookList component currently performs.
- B. Set the AspCompat attribute of the Page directive to true.
- C. Add the following line of code to the Page.Load event handler:  
`RegisterRequiresPostBack("TestKing.BookList");`
- D. Add the following attribute to the processModel element of the Web.config file:  
`comImpersonationLevel = Delegate`

**Answer: B.**

**Explanation:** If the older file contains calls to COM components — for example, ADO code then we must add the AspCompat attribute to the page directive in HTML view. The aspcompat attribute forces the page to execute in single-threaded (STA) mode.

**Note:** You can work with and run existing ASP pages (.asp files) as-is in Visual Studio. You can use ASP pages and ASP.NET pages in the same project. It is useful to convert ASP pages to ASP.NET Web Forms pages so that you can take advantage of the enhanced features of the newer architecture.

**Reference:** Visual Basic and Visual C# Concepts, Migrating ASP Pages to Web Forms Pages

**QUESTION NO: 2**

**You are creating an ASP.NET application for TestKing. Customers will use this application to manage their own insurance policies. For example, a customer can use the application to renew policies.**

**An existing COM component named TestKPolicyLibrary.dll contains the logic for calculating the renewal premium. TestKPolicyLibrary.dll is written in Visual Basic 6.0. The class that performs the**

calculations is named **cPolicyActions**. The **CalculateRenewal** function of **cPolicyActions** accepts a policy identification number and returns a premium as a **Double**.

You need to use **TestKPolicyLibrary.dll** in your ASP.NET application. You also need to enable the application to use the **cPolicyActions** class.

What should you do?

- A. Run the following command in a command window:  
`TLBIMP.EXE TestKPolicyLibrary.DLL /out:TestKPolicyLibrary.NET.DLL`  
Copy the original **TestKPolicyLibrary.dll** to the **/bin** directory of your ASP.NET application.
- B. Run the following command in a command window:  
`TLBEXP.EXE TestKPolicyLibrary.DLL /out:TestKPolicyLibrary.NET.DLL`  
Copy the original **TestKPolicyLibrary.dll** to the **/bin** directory of your ASP.NET application.
- C. Select **Add Existing Item** from the **Project** menu in Visual Studio .NET and browse to **TestKPolicyLibrary.dll**.
- D. Select **Add Reference** from the **Project** menu in Visual Studio .NET, select the **COM** tab, and browse to **TestKPolicyLibrary.dll**.

**Answer: D**

**Explanation:** To add a reference to a COM object from a .NET application:

1. Open a new or existing Microsoft Visual C# .NET project in Visual Studio .NET.
2. Click the **Project** menu and select **Add Reference**.
3. In the **Add Reference** window, click the **COM** tab.
4. Scroll down the list of components and select the one you want to reference, such as **Microsoft CDO For Exchange 2000 Library**. Click **Select**. After the component name appears in the **Selected Components** window, click **OK**.

**Note:** The COM component must have been previously registered on the server for this to succeed.

**Reference:** Using COM Interoperability in Visual Basic .NET

**Incorrect Answers**

- A:** TBLIMP is required if Visual Studio .NET macros must reference COM components. TLBIMP "wraps" the component, enabling Visual Studio .NET macros to reference it. However, TLBIMP is not required if we are going to reference a COM object from a Visual Studio .NET application.
- B:** Tlbexp.exe generates a type library that contains definitions of the types defined in the assembly. Applications such as Visual Basic 6.0 can use the generated type library to bind to the .NET types defined in the assembly. However, the requirements of this scenario are the opposite: we want to reference a COM object from a Visual Studio .NET application.
- C:** We must specify that we are referencing a COM object.

SUBSECTION C: Instantiate and invoke a .NET component. (0 questions)

SUBSECTION D: Call native functions by using platform invoke. (0 questions)

## SECTION 10: Implement globalization.

SUBSECTION A: Implement localizability for the user interface. (3 questions)

### QUESTION NO: 1

**As a software developer at TestKing you are creating an ASP.NET application that will display facts about the solar system. This application will support localization for users from France, Germany, Japan, and the United States. To see information about a particular planet, the user will select the planet from a drop-down list box on SolarSystem.aspx.**

**You want to display the planet names in the drop-down list box in the language appropriate to the individual who is using the application.**

**What should you do?**

- A. Create a database table named Planets.  
Create three column named PlanetID, LocaleID, and Description.  
Use SqlCommand.ExecuteReader to query the table for the locale specified in the request.  
Using the locale specified in the request, translate the values by using the TextInfo.OEMCodePage property.  
Populate the drop-down list box with the translated text.
- B. Create a DataTable object named Planets.  
Populate the Planets DataTable object by using string constants.  
Using the locale specified in the request, translate the values by using a UnicodeEncoding object.  
Bind the DataSource property of the drop-down list box to the DataTable object.
- C. Create a database table named Planets.  
Create two columns named PlanetID and Description  
Use a SqlDataAdapter to load the planet information into a DataSet object.  
Using the locale specified in the request, use the String format provider to translate the values.  
Bind the DataSource property of the drop-down list box to the DataSet.DefaultView object.
- D. Create string resources assemblies for each locale.  
Using the locale specified in the request, use a ResourceManager to load the appropriate assembly.  
Populate an array with the string values from the assembly.  
Bind the DataSource property of the drop-down list box to the array.

**Answer: D**

**Explanation:** The ResourceManager class provides convenient access to culture-correct resources at run time.

**Reference:** .NET Framework Tutorials, ResourceManager

## QUESTION NO: 2

You are creating an ASP.NET page that enables users to select a country and view information on tourist attractions in that country. Users select a country from a list box named `countryList`. The list box displays country names. The list box also contains hidden country codes.

Your code retrieves a cached `DataTable` object that contains tourist attraction descriptions and a numeric country code named `CountryID`. The `DataTable` object is named `attractionsTable`.

You want to extract an array of `DataRow` objects from the `DataTable` object. You want to include tourist attractions for only the selected country.

Which code segment should you use?

- A. `DataRow[] result = attractionsTable.Select("CountryID = " + countryList.SelectedItem.Text);`
- B. `DataRow[] result = attractionsTable.Select("CountryID = " + countryList.SelectedItem.Value);`
- C. `DataRow result = attractionsTable.Rows.Find("CountryID = " + countryList.SelectedItem.Value);`
- D. `DataRow result = attractionsTable.Rows.Find(countryList.SelectedItem.Value);`

**Answer: B**

**Explanation:** The `DataTable.Select` method gets an array of all `DataRow` objects that match the filter criteria in order of primary key (or lacking one, order of addition.). The filter will compare `CountryID` values. We should use Country codes and not country names. We should therefore use the `Value` of the selected item, not the `Text`.

**Reference:** .NET Framework Class Library, `DataTable.Select Method (String) [C#]`

.NET Framework Class Library, `ListControl.SelectedItem Property [C#]`

## Incorrect Answers

- A:** The `ListBox.TextBox` property gets or searches for the text of the currently selected item in the `ListBox`. However, this would retrieve names of countries, but the filter use comparison to a `CountryID` column. We must use the country code, not the country name.

**C, D:** The `DataRowCollection.Find` method is not appropriate in this scenario. It retrieves only a single row, not an array of rows.

### QUESTION NO: 3

You create an ASP.NET application to provide corporate news and information to TestKing's employees. The application is used by employees in New Zealand.

Default.aspx has a Web Form label control named `currentDateLabel`. The `Page.Load` event handler for Default.aspx included the following line of code:

```
currentDateLabel.Text = DateTime.Now.ToString("D")
```

You need to ensure that the data is displayed correctly for employees in New Zealand. What should you do?

- A. In the Web.config file for the application, set the culture attribute of the globalization element to en-NZ.
- B. In the Web.config file for the application, set the uiCulture attribute of the globalization element to en-NZ.
- C. In Visual Studio .NET, set the responseEncoding attribute in the page directive for Default.aspx to UTF-8.
- D. In Visual Studio .NET, save the Default.aspx page for both versions of the application by selecting Advanced Save Options from the File menu and selecting UTF-8.

**Answer: A**

**Explanation:** The culture attribute of the globalization element specifies the default culture for processing incoming Web requests.

**Reference:** .NET Framework General Reference, <globalization> Element

### Incorrect Answers

- B:** The `uiculture` attribute of the globalization specifies the default culture for processing locale-dependent resource searches. It does not apply in this scenario.
- C, D:** The `UTF8Encoding` Class encodes Unicode characters using UCS Transformation Format, 8-bit form (UTF-8). This encoding supports all Unicode character values and surrogates. However, it does not help in displaying data in New Zealand format.

SUBSECTION B: Convert existing encodings. (0 questions)

SUBSECTION C: Implement right-to-left and left-to-right mirroring. (0 questions)

SUBSECTION D: Prepare culture-specific formatting. (1 question)

**QUESTION NO: 1**

**You are a Web developer for TestKing. You are creating an online inventory Web site to be used by employees in Germany and the United States. When a user selects a specific item from the inventory, the site needs to display the cost of the item in both United States currency and German currency. The cost must be displayed appropriately for each locale.**

**You want to create a function to perform this task.**

**Which code should you use?**

- A. 

```
private string TKGetDisplayValue(double value,string
inputRegion)
{
    string display;
    RegionInfo region;
    region = new RegionInfo(inputRegion);
    display = value.ToString("C");
    display += region.CurrencySymbol;
    return display;
}
```
- B. 

```
private string TKGetDisplayValue(double value,string
inputCulture)
{
    string display;
    NumberFormatInfo LocalFormat = (NumberFormatInfo)
    NumberFormatInfo.CurrentInfo.Clone();
    display = value.ToString("C", LocalFormat);
    return display;
}
```
- C. 

```
private string TKGetDisplayValue(double value,string
inputRegion)
{
    string display;
    RegionInfo region;
    region = new RegionInfo(inputRegion);
    display = value.ToString("C");
    display += region.ISOCurrencySymbol;
    return display;
}
```
- D. 

```
private string TKGetDisplayValue(double value, string
inputCulture)
```

```

{
    string display;
    CultureInfo culture;
    culture = new CultureInfo(inputCulture);
    display = value.ToString("C", culture);
    return display;
}

```

**Answer: D**

**Explanation:** We create a new CultureInfo object based on the inputCulture parameter. We then produce the result with “C” constant, representing the current culture, and the new CultureInfo object: `display = value.ToString("C", culture)`

**Note:** The CultureInfo Class contains culture-specific information, such as the language, country/region, calendar, and cultural conventions associated with a specific culture. This class also provides the information required for performing culture-specific operations, such as casing, formatting dates and numbers, and comparing strings.

**Reference:**

.NET Framework Developer's Guide, Formatting Numeric Data for a Specific Culture [C#]

**Incorrect Answers**

**B:** The NumberFormatInfo class defines how currency, decimal separators, and other numeric symbols are formatted and displayed based on culture. However, we should create a CultureInfo object, not a NumberFormatInfo object).

**A, C:** We should use the CultureInfo class not the RegionInfo class.

**Note:** In contrast to CultureInfo, RegionInfo does not represent preferences of the user and does not depend on the user's language or culture.

## SECTION 11: Handle events.

### SUBSECTION A: Create event handlers. (7 questions)

#### QUESTION NO: 1

**You are creating a DataGridView control named TKGrid for a travel service. Each row in myGrid contains a travel reservation and an Edit command button. In each row, the fields that contain travel reservation information are read-only labels. You want all the fields to change to text boxes when a user clicks the Edit command button in the row.**

**You are writing the following event handler for the EditCommand event. (Line numbers are included for reference only)**

```

1 private void TKGrid_EditCommand(object s,
   DataGridCommandEventArgs e)
   {
2
3 }

```

**Which code should you add at line 2 of the event handler?**

- A. TKGrid.EditItemIndex = e.Item.ItemIndex;
- B. TKGrid.DataKeyField = e.Item.AccessKey;
- C. TKGrid.SelectedIndex = e.Item.ItemIndex;
- D. TKGrid.CurrentPageIndex = e.Item.ItemIndex;

**Answer: A**

**Explanation:** The EditItemIndex property is used to programmatically control which item is being edited. Setting this property to an index of an item in the DataGrid control will enable editing controls for that item in the EditCommandColumn.

**Reference:** .NET Framework Class Library, DataGrid.EditItemIndex Property [C#]

#### **Incorrect Answers**

- B:** The DataKeyField is used to get or set the key field in the data source specified by the DataSource property.
- C:** The SelectedIndex property is used to determine the index of the item selected by the user in the DataGrid control.
- D:** The CurrentPageIndex property is used to determine the currently displayed page in the DataGrid control when paging is enabled. This property is also used to programmatically control which page is displayed.

#### **QUESTION NO: 2**

**You create an ASP.NET application for an online insurance site TestKing Insurance. A page named VehicleInformation.aspx has the following Page directive:**

```

<%@ Page Language="c#"
CodeBehind="VehicleInformation.aspx.cs"
AutoEventWireup="false" inherits="InsApp.VehicleInfo"%>

```

**VehicleInformation.aspx had a TextBox control named vehicleIDNumber in which the user can enter a vehicle identification number (VIN). The HTML code for this control is as follows:**

```

<asp:TextBox ID="vehicleIDNumber" Columns="20"
Runat="server"/>

```

**You need to implement a TextChanged event handler for vehicleIDNumber. You want this event handler to retrieve information about a vehicle by using an XML Web service that charges for each access. The page will then be redisplayed with additional information about the vehicle obtained from the XML Web service.**

**You are implementing the TextChanged event handler.**

**Which two courses of action should you take? (Each correct answer presents part of the solution. Choose two)**

- A. In the Page directive for VehicleInformation.aspx, ensure that the AutoEventWireup attributes is set to “true”.
- B. In the Page directive for VehicleInformation.aspx, ensure that the EnableViewState attribute is set to “true”.
- C. In the vehicleIDNumber HTML element, ensure that the AutoPostBack attribute is set to “false”. Include code for the client-side onserverchange event to submit the Web Form for processing by the server.
- D. In the vehicleIDNumber HTML element, ensure that the AutoPostBack attribute is set to “true”. Include code in the TextChanged event handler to query the XML Web service.

**Answer: B, D**

**Explanation:**

- B:** The Page.EnableViewState property value indicates whether the page maintains its view state, and the view state of any server controls it contains, when the current page request ends.
- D:** The AutoPostBack property is used to specify whether an automatic postback to the server will occur whenever the user changes the content of the text box. As we want we want to use an XML Web service we must set the attribute to **true**.

**Reference:**

.NET Framework Class Library, Control.EnableViewState Property [C#]

.NET Framework Class Library, TextBox.AutoPostBack Property [C#]

**Incorrect Answers**

- A:** AutoEventWireup is used to automatically associate page events and methods. It does not provide a solution for this scenario.
- C:** We are required to use a XML Web service. The AutoPostBack attribute must be set to **false**.

**QUESTION NO: 3**

**You are creating a Web Form for TestKing’s human resources department. You create a Web user control named Employee that allows the user to edit employee information. Each instance of the control on your Web Form will contains information about a different employee.**

**You place the Employee control on the Web Form and name the control TK1. You also add the Employee control to the ItemTemplate of a Repeater control named repeaterEmployees.**

**Each Employee control in repeaterEmployees contains several TextBox controls. You want your Web Form to handle TextChanged events that are raised by these TextBox controls.**

**Which event handler should you use?**

- A. `private void TK1_TextChanged(object source, EventArgs e)`
- B. `private void repeaterEmployees_ItemDataBound(object source, RepeaterItemEventArgs e)`
- C. `private void repeaterEmployees_DataBinding(object source, RepeaterItemEventArgs e)`
- D. `private void repeaterEmployees_ItemCommand(object source, RepeaterCommandEventArgs e)`

**Answer: B**

**Explanation:** The **ItemDataBound** event occurs after an item in the Repeater is data-bound but before it is rendered on the page.

**Note:** The Repeater Web server control is a basic container control that allows you to create custom lists out of any data available to the page.

**Reference:** Visual Basic and Visual C# Concepts, Introduction to the Repeater Web Server Control .NET Framework Class Library, Repeater Events

#### **Incorrect Answers**

- A:** The Repeater class does not have any **TextChanged** event.
- C:** The **DataBinding** event occurs when the server control binds to a data source.
- D:** The **Repeater.ItemCommand** event is raised in response to button clicks in individual items in a Repeater control.

#### **QUESTION NO: 4**

**You create an ASP.NET application for online sales site for the TestKing Corporation. A page named OrderTKVerify.aspx displays a detailed listing of the items ordered, their quantity, and their unit price. OrderTKVerify.aspx then displays the final order total at the end of the page.**

**The Web Form within OrderTKVerify.aspx includes a Web server control button for order submission. The control includes the following HTML element generate by Visual Studio .NET.**

```
<asp:button id="submitOrderButton" runat="server"
Text="Submit Order"></asp:button>
```

The primary event handler for submitOrderButton is named submitOrderButton\_Click and runs on the server. A client-side function named verifyBeforeSubmit() displays a dialog box that asks the user to verify the intent to submit the order.

You need to ensure that verifyBeforeSubmit() runs before submitOrderButton\_Click.

What should you do?

A. Modify the HTML element as follows:

```
<asp:button id="submitOrderButton" runat="server"
Text="Submit Order"
onClick="verifyBeforeSubmit();" ></asp:button>
```

B. Modify the HTML elements as follows:

```
<asp:button id="submitOrderButton" runat="server"
Text="Submit Order"
ServerClick="verifyBeforeSubmit();" ></asp:button>
```

C. Add the following code to the Page.Load event handler for OrderTKVerify.aspx:

```
submitOrderButton.Attribute.Add("onclick",
"verifyBeforeSubmit();");
```

D. Add the following code to the Page.Load event handler for OrderTKVerify.aspx:

```
submitOrderButton.Attribute.Add("ServerClick",
"verifyBeforeSubmit();");
```

**Answer: C**

**Explanation:** The proposed solution demonstrates how to specify and code an event handler for the Click event in order to display a simple message on the Web page.

**Reference:** .NET Framework Class Library, Button.OnClick Method [C#]

**Incorrect Answers:**

The OnClick property of the button control is for server side procedures not client side ones (not A)

## QUESTION NO: 5

You create an ASP .NET page for TestKing's sales department. Employees in the sales department will use the page to review and modify customer purchase orders that are associated with sales invoices. The page contains a DataGrid control named OrderHeader that displays the customer company name, the purchase order (PO) number, and the related sales invoice order number.

You define OrderHeader by using the following HTML element:

```
<asp:DataGrid id="OrderHeader" runat="server"
```

```
AutoGenerateColumns="False" DataKeyField="OrderID"
```

**In addition, you define the following HTML element for the EditItemTemplate for the PONumber field:**

```
<EditItemTemplate>
<asp:TextBox ID="PONumber" width="30"
Text='<%# Container.DataItem("PONumber") %>'
Runat="server" />
</EditItemTemplate>
```

**You define the UpdateCommand event handler for OrderHeader as follows:**

```
private void OrderHeader_UpdateCommand(object source,
System.Web.UI.WebControls.DataGridCommandEventArgs e)
```

**In the UpdateCommand event handler, you define a variable named PurchaseOrder. This variable is a string. You need to set this variable equal to the new value of the item being updates.**

**Which statement should you include in the UpdateCommand event handler?**

- A. purchaseOrder = e.Item.Cells[1].Text;
- B. purchaseOrder =  
(TextBox)e.Item.Cells[1].Controls["PONumber"].Text;
- C. purchaseOrder =  
((TextBox)e.Item.Cells[1].Controls[0]).Text;
- D. purchaseOrder = PONumber.Text;

**Answer: C**

**Explanation:** The proposed solution works, but a more practical answer that works also would be ((TextBox)e.Item.Cells[0].FindControl("PONumber")).Text;

## **QUESTION NO: 6**

**You are creating an ASP.NET application for TestKing's intranet. Employees will use this application to schedule conference rooms for meetings. The scheduling page includes a Calendar control that employees can use to choose a date to reserve a room. The Calendar control is defined as follows:**

```
<asp:calendar id="WorkDays" runat="server"
OnDayRender="WorkDays_DayRender"/>
```

**You want to display a message that reads "Staff Meeting" below every Friday displayed in the calendar. You also want to find all the weekdays for the current month displayed in the calendar and show them with a yellow highlight.**

**You are writing code for the `WorkDays.DayRender` event handler to perform these tasks. You write the following code. (Line numbers are included for reference only)**

```
1 private void WorkDays_Render(object source,  
   DayRenderEventArgs e)  
2 {  
3  
4 }
```

**Which code should you add at line 3 of the event handler?**

- A. 

```
if (e.Day.Date.DayOfWeek == DayOfWeek.Friday)  
{  
    e.Cell.Controls.Add(new  
        LiteralControl("Staff Meeting"));  
}  
if (!e.Day.IsWeekend)  
{  
    e.Cell.BackColor = System.Drawing.Color.Yellow;  
}
```
- B. 

```
if ((e.Day.Date.Day == 6) && e.DayIsOtherMonth)  
{  
    e.Cell.Controls.Add(new  
        LiteralControl("Staff Meeting"));  
    e.Cell.BackColor = System.Drawing.Color.Yellow;  
}
```
- C. 

```
if (e.Day.Date.Day == 6)  
{  
    e.Cell.Controls.Add(new  
        LiteralControl("Staff Meeting"));  
}  
if (!e.Day.IsWeekend && !e.Day.IsOtherMonth)  
{  
    e.Cell.BackColor = System.Drawing.Color.Yellow;  
}
```
- D. 

```
if (e.Day.Date.DayOfWeek == DayOfWeek.Friday)  
{  
    e.Cell.Controls.Add(new  
        LiteralControl("Staff Meeting"));  
}  
if (!e.Day.IsWeekend && !e.Day.IsOtherMonth)  
{  
    e.Cell.BackColor = System.Drawing.Color.Yellow;  
}
```

**Answer: D**

**Explanation:** The statement `e.Day.Date.DayOfWeek == DayOfWeek.Friday` checks if the Date is a Friday. If this is the case we add the appropriate text.

We then use another if-statement to check that the date is not a weekend and that the date is not a weekend. If both the conditions are true we change the background color to yellow.

**Note:** The `CalendarDay.IsOtherMonth` property gets a value that indicates whether the date represented by an instance of this class is in a month other than the month displayed in the Calendar control.

**Reference:**

.NET Framework Class Library, `CalendarDay.IsOtherMonth` Property [C#]

### Incorrect Answers

**A:** We should check if the date is in the month that is displayed by the calendar.

**B:** We need two separate if-statements to specify both conditions.

**C:** The `e.Day.Date.Day == 6` comparison checks if the day is the 6<sup>th</sup> day in the month. This is not appropriate for this scenario.

### QUESTION NO: 7

You are creating an ASP.NET application called **TestKApp** that will be used by companies to quickly create information portals customized to their business. **TestKApp** stored commonly used text strings in application variables for use by the page in your application.

You need your application to initialize these text strings only when the first user accesses the application. What should you do?

- A. Add code to the `Application_OnStart` event handler in the `Global.asax` file to set the values of the text strings.
- B. Add code to the `Application_BeginRequest` event handler in the `Global.asax` file to set the values of the text strings.
- C. Add code to the `Session_OnStart` event handler in the `Global.asax` file to set the values of the text strings.
- D. Include code in the `Page.Load` event handler for the default application page that sets the values if the text strings when the `IsPostBack` property of the `Page` object is **False**.
- E. Include code in the `Page.Load` event handler for the default application page that sets the values of the text strings when the `IsNewSession` property of the `Session` object is set to **True**.

**Answer: A**

**Explanation:** The `OnStart` event only occurs when the first user starts the application.

**Reference:** .NET Framework Class Library, `ServiceBase` Class [C#]

### Incorrect Answers

- B:** The `HttpApplication.BeginRequest` event occurs as the first event in the HTTP pipeline chain of execution when ASP.NET responds to a request.
- C:** This would set the values every time a new session is started.
- D, E:** We should use the `OnStart` event handler of the application, not the `Page.Load` event handler.

SUBSECTION B: Raise events. (2 questions)

### QUESTION NO: 1

You create an ASP.NET application to keep track of TestKing's employees. Employees will use the application to indicate whether they are currently in the office or out of the office.

The main page of the application is named `ShowBoard.aspx`. This page contains a Repeater control named `TestKiEmployeeStatus` that is bound to the results of a stored procedure in the back-end database. The stored procedure provides all employee identification numbers (IDs), all employee names, and each employee's current status of either `In` if the employee is in the office or `Out` if the employee is out of the office.

The HTML code for `TestKiEmployeeStatus` is as follows:

```
<asp:repeater id="TestKiEmployeeStatus" runat="server">
  <ItemTemplate>
    <%# Container.DataItem["EmployeeName"] %>
    (<%# Container.DataItem["Status"] %>) <br/>
  </ItemTemplate>
</asp:repeater>
```

The code-behind file for `ShowBoard.aspx` contains a private procedure named `ChangeInStatus` that toggles the status for an employee by using the employee's ID.

You need to add a button for each employee listed by `TestKiEmployeeStatus`. When an employee clicks the button, you want the button to call `ChangeInOutStatus` and pass the employee ID to toggle the status of the employee.

What are two possible ways to achieve this goal? (Each correct answer presents a complete solution. Choose two)

- A. Add the following HTML code to the `ItemTemplate` element of `TestKiEmployeeStatus`:

```
<input type="button" id="changeStatusButton"
alt=<%# Container.DataItem["EmployeeID"] %>
OnClick="changeStatusButton" Runat="server"
Value="Change Status"/>
```

Add the following subroutine to the code-behind file for `ShowBoard.aspx`:

```
public void changeStatusButton(
```

```

System.Object sender, System.EventArgs e)
{
    ChangeInOutStatus((int) sender.Attributes["alt"]);
}

```

- B. Add the following HTML code to the Item Template element of TestKiEmployeeStatus:

```

<input type="button" id="changeStatusButton"
alt=<%# Container.DataItem["EmployeeID"] %>
OnServerClick="changeStatusButton" Runat="server"
Value="Change Status"/>

```

Add the following subroutine to the code-behind file for ShowBoard.aspx:

```

Public void changeStatusButton(
System.Object sender, System.EventArgs e)
{
    ChangeInOutStatus((int) (sender.Attributes["alt"]));
}

```

- C. Add the following HTML code to the ItemTemplate element of TestKiEmployeeStatus:

```

<asp:Button id="changeStatusButton" Runat="Server"
Text="Change Status"
CommandArgument=<%# Container.DataItem["EmployeeID"] %>
/>

```

Add the following code to the ItemCommand event of TestKiEmployeeStatus:

```

if (source.id == "changeStatusButton")
{
    ChangeInOutStatus(
(int)e.CommandSource.CommandArgument);
}

```

- D. Add the following HTML code to the ItemTemplate element of TestKiEmployeeStatus:

```

<asp:Button id="changeStatusButton" Runat="server"
Text="Change Status"
CommandArgument=<%# Container.DataItem["EmployeeID"] %>
/>

```

Add the following code to the ItemCommand event of TestKiEmployeeStatus:

```

if (e.CommandSource.id == "changeStatusButton")
{
    ChangeInOutStatus((int)e.CommandArgument);
}

```

**Answer: B, D**

**Explanation:**

- B:** The ServerClick event is raised when the HtmlButton control is clicked. This event causes a roundtrip to occur from the client to the server and back. It is deliberately different from the client-side **OnClick** event. In the event that a conflict exists between code run with a **ServerClick** event and code run by a client-side **OnClick** event, the server-side event instructions will override the client-side code.

**D:** The CommandSource property is used to determine the source of the command.

**Reference:** .NET Framework Class Library, HtmlButton.OnServerClick Method [C#]

## QUESTION NO: 2

You create a Web custom control named **TKToggle** that users can turn on and off. The **TKToggle** control includes a **Button** control named **toggleButton**. You write an event handler named **toggleButton\_Click** for the **toggleButton.Click** event. This event adjusts the **BorderStyle** property to signify whether the **Button** is toggled on or off.

You want to add code to the **TKToggle** class so that when **toggleButton** is clicked, pages that contain instances of **TKToggle** can process custom event handling code. You add the following code to the **TKToggle** class:

```
public event EventHandler ChangedValue;

protected void OnChangedValue(EventArgs e)
{
    ChangedValue(this, e);
}
```

You need to add code to the **toggleButton\_Click** so that pages that contain instances of **TKToggle** can handle the **ChangedValue** event and process custom event handling code.

Which lines of code are two possible ways to achieve this goal? (Each correct answer presents a complete solution. Choose two)

- A. `ChangedValue(this, EventArgs.Empty);`
- B. `s.Click += new System.EventHandler(this.OnChangedValue);`
- C. `OnChangedValue(EventArgs.Empty);`
- D. `OnChangedValue(this, EventArgs.Empty);`

**Answer: B, C**

**Explanation:**

- B:** To wire your event handler to the instance, you must create an instance of **EventHandler** that takes a reference to **OnChangedValue** in its argument and add this delegate instance to the **Click** event.
- C:** We can invoke the **OnChangedValue** event. We must use only the **EventArgs** parameter.

**Note:** To consume an event in an application, you must provide an event handler (an event-handling method) that executes program logic in response to the event and register the event handler with the event source. This process is referred to as event wiring.

**Reference:**

**Incorrect Answers**

- A:** We must use the **OnChangedValue** event.  
**D:** We should specify only the EventArgs parameter.

SECTION 12: Implement accessibility features. (1 question)

**QUESTION NO: 1**

**You company TestKing Inc. hosts an ASP.NET application that provides customer demographic information. Some of the demographics data is presented by using images.**

**The target audience for the application includes a significant number of users who have low vision. These individuals use various browsers that vocalize the textual content of Web pages. These users need to receive the content of the images in vocalized form.**

**You need to modify the application to make it accessible for your target audience. You need to accomplish this task with the minimum amount of development effort.**

**How should you modify the application?**

- A. Modify all ASP.NET pages in the application so that the view state is enabled.
- B. Modify all ASP.NET pages in the application to add custom logic that conveys the demographic information in either textual or graphical format.
- C. Modify all images in the application so that the ToolTip property conveys the same demographic information as the image.
- D. Modify all images in the application so that the AlternateText property conveys the same demographic information as the image.

**Answer: D**

**Explanation:** The AlternateText property is used by accessibility utilities such as the Windows XP narrator in order to present graphics as speech.

SECTION 13: Use and edit intrinsic objects. Intrinsic objects include response, request, session, server, and application.

SUBSECTION A: Retrieve values from the properties of intrinsic objects. (0 questions)

SUBSECTION B: Set values on the properties of intrinsic objects. (2 questions)

**QUESTION NO: 1**

**Your ASP.NET application uses the Microsoft .NET Framework security classes to implement role-based security. You need to authorize a user based on membership in two different roles.**

**You create a function named ValidateTKRole that has three arguments. The argument named User is the user name, the argument named Role1 is the first role to verify, and the argument named Role2 is the second role to verify. You want ValidateTKRole to return a value of true if the specified user has membership in either of the specified roles.**

**You write the following code:**

```
PrincipalPermission principalPerm1 =  
new PrincipalPermission("User", "Role1");  
PrincipalPermission principalPerm2 =  
new PrincipalPermission("User", "Role");
```

**Which code segment should you use to complete the function?**

- A. `return principalPerm1.IsUnrestricted() && principalPerm2.IsUnrestricted();`
- B. `return principalPerm1.IsSubsetOf(principalPerm2);`
- C. `return principalPerm1.Intersect(principalPerm2).Demand();`
- D. `return principalPerm1.Union(principalPerm2).Demand();`

**Answer: D**

**Explanation:** The SecurityPermission.Union method creates a permission that is the union of the current permission and the specified permission. This ensures that ValidateRole returns a value of true if either permissions is true.

**Reference:** .NET Framework Class Library, SecurityPermission.Union Method [C#]

**Incorrect Answers**

- A:** The SecurityPermission.IsUnrestricted method returns a value indicating whether the current permission is unrestricted.
- B:** The SecurityPermission.IsSubsetOf method determines whether the current permission is a subset of the specified permission.
- C:** Intersect would require that both conditions were true in order to return true.

**QUESTION NO: 2**

You are creating an ASP.NET page for TestKing's Web site. Customers will use the ASP.NET page to enter payment information.

You add a **DropDownList** control named **cardTypeList** that enables customers to select a type of credit card. You need to ensure that customers select a credit card type. You want a default value of **Select** to be displayed in the **cardTypeList** control.

You want the page validation to fail if a customer does not select a credit card type from the list.

What should you do?

- A. Add a **RequiredFieldValidator** control and set its **ControlToValidate** property to **cardTypeList**. Set the **InitialValue** property of the **RequiredFieldValidator** control to **Select**.
- B. Add a **RequiredFieldValidator** control and set its **ControlToValidate** property to **cardTypeList**. Set the **DataTextField** property of the **cardTypeList** control to **Select**.
- C. Add a **CustomValidator** control and set its **ControlToValidate** property to **cardTypeList**. Set the **DataTextField** property of the **cardTypeList** control to **Select**.
- D. Add a **RegularExpressionValidator** control and set its **ControlToValidate** property to **cardTypeList**. Set the **ValidateExpression** property of the **RegularExpressionValidator** control to **!Select**.

**Answer: A**

**Explanation:** We use a **RequiredFieldValidator** control to ensure that users enter a **cardTypeList**. We use the **InitialValue** property of the **RequiredFieldValidator** control to specify the default or initial value of the **cardTypeList** control.

**Note:** The **RequiredFieldValidator** Control evaluates the value of an input control to ensure that the user enters a value.

**RequiredFieldValidator.InitialValue** property gets or sets the initial value of the associated input control.

SUBSECTION C: Use intrinsic objects to perform operations. (3 questions)

**QUESTION NO: 1**

You create an ASP.NET application for TestKing Motors. The application allows users to purchase automobile insurance policies online. A page named **InsuredAuto.aspx** is used to gather information about the vehicle being insured.

**InsuredAuto.aspx** contains a **TextBox** control named **vehicleIDNumber**. The user enters the vehicle identification number (VIN) of the vehicle into **vehicleIDNumber** and then clicks a button to submit the page. The **Button** control is named **submitButton**. Upon submission of the page, additional vehicle information is obtained for the VIN, and the page is redisplayed for showing the vehicle information.

**You define vehicleIDNumber by using the following HTML tag:**

```
<asp:TextBox id="vehicleIDNumber" runat="server"
EnableViewState="True"/>
```

**Valid VINs are composed of numbers and uppercase letters. You need to include code that converts any lowercase letters to uppercase letters so that the properly formatted VIN is displayed after the page is submitted and redisplayed.**

**What are two possible ways to achieve this goal? (Each correct answer presents a complete solution. Choose two)**

- A. Add the following code to the vehicleIDNumber.TextChanged event handler for InsuredAuto.aspx:  
vehicleIDNumber.Text = vehicleIDNumber.Text.ToUpper();
- B. Add the following code to the submitButton.Click event handler for InsuredAuto.aspx:  
vehicleIDNumber.Text = vehicleIDNumber.Text.ToUpper();
- C. Add the following code to the Page.Init event handler for InsuredAuto.aspx:  
vehicleIDNumber.Text = vehicleIDNumber.Text.ToUpper();
- D. Add the following code to the Page.Render event handler for InsuredAuto.aspx:  
vehicleIDNumber.Text = vehicleIDNumber.Text.ToUpper();

**Answer: A, B**

**Explanation:**

- A:** The TextBox.TextChanged event occurs when the content of the text box is changed upon server postback.
- B:** When the user hits the submit button additional information is obtained for the VIN. We must therefore convert the text to upper case.

**Reference:** .NET Framework Class Library, Page Members

**Incorrect Answers**

- C:** The Page.Init event only occurs when the server control is initialized, which is the first step in its lifecycle. This occurs only when the page is loaded.
- D:** The Page class does have a rerender event, but it does not have a render event.

**QUESTION NO: 2**

**You create an ASP.NET application for TestKing's purchasing department. A page in the application displays a list of products based on the supplier, the product category, or the price. The URL of the page includes this information as parameters.**

**You want to store multiple versions of your ASP.NET page in the cache based in the parameter values. You want each version of the page to be cached for 300 seconds. You need to add code to the page to accomplish this goal.**

**Which code segment should you use?**

- A. `Response.Cache.SetExpires(DateTime.Now.AddSeconds(300));`  
`Response.Cache.VaryByParams["?"] = true;`
- B. `Response.Cache.SetExpires(DateTime.Now.AddSeconds(300));`  
`Response.Cache.VaryByParams["All"] = true;`
- C. `Response.Cache.SetCacheability(HttpCacheability.Public);`  
`Response.Cache.`  
`SetLastModified(DateTime.Parse("00:05:00"));`  
`Response.Cache.VaryByParams["All"] = true;`
- D. `Response.Cache.SetCacheability(HttpCacheability.Public);`  
`Response.Cache.SetExpires(DateTime.Now.AddSeconds(300));`  
`Response.Cache.VaryByParams["*"] = true;`

**Answer: D**

**Explanation:** Cachability corresponds to the Location attribute. The Public value corresponds to any location. We use the SetExpires to set the cache duration. Finally we use the "\*" string to specify that all parameter values are cached.

**Reference:**

.NET Framework Developer's Guide, Caching Versions of a Page, Based on Parameters [C#]  
.NET Framework Developer's Guide, Setting Expirations for Page Caching [C#]

**Incorrect Answers**

**A, B:** Cachability has to be set.

**C:** We should use "\*", not "all" when specify VaryByParams.

**QUESTION NO: 3**

**You create an ASP.NET application to display sales analysis information for TestKing. A page named TkSalesSummary.aspx displays three separate sections of information.**

**For each section, you write code that calls a stored procedure in a database. The code for each section calls a different stored procedure. After the stored procedure runs, the results are immediately written in HTML format to the Response object for the application.**

**You do not want users to wait until the results are returned from all three stored procedures before they begin to receive content rendered in their browser. What are two possible ways to achieve this goal? (Each correct answer presents a complete solution. Choose two)**

- A. Set the **SuppressContent** property of the Response object to **False**.
- B. Set the **BufferOutput** property of the Response object to **False**.

- C. Set the **CacheControl** property of the Response object to **Public**.
- D. Insert the following statement after each section is written to the **Response** object for the application:  
`Response.Clear();`
- E. Insert the following statement after each section is written to the **Response** object for the application:  
`Response.ClearContent();`
- F. Insert the following statement after each section is written to the **Response** object for the application:  
`Response.Flush();`

**Answer: B, F**

**Explanation:**

- B:** The `HttpResponse.BufferOutput` property gets or sets a value indicating whether to buffer output and send it after the entire page is finished processing.
- F:** The flush method forces all currently buffered output to be sent to the client.

**Reference:**

.NET Framework Class Library, `HttpResponse.BufferOutput` Property [C#]

.NET Framework Class Library, `HttpResponse.Flush` Method [C#]

**Incorrect Answers**

- A:** The `HttpResponse.SuppressContent` property gets or sets a value indicating whether to send HTTP content to the client.
- C:** Caching would not meet the requirements of this scenario.
- D, E:** The `HttpResponse.Clear` and `HttpResponse.ClearContent` methods just clear all content output from the buffer stream.

## PART II: Creating and Managing Components and .NET Assemblies (5 questions)

### SECTION 1: Create and modify a .NET assembly.

#### SUBSECTION A: Create and implement satellite assemblies. (2 questions)

##### QUESTION NO: 1

**You create an ASP.NET application named TKApp. You create an assembly named TKApp.dll in a directory named TKDir. The assembly includes a default resource file named strings.resources that adequately supports English-speaking users of the application. You create an additional resource file named strings.ja.resources to enable support for Japanese-speaking users. The resource file is located in the TKDir/ja subdirectory. You want to create a satellite assembly for TKApp.dll that will use the new resource file.**

**What should you do?**

- A. Run the Assembly Linker (Al.exe) to embed strings.ja.resources in the output assembly.  
Place the output assembly in TKDir.
- B. Run the Assembly Linker (Al.exe) to embed strings.ja.resources in the output assembly.  
Place the output assembly in TKDir/ja.
- C. Run the Assembly Linker (Al.exe) to link strings.ja.resources to the output assembly.  
Place the output assembly in TKDir.
- D. Run the Assembly Linker (Al.exe) to link strings.ja.resources to the output assembly.  
Place the output assembly in TKDir/ja.

**Answer: B**

**Explanation:** Assemblies contain resources. We embed the strings.ja.resources in the assembly.

After you have compiled your satellite assemblies, they all have the same name. The runtime differentiates between them based upon the culture specified at compile time with Al.exe's /culture option and by each assembly's directory location.

**Reference:** .NET Framework Developer's Guide, Creating Satellite Assemblies

##### Incorrect Answers

**A:** We must put the Japanese assembly into a separate folder.

**C, D:** We must embed the resource file within the assembly, not link it.

##### QUESTION NO: 2

**You are creating an ASP.NET application that will be published in several languages. You develop a satellite assembly that will include the localized resources for one of the other languages. The satellite assembly will also contain code that accesses Enterprise Services.**

**TestKing has a build team that is responsible for compiling and publishing all software applications created by your group. The build team is also responsible for digitally signing the software with a public/private key pair.**

**The build team permits you to have access to TestKing's public key, but not the private key. In order to test your localized satellite assembly, you need to digitally sign the assembly.**

**What are two possible ways to achieve this goal? (Each correct answer presents a complete solution. Choose two)**

- A. Create a test certificate for your satellite assembly by using the Software Publisher Certificate Test tool (Cert2spc.exe).
- B. Compile the satellite assembly by using the Resource File Generator (Resgen.exe) with the /compile switch.
- C. Compile the satellite assembly by using the Assembly Linker (Al.exe) with the /delay+ switch.
- D. Use the Global Assembly Cache tool (Gacutil.exe) to install the assembly in the global assembly cache.
- E. Generate a new public/private key pair by using the Strong Name tool (Sn.exe).  
Use the new key pair to sign the assembly temporarily for testing purposes.

**Answer: C, E**

**Explanation:**

- C:** The **/delay** switch specifies whether the assembly will be fully or partially signed. When an assembly is delay signed, Al.exe does not compute and store the signature, but just reserves space in the file so the signature can be added later.
- E:** The Strong Name tool helps sign assemblies with strong names. Sn.exe provides options for key management, signature generation, and signature verification.  
The -R and -Rc options are useful with assemblies that have been delay signed. In this scenario, only the public key has been set at compile time and signing is performed later when the private key is known.

**Reference:**

.NET Framework Tools Strong Name Tool (Sn.exe)  
.NET Framework Tools, Assembly Linker (Al.exe)  
.NET Framework Tools, Software Publisher Certificate Test Tool (Cert2spc.exe)

**Incorrect Answers**

- A:** The Software Publisher Certificate Test tool creates a Software Publisher's Certificate (SPC) from one or more X.509 certificates. Cert2spc.exe is for test purposes only. However, there is no need of a SPC since we already have access to the company's public key.
- B:** Resgen is not useful for signing assemblies.  
**Note:** The Resource File Generator converts .txt files and .resx (XML-based resource format) files to common language runtime binary .resources files that can be embedded in a runtime binary executable or compiled into satellite assemblies.

**D:** The Global Assembly Cache tool allows you to view and manipulate the contents of the global assembly cache and download cache. However, it cannot be used to digitally sign an assembly.

SUBSECTION B: Create resource-only assemblies. (2 questions)

**QUESTION NO: 1**

**You create English, French, and German versions of a test engine ASP.NET application you are developing for TestKing Inc. You have separate resource files for each language version. You need to deploy the appropriate resource file based on the language settings of the server.**

**What should you do?**

- A. Create an installer and set the Installer.Context property for each version of your application.
- B. Create an installer that has a launch condition to verify the locale settings.
- C. Create an installer that has a custom action to install only location-specific files.
- D. Create an installer that has an MsiConfigureProduct function to install the appropriate version.

**Answer: C**

**Explanation:** Custom actions are a Windows Installer feature that allows you to run code at the end of an installation to perform actions that cannot be handled during installation. This is an appropriate solution for this scenario as we only want to deploy the resource files on the server.

**Note:** Resources can be composed of a wide range of elements, including interface elements that provide information to the user (for example a bitmap, icon, or cursor); custom resources that contain data an application needs; version resources that are used by setup APIs; and menu and dialog box resources.

**Reference:**

Visual Studio, Working with Resource Files

Visual Studio, Custom Actions

**Incorrect Answers**

- A:** We just want to deploy the resource files. We do not need to set the Context property in the application.
- B:** We don't need any launch conditions. We just want to deploy the resource files.
- D:** We just want to deploy the resource files.

**QUESTION NO: 2**

**You create an ASP.NET application named TKProject. You write code to specify the namespace structure of TKProject by including all class declarations within a namespace named TKNamespace.**

**You want to compile TKProject so that the fully qualifies namespace of each class is TKNamespace. You want to prevent the fully qualifies namespace of each class from being TKProject.TKNamespace. You need to make changes in the Common Properties folder of the Property Pages dialog box for TKProject.**

**What should you do?**

- A. Change the value of the **AssemblyName** property to **TKNamespace**.
- B. Clear the value of the **AssemblyName** property and leave it blank.
- C. Change the value of the **RootNamespace** property to **TKNamespace**.
- D. Clear the value of the **RootNamespace** property and leave it blank.

**Answer: D**

**Explanation:** Returns or sets the namespace for items added through the Add New Item Dialog Box. This property provides the same functionality as the DefaultNamespace Property, and using the DefaultNamespace property is preferred for setting the namespace of new project items.

We should clear this property as we want to prevent the fully qualifies namespace of each class from being TKProject.TKNamespace.

**Reference:** Visual Basic and Visual C# Project Extensibility, RootNamespace Property [C#]

**Incorrect Answers**

- A, B:** The AssemblyName property is not directly related to the fully qualified namespace class.
- C:** We should clear the RootNamespace property as we want to prevent the fully qualifies namespace of each class from being TKProject.TKNamespace.

**SECTION 2: Create Web custom controls and Web user controls. (1 question)**

**QUESTION NO: 1**

**You create an ASP.NET application for TestKing to sell Study Guides online. One of the requirements is that every page must display the company name at the top. You create a Web custom control that encapsulates the company name in a heading element. Your control class named CompanyName inherits from the Control class.**

**The following HTML code displays the company name:**

```
<h2>TestKing</h2>
```

**You need to write code in the CompanyName class to display the company header. Which code should you use?**

- A. `protected override void Render(  
    HtmlTextWriter output)  
    {  
        output.Write("<h2>TestKing</h2>");  
    }`
- B. `protected override void OnPreRender(  
    EventArgs e)  
    {  
        this.Controls.Add(new  
        LiteralControl("<h2>TestKing</h2>"));  
    }`
- C. `protected override void RenderChildren(  
    HtmlTextWriter output)  
    {  
        output.Write("<h2>TestKing</h2>");  
    }`
- D. `protected override void OnInit(EventArgs e)  
    {  
        this.Controls.Add(new  
        LiteralControl("<h2>TestKing</h2>");  
    }`

**Answer: A**

**Explanation:** You create a rendered custom control's appearance by overriding the base class's `Render` method and writing to the method's output argument using the `HtmlTextWriter` utility methods. The most direct approach is to use the `Write` methods to add the HTML directly to the `HtmlTextWriter`.

The `Control.RenderChildren` method outputs the content of a server control's children to a provided `HtmlTextWriter` object, which writes the content to be rendered on the client. This method notifies ASP.NET to render any Active Server Pages (ASP) code on the page. If no ASP code exists on the page, this method renders any child controls for the server control.

**Reference:** 70-305/70-315 Training kit, Creating the Rendered Control's Appearance, pages 544-547  
.NET Framework Class Library, `Control.RenderChildren` Method [C#]

**Incorrect Answers**

**B, D:** We should not add controls to the web page, just a header.

**C:** We should override the render method, not the `RenderChildren` method, as we want to add content to the page itself, not the controls of the page.

## PART III: Consuming and Manipulating Data (21 questions)

SECTION 1: Access and manipulate data from a Microsoft SQL Server database by creating and using ad hoc queries and stored procedures. (9 questions)

### QUESTION NO: 1

Your ASP.NET application enables customers to create new sales orders. The sales orders are stored in a Microsoft SQL Server database table named TestKingSales. The table has an IDENTITY column named OrderID.

Your code uses a DataTable object to manage the order data. The DataTable object contains a column named OrderNumber. You use the Update method of a SqlDataAdapter object to call a stored procedure that inserts each new order into the database. The stored procedure uses a parameter to return the new OrderID value for each order.

You assign a SqlCommand object to the InsertCommand property of the SqlDataAdapter object. You add a SqlParameter object to the Parameters collection of the SqlDataAdapter object, specifying the name and data type of the parameter.

You need to set properties of the SqlParameter object to retrieve new OrderID values from the database into the OrderNumber column of your DataTable object.

What should you do?

- A. Set the Direction property to ParameterDirection.ReturnValue.  
Set the SourceColumn property to "OrderID".
- B. Set the Direction property to ParameterDirection.ReturnValue.  
Set the SourceColumn property to "OrderNumber".
- C. Set the Direction property to ParameterDirection.Output.  
Set the SourceColumn property to "OrderID".
- D. Set the Direction property to ParameterDirection.Output.  
Set the SourceColumn property to "OrderNumber".

**Answer: D**

**Explanation:** As the stored procedure uses a parameter to return the new OrderID value we need to use an output parameter. This is accomplished by setting the Direction property to ParameterDirection.Output.

The SqlParameter.SourceColumn property gets or sets the name of the source column that is mapped to the DataSet and used for loading or returning the Value. The source column, where the value will be stored, is the OrderNumber column.

**Note:** SqlParameter.Direction property gets or sets a value indicating whether the parameter is input-only, output-only, bidirectional, or a stored procedure return value parameter.

**Reference:**

.NET Framework Class Library, SqlParameter.Direction Property [C#]

.NET Framework Class Library, ParameterDirection Enumeration

.NET Framework Class Library, SqlParameter.SourceColumn Property

**Incorrect Answers**

- A, B:** The scenario clearly states that the stored procedure uses a parameter, not a return value, to return the new OrderID value. We should not set the Direction property to ParameterDirection.ReturnValue
- C:** The output parameter should be stored in the OrderNumber column. We must set the SourceColumn property to the OrderNumber column.

**QUESTION NO: 2**

**You create an ASP.NET page that retrieves product information from a Microsoft SQL Server database named TestKiDB. You want to display the list of products in a Repeater control named repeaterProducts. Your code uses the System.Data namespace and the System.Data.SqlClient namespace. You write the following procedure to retrieve the data:**

```
private void RepeaterBind(  
    string ConnectionString, string SQL)  
{  
    SqlDataAdapter da;  
    DataTable dt;  
    da = new SqlDataAdapter(SQL, ConnectionString);  
    dt = new DataTable();
```

**You need to add code that will fill repeaterProducts with data retrieved from the database. Which code segment should you use?**

- A. `repeaterProducts.DataSource = dt;  
repeaterProducts.DataBind();  
da.Fill(dt);`
- B. `da.Fill(dt);  
repeaterProducts.DataBind();  
repeaterProducts.DataSource = dt;`
- C. `repeaterProducts.DataBind();  
da.Fill(dt);  
repeaterProducts.DataSource = dt;`

```
D. da.Fill(dt);  
   repeaterProducts.DataSource = dt;  
   repeaterProducts.DataBind();
```

**Answer: D**

**Explanation:** First we must fill the data set. Then we specify the data source, and finally we bind the data to the control.

**Note:** Using data-access objects in code follows the sequence:

1. Create the data connection object.
2. Create a data adapter object.
3. Create a data set object.
4. Invoke methods on the adapter object to fill or update the data set.  
This scenario: `da.Fill(dt)`
5. Use data binding or another technique to display the data from the data set.  
This scenario:  
`repeaterProducts.DataSource = dt`  
`repeaterProducts.DataBind()`

**Reference:** 70-305/70-315 Training kit, Creating a Database Connection at Run Time, pages 222-223

#### **Incorrect Answers**

- A:** We must start by filling the data set.
- B:** We must specify the data source before we bind the control to the data.
- C:** We must start by filling the data set.

#### **QUESTION NO: 3**

**You are creating an ASP.NET page that displays inventory figures for selected items. Your code creates ad hoc SQL queries and retrieves data from a Microsoft SQL Server database. The identification number of an item is stored in a string variable named `ItemID`, and the SQL statement for your query is stored in a variable named `SQL`.**

**You use the following line of code to construct the SQL query:**

```
SQL = "SELECT UnitsOnHand, UnitsOnOrder FROM Inventory"  
+ " WHERE ProductID = " + ItemID;
```

**The `ProductID`, `UnitsOnHand`, and `UnitsOnOrder` columns in the database are all of type `int`. You use a `SqlDataReader` object named `reader` to retrieve the data.**

**You want to assign the `UnitsOnHand` quantity to a variable named `OnHand`. Which line of code should you use?**

```
A. OnHand = reader.GetInt16(0);
```

- B. `OnHand = reader.GetInt16(1);`
- C. `OnHand = reader.GetInt32(0);`
- D. `OnHand = reader.GetInt32(1);`

**Answer: C**

**Explanation:** The SQL Server datatype **int** corresponds to 32-bit Visual Basic .NET integers. We must therefore use the `GetInt32` method which gets the value of the specified column as a 32-bit signed integer. We must specify the 1<sup>st</sup> column as we want to retrieve the value of the `UnitsOnHand` column which is listed first in the SQL `SELECT` statement. The `GetInt32` parameter, which specifies the ordinal of the column, is 0 based. We should use 0 value of the parameter to retrieve the appropriate column.

**Note:** The SQL Server datatype `int` (Integer, whole number) represents data from  $-2^{31}$  (-2,147,483,648) through  $2^{31} - 1$  (2,147,483,647). Storage size is 4 bytes. The SQL-92 synonym for `int` is `integer`.

**Reference:**

SQL Server Books Online, Transact-SQL Reference, `int`, `bigint`, `smallint`, and `tinyint`  
.NET Framework Class Library, `SqlDataReader.GetInt32` Method [C#]

**Incorrect Answers**

- A:** `SqlDataReader.GetInt16` method gets the value of the specified column as a 16-bit signed integer.
- D:** `GetInt32(1)` would retrieve the second column named `UnitsOrder`.

**QUESTION NO: 4**

You are creating an ASP.NET page for the sales department at TestKing. The page enables users to access data for individual customers by selecting a customer's name. After a customer's name is selected, the page displays a list of that customer's unshipped orders and the total year-to-date (YTD) sales to that customer.

Your company's sales data is stored in a Microsoft SQL Server database. You write a stored procedure to return the data that you need to display on the ASP.NET page. The stored procedure returns a result set containing the list of unshipped orders, and it returns the YTD sales in a parameter named `@YTD`. You write code that uses a `SqlCommand` object named `cmd` and a `SqlDataReader` object named `reader` to run the stored procedure and return the data. You bind `reader` to a `DataGrid` control on your page to display the list of unshipped orders.

You want to display the YTD sales in a `Label` control named `ytdLabel`.

Which code segment should you use?

- A. 

```
reader.NextResult();  
ytdLabel.Text = cmd.Parameters("@YTD").Value.ToString();  
reader.Close();
```

- B. `reader.Close();`  
`ytdLabel.Text = reader.NextResult().ToString();`
- C. `reader.Close();`  
`ytdLabel.Text = cmd.Parameters("@YTD").Value.ToString();`
- D. `ytdLabel.Text = cmd.Parameters("@RETURN_VALUE").Value.ToString();`  
`reader.Close();`

**Answer: C**

**Explanation:** The YTD parameter is an output parameter that contains the information we want to display in the Label control. We fetch this value from the parameters collection, convert it to a string, and save it the label control.

**Reference:** .NET Framework Developer's Guide, Input and Output Parameters, and Return Values [C#]

#### Incorrect Answers

- A, B:** The `SqlDataReader.NextResult` method advances the data reader to the next result, when reading the results of batch Transact-SQL statements. However, in this scenario the reader only provides a single result set.
- D:** The YTD sales is returned in a parameter named `@YTD`. It is not returned as a return value of the stored procedure.

#### QUESTION NO: 5

**You are creating an ASP.NET page that displays a list of products. The product information is stored in a Microsoft SQL Server database. You use `SqlConnection` object to connect to the database. Your SQL Server computer is named `TestKing1`. The database that contains the product information is named `SalesDB`. The table that contains the product information is named `Products`. To connect to `SalesDB`, you use a SQL Server user account named `WebApp` that has the password `TestKi12`.**

**You need to set the `ConnectionString` property of the `SqlConnection` object.**

**Which string should you use?**

- A. `"Provider=SQLOLEDB.1;File Name =\"Data\\MyFile.udl`
- B. `"Provider=MSDASQL;Data Source=TestKing1;`  
`Initial Catalog=SalesDB;`  
`User ID=WebApp;Password=TestKi12"`
- C. `"Data Source=TestKing1;Initial Catalog=SalesDB;`  
`User ID=WebApp;Password=TestKi12"`
- D. `"Data Source=TestKing1;Database=SalesDB;`  
`Initial File Name=Products;User ID=WebApp;Pwd=TestKi12"`

**Answer: C**

**Explanation:** We specify the name of the SQL Server computer with the **Data Source** attribute. The database is specified with the **Initial Catalog** attribute.

**Reference:** .NET Framework Class Library, SqlConnection.ConnectionString Property [C#]

**Incorrect Answers**

**A, B:** The SqlConnection.ConnectionString has no **Provider** attribute. The provider is implicitly SQL Server 7.0 or later.

**D:** There is no **Initial File name** attribute in the SqlConnection.ConnectionString. This attribute makes the connection string invalid.

**QUESTION NO: 6**

**You are creating an ASP.NET page to retrieve sales data from a Microsoft SQL Server database. You are writing a method named GetTestKSales to run a stored procedure in the SQL Server database. The stored procedure has one input parameter that is used to specify a product. The stored procedure returns to the year-to-date sales for that product.**

**You declare a numeric variable in the GetTestKSales method. You want to assign the return value of the stored procedure to the variable.**

**What should you do?**

- A. Create a SqlDataAdapter object and call its Fill method to run the stored procedure and assign the year-to-date sales value to your numeric variable.
- B. Create a SqlDataAdapter object and call its Update method to run the stored procedure and assign the year-to-date sales value to your numeric variable.
- C. Create a SqlCommand object and call its ExecuteScalar method to run the stored procedure and assigns the year-to-date sales value to your numeric variable.
- D. Create a SqlCommand object and call its ExecuteReader method to run the stored procedure and assign the year-to-date sales value to your numeric variable.

**Answer: C**

**Explanation:** The SqlCommand.ExecuteScalar method executes the query, and returns the first column of the first row in the resultset returned by the query. Extra columns or rows are ignored. The ExecuteScalar method is used to retrieve a single value (for example, an aggregate value) from a database.

**Reference:** .NET Framework Class Library, SqlCommand.ExecuteScalar Method [C#]

**Incorrect Answers**

**A, B:** A SqlDataAdapter object represents a set of data commands and a database connection that are used to fill the DataSet and update a SQL Server database. However, in this scenario we only want to retrieve a single scalar value.

**D:** The SqlCommand.ExecuteReader method Sends the CommandText to the Connection and builds a SqlDataReader. However, we are only interested in a single scalar value, not a SqlDataReader object capable of providing a stream of data.

#### QUESTION NO: 7

**You are creating an ASP.NET application for TestKing. The company data is stored in a Microsoft SQL Server 6.5 database. Your application generates accounting summary reports based on transaction tables that contain million of rows.**

**You want your application to return each summary report as quickly as possible. You need to configure your application to connect to the database and retrieve the data in a way that achieves this goal.**

**What should you do?**

- A. Use a SqlConnection object to connect to the database, and use a SqlCommand object to run a stored procedure that returns the data.
- B. Use an OleDbConnection object to connect to the database, and use an OleDbCommand object to run a stored procedure that returns the data.
- C. Configure SQL Server to support HTTP access, and create an XML template to run a stored procedure that returns the data in XML format.
- D. Use COM interop to create an ADODB.Connection object, and use an ADODB.Command object to run a SQL statement that returns the data.

**Answer: B**

**Explanation:** We need to use an OleDbConnection to connect to SQL Server Version 6.5 (or earlier).

**Note:** The .NET Framework includes the SQL Server .NET Data Provider (for Microsoft SQL Server version 7.0 or later), and the OLE DB .NET Data Provider.

**Reference:** .NET Framework Developer's Guide, .NET Data Providers [C#]

#### Incorrect Answers

- A:** We could use a SqlConnection object only if the SQL Server were SQL Server 7.0, 2000 or later.
- C:** HTTP functionality is not required in this scenario. It would introduce unnecessary overhead.
- D:** ADODB is a legacy standard and should not be used here.

#### QUESTION NO: 8

**You are creating an ASP.NET page for TestKing. TestKing Employees will use the page to enter suggested names for new products. Each suggestion is saved in a Microsoft SQL Server database. The table in the database for suggestion includes the following three columns.**

| Column name | Content |
|-------------|---------|
|-------------|---------|

|                   |                                                              |
|-------------------|--------------------------------------------------------------|
| <b>EmployeeID</b> | <b>identification number of employee making a suggestion</b> |
| <b>ProductID</b>  | <b>identification number for the product being named</b>     |
| <b>Suggestion</b> | <b>suggested name for product</b>                            |

To add a suggestion to the ASP.NET page, an employee logs on by entering the appropriate EmployeeID and password. The employee then uses a drop-down list box to select a ProductID and uses a grid to enter suggested names for that product. The employee can enter multiple suggestions for single products before submitting the page.

The database table has a unique index that includes the EmployeeID, ProductID, and Suggestion columns. The unique index does not allow the same suggested name to be recorded twice for the same product by the same employee.

You are using a SqlDataAdapter object to insert the suggestions into the database. If one of the suggested names for a product is a duplicate, the database returns an error to your code. You do not want such errors to interrupts processing. You want your code to continue inserting any remaining suggestions entered by the employee. You also want to be able to access a list of any suggested names that were skipped due to errors.

**What should you do?**

- A. Set the SqlDataAdapter object's ContinueUpdateOnError property to true before calling the object's Update method.
- B. Enclose your call to the SqlDataAdapter object's Update method in a try/catch block. In the Catch code, set the object's ContinueUpdateOnError property to true.
- C. Create an event handler for the SqlDataAdapter object's RowUpdated event. In the event handler, if the SqlRowUpdatedEventArgs object's UpdateStatus property has a value of UpdateStatus.ErrorsOccured, then set the SqlDataAdapter object's ContinueUpdateOnErrorProperty to true.
- D. Create an event handler for the SqlDataAdapter object's RowUpdated event. In the event handler, if the SqlRowUpdatedEventArgs object's Errors property returns a non-null value, then set the SqlDataAdapter object's ContinueUpdateOnError property to true.

**Answer: A**

**Explanation:** The SqlDataAdapter.ContinueUpdateOnError property gets or sets a value that specifies whether to generate an exception, or the row in error when an error is encountered during a row update. If ContinueUpdateOnError is set to true, no exception is thrown when an error occurs during the update of a row. The update of the row is skipped and the error information is placed in the RowError property of the row in error.

**Reference:** .NET Framework Class Library, SqlDataAdapter Members

**Incorrect Answers**

**B:** We should set the ContinueUpdateOnError property to true beforehand, not the Catch code.

**C, D:** An event handler is not needed. The required functionality is inherent in the SqlDataAdapter class.

**QUESTION NO: 9**

You are creating an ASP.NET accounting application that stores and manipulates data in a Microsoft SQL Server database named TestKingSrv. One of the pages in the application will be used for performing month-end operations to calculate the balance of all accounts.

When a user clicks a button on the page, you want your code to run several stored procedures to calculate the month-end balances. These procedures must all succeed before the calculated balances can be stored in the database. If any of the procedures fail, then you do not want to store any of the month-end calculated balances. While the procedures are running, you do not want any users to be able to edit, add, or delete data in the tables affected by the procedures.

What should you do?

- A. Create a class derived from System.EnterpriseServices.ServicesComponent to run the stored procedures. Annotate the class by using a TransactionAttribute type of attribute. Set the Value property of the attribute to TransactionOption.RequiresNew.
- B. Create a master stored procedure. Use this master stored procedure to call the other stored procedures that perform the month-end operations. Add WITH REPEATABLE READ to the master stored procedure.
- C. Use structured exception handling to catch a SqlException if one of the stored procedures fails. Use the Procedure property of the SqlException to identify which stored procedure generated the exception, and call a stored procedure to reserve the previous calculations.
- D. Set the IsolationLevel property of a SqlTransaction object to IsolationLevel.Serializable. Assign the SqlTransaction object to the Transaction property of the SqlCommand object. Use a SqlCommand object to run the stored procedures.

**Answer: D**

**Explanation:** We should use a Transaction to ensure that either all stored procedures will succeed or if one stored procedure fails, the whole transaction will be backtracked. Furthermore, in order to protect the data in tables during the transaction, we should use the highest transaction isolation level of Serializable. We use a SqlCommand object to run the stored procedure. We set the Transaction property of the SqlCommand to the SqlTransaction object we created.

**Note:** The transactionIsolation level of Serializable places a range lock on the DataSet, preventing other users from updating or inserting rows into the dataset until the transaction is complete.

**Reference:** .NET Framework Class Library, IsolationLevel Enumeration [C#]

**Incorrect Answers**

**A, B:** This is not the way to set up a transaction.

**C:** Exception handling would be extremely complicated to meet the requirement of the scenario.

**SECTION 2:** Access and manipulate data from a data store. Data stores include relational databases, XML documents, and flat files. Methods include XML techniques and ADO.NET. (6 questions)

**QUESTION NO: 1**

**You develop a contact management application that will enable users to retrieve information from a central database. After the data is returned to your application, users must be able to view it, edit it, add new records, and delete existing records. All user changes must then be saved in the database. Your application design requires several ADO.NET object to work together to accomplish these requirements. You use classes from the System.Data and System.Data.OleDb namespaces. First you write the code to connect to the database.**

**Which four actions should you take next? (Each correct answer presents part of the solution. Choose four)**

- A. Create an OleDbDataAdapter object and define the SelectCommand property.
- B. Create an OleDbCommand object and use the ExecuteScalar method.
- C. Create a DataTable object as container for the data.
- D. Create a DataSet object as a container for the data.
- E. Call the DataAdapter.Fill method to populate the DataSet object.
- F. Call the DataAdapter.Update method to populate the DataSet object.
- G. Call the DataAdapter.Update method to save changes to the database.
- H. Call the DataSet.AcceptChanges method to save changes to the database.

**Answer: A, D, E, G**

**Explanation:**

- A:** First we need to create a DataAdapter, or more specifically an OleDbDataAdapter, object in order to access the data source. We use the SelectCommand property to define an appropriate SQL command.
- D:** The data will be stored in a DataSet.
- E:** We must populate the DataSet with the DataAdapter.Fill method.
- G:** We make updates to the DataSet and then store these changes in the database by the DataAdapter.Update method. The Update method of the DataAdapter is called to resolve changes from a DataSet back to the data source.

**Reference:**

.NET Framework Developer's Guide, Updating the Database with a DataAdapter and the DataSet

**Incorrect Answers**

- B:** The ExecuteScalar method returns a single scalar value.

- C:** A DataTable object is not called for. DataTables are optional.
- F:** We use the fill, not the update method to populate the DataSet.
- H:** The DataSet.AcceptChanges only affects the DataSet. However, we save the changes back to the data source.

#### **QUESTION NO: 2**

**You create an ASP.NET application named TestKApp for TestKing's intranet. TestKApp stores static data in a flat file. The file is located in a separate directory on the Web server. You want to allow only your application to access this directory.**

**TestKApp uses Microsoft Windows authentication. The application runs successfully on your computer. However, when TestKApp is deployed to the test server, testers report a permission error when the application attempts to access the flat file.**

**You need to ensure that the application can load the data from the flat file. You want to prevent users from using the file system to read the file.**

**What should you do?**

- A. Add the following element to the authorization section of the Web.config file:  
`<identity impersonate="true"/>`
- B. Add the following element to the system.web section of the Web.config file:  
`<allow users="system"/>`
- C. Grant the ASPNET account Read permission on the directory where the file is located.
- D. In the Machine.config file, set the userName attribute in the processModel section to "system".

**Answer: C**

**Explanation:** ASP .NET runs in the security context of the ASPNET account, which is created as a local account on installation and belongs to the User Group on the machine. By giving only this account read permission to the file we ensure that the application, but not the users, are able to access the file.

**Reference:** Designing Distributed Applications with Visual Studio .NET, ASP.NET Process Identity

#### **QUESTION NO: 3**

**You are creating an ASP.NET application for TestKing. Your code uses the System.Data namespace. The marketing managers at your company use a page on your Web site to edit the prices of the company's products.**

**You retrieve product part numbers, named, and prices from a database. You store this information in a DataSet object named productInfo, and you display the data on the Web page.**

**The marketing managers use your page to edit one or more prices, and you record these change in productInfo. The marketing managers click a Save button to save their changes.**

**You write code in the Click event handler for the Save button to save the edited prices to the database. You want to extract the edited rows in productInfo before performing the update. You create a second DataSet object named productChanges to hold only edited product data.**

**Which line of code should you use to copy the edited rows from productInfo into productChanges?**

- A. `productChanges = productInfo.GetChanges(DataRowState.Detached);`
- B. `productChanges = productInfo.GetChanges();`
- C. `productChanges.Merge(productInfo, true);`
- D. `productChanges.Merge(productInfo, false);`

**Answer: B**

**Explanation:** The `DataSet.GetChanges` method gets a copy of the `DataSet` containing all changes made to it since it was last loaded, or since `AcceptChanges` was called.

**Reference:** .NET Framework Class Library, `DataSet.GetChanges` Method [C#]

**Incorrect Answers**

- A:** The `DataRowState` is not relevant since we have not created any `DataRows` in this scenario.  
**C, D:** We only want to extract the changes rows from the `DataSet`, not merge the two `DataSet`.

**QUESTION NO: 4**

**You are creating a Web site for TestKing. You receive product lists in the form of XML documents. You are creating a procedure to extract information from these XML documents according to criteria that your users will select.**

**When a user makes a request, you want the results of these requests to be returned as quickly as possible. What should you do?**

- A. Create an `XmlDataDocument` object and load it with the XML data.  
Use the `DataSet` property of the object to create a `DataSet` object.  
Use a SQL `SELECT` statement to extract the requested data.
- B. Create an `XmlDataDocument` object and load it with the XML data.  
Use the `SelectNodes` method of the object to extract the requested data.
- C. Create an `XPathDocument` object and load it with the XML data.  
Call the `CreateNavigator` method to create an `XPathNavigator` object.

Call the Select method of the XPathNavigator object to run an XPath query that extracts the requested data.

D. Create an XmlReader object.

Use the Read method of the object to stream through the XML data and to apply an XPath expression to extract the requested data.

**Answer: C**

**Explanation:** The XPathDocument class provides a fast read-only cache for XML document processing using XSLT. XPath (XML Path Language) is a graph navigation language. XPath is used to select a set of nodes from an XML document.

**Reference:** .NET Framework Class Library, XPathDocument Class

#### **QUESTION NO: 5**

**You are creating an ASP.NET application for TestKing. The application will be used to identify potential customers.**

**Your application will call an XML Web service run by Wide World Importers. The XML Web service will return an ADO.NET DataSet object containing a list of companies that purchase wine. You want to merge this DataSet object into a DataSet object containing a list of companies that are potential customers.**

**You specify wideWorld as the name of the DataSet object form Wide World Importers, and you specify customerProspects as the name of the DataSet object containing potential customers. After the merge, customerProspects will include the company names in wideWorld.**

**The two DataSet objects contain tables that have the same names and primary keys. The tables in the two DataSet objects contain columns that have the same names and data types. A table in wideWorld also contains additional columns that you do not want to add to customerProspects. If customerProspects included any tables containing rows with pending changes, you want to preserve the current values in those rows when the merge occurs.**

**Which line of code should you use to merge the wideWorld DataSet object into customerProspects DataSet object?**

- A. `customerProspects.Merge (wideWorld, true, MissingSchemaAction.Ignore);`
- B. `customerProspects.Merge (wideWorld, true, MissingSchemaAction.AddWithKey);`
- C. `wideWorld.Merge (customerProspects, true, MissingSchemaAction.Ignore);`

```
D. wideWorld.Merge (customerProspects, true,
MissingSchemaAction.Add);
```

**Answer: A**

**Explanation:** The DataSet.Merge (DataTable, Boolean, MissingSchemaAction) method merges this DataTable with a specified DataTable preserving changes according to the specified argument, and handling an incompatible schema according to the specified argument.

As we want to merge the DataSets into the wideWorld DataSet we should apply the merge method on wideWorld.

The Ignore MissingSchemaAction ignores the extra columns. This meets the requirement not to add the extra columns from the table in wideWorld that contains additional columns.

**Reference:** .NET Framework Class Library, DataSet.Merge Method (DataTable, Boolean, MissingSchemaAction) [C#]

.NET Framework Class Library, MissingSchemaAction Enumeration [C#]

**Incorrect Answers**

**B:** The AddWithKey MissingSchemaAction adds the necessary columns and primary key information to complete the schema. However, we do not want to add any extra columns.

**C, D:** As we want to merge the DataSets into the customerProspects DataSet we should apply the merge method on customerProspects, not on wideWorld .

**QUESTION NO: 6**

**You are creating an ASP.NET page that contains a Label control named specialsLabel. A text file named Specials.txt contains a list of products. Specials.txt is located in the application directory. Each product name listed in Specials.txt is followed by a carriage return.**

**You need to display a list of featured products in specialsLabel. You need to retrieve the lost of products from Specials.txt.**

**Which code segment should you use?**

```
A. System.IO.StreamReader reader =
    System.IO.File.OpenText(
        Server.MapPath("Specials.txt"));
    string inout = "";
    while (input !=null)
    {
        specialsLabel.Text =
            string.Format("{0} <br> {1} ",
                specialsLabel.Text, input);
        input = reader.BaseStream.ToString();
    }
    reader.Close();
```

- B. `System.IO.StreamReader reader =  
System.IO.File.OpenText(  
Server.MapPath("Specials.txt"));  
string inout = "";  
input = reader.ReadLine();  
while (input != null)  
{  
specialsLabel.Text =  
string.Format("{0} <br> {1} ",  
specialsLabel.Text, input);  
input = reader.ReadLine();  
}  
reader.Close();`
- C. `System.IO.Stream strm = System.IO.File.OpenRead(  
Server.MapPath("Specials.txt"));  
byte[] b = new byte[1024];  
string input;  
input = strm.Read(b, 0, b.Length).ToString();  
specialsLabel.Text = input;  
strm.Close();`
- D. `System.IO.Stream strm = System.IO.File.OpenRead(  
Server.MapPath("Specials.txt"));  
string input;  
input = strm.ToString();  
specialsLabel.Text = input;  
strm.Close();`

**Answer: B**

**Explanation:** We create a StreamReader. We then read one line at a time and display each line appropriately, until the stream is empty.

**Reference:** .NET Framework Developer's Guide, Reading Text from a File [C#]

**Incorrect Answers**

- A:** The StreamReader.BaseStream property Returns the underlying stream. We cannot use the ToString method on a stream. The following command is incorrect:  
`input = reader.BaseStream.ToString()`
- C:** We should read a line a time, not a byte.
- D:** We cannot use the ToString method on a FileStream.

### SECTION 3: Handle data errors. (6 questions)

#### QUESTION NO: 1

**You are creating an ASP.NET Web Form that displays employee data from a DataSet object. You want to fill the DataSet object and then you want to retrieve a reference to the employee whose primary key has the value of 1.**

**You write the following code. (Line numbers are included for reference only)**

```
01 SqlConnection(connectionString);
02 conn.Open();
03 SqlCommand cmd = new SqlCommand
    ("SELECT * FROM Employees", conn);
04 SqlDataAdapter da = new
    SqlDataAdapter(cmd);
05 DataSet ds = new DataSet();
06
07 da.Fill(ds, "Employees");
08
09 DataRow dr;
10 dr = ds.Tables["Employees"].Rows.Find(1);
11 nameLabel.Text = dr["Name"].ToString();
```

**When you run the code, you receive the following error message at line 10: "Table doesn't have a primary key."**

**You ensure that a primary key is defined on the Employees table in the database. You want to alleviate the error to allow the code to run correctly. You also want to catch the exception that would occur if the employee whose primary key has the value if 1 is deleted from the database.**

**Which two actions should you take? (Each correct answer presents part of the solution. Choose two)**

- A. Add the following code at line 06:  
`da.MissingSchemaAction = MissingSchemaAction.AddWithKey;`
- B. Add the following code at line 06:  
`da.MissingSchemaAction = MissingSchemaAction.Add;`
- C. Add the following code at line 06:  
`da.MissingSchemaAction = MissingSchemaAction.Ignore;`
- D. Add the following code at line 06:  
`da.MissingSchemaAction = MissingSchemaAction.Error;`
- E. Place line 07 in a structured exception handling block.
- F. Place lines 10 and 11 in a structured exception handling block.

**Answer: A, F**

**Explanation:**

- A:** The Fill method of the DataAdapter fills a DataSet only with table columns and rows from a data source. No constraints are applied though constraints are commonly set by the data source. To populate a DataSet with existing primary key constraint information from a data source, you can either call the FillSchema method of the DataAdapter, or set the MissingSchemaAction property of the DataAdapter to AddWithKey before calling Fill.
- F:** We must put the code that updates the DataSet within a structured exception handling block. This will ensure that exceptions caused by the primary key constraint are caught.

**Reference:**

.NET Framework Developer's Guide, Adding Existing Constraints to a DataSet [C#]  
.NET Framework Class Library, MissingSchemaAction Enumeration [C#]

**Incorrect Answers**

- B:** The MissingSchemaAction.Add adds the necessary columns to complete the schema.
- C:** The MissingSchemaAction.Ignore ignores the extra columns.
- D:** The MissingSchemaAction.Error generates a SystemException.
- E:** Errors due to the primary key constraint would not occur when the DataSet is filled.

**QUESTION NO: 2**

**You are creating an ASP.NET page that presents data to users in an updatable DataGrid control. Users update data in the grid. Your code uses the System.Data namespace and the System.Data.OleDb namespace.**

**Data changes are saved in an ADO.NET DataTable object. You want a user's changes to be saved to a database when the user finishes making changes. You write the following procedure to accomplish this task:**

```
string sql, string connectionString, DataTable dataTable)
{
    OleDbDataAdapter da = new OleDbDataAdapter();
    OleDbConnection cnn =
    new OleDbConnection(connectionString);
    dataTable.AcceptChanges();
    da.UpdateCommand.CommandText = sql;
    da.UpdateCommand.Connection = cnn;
    da.Update(dataTable);
    da.Dispose();
}
```

**This code runs to completion, but no data changes appear in the database. You test the update query and the connection string that you are passing to the procedure, and they both work correctly. You need to alter the code to ensure that data changes appear in the database.**

**What should you do?**

- A. Add the following two lines of code before calling the Update method:  
`OleDbCommandBuilder cb = new OleDbCommandBuilder(da);`  
`cb.GetUpdateCommand();`
- B. Add the following line of code before calling the Update method:  
`da.UpdateCommand.Connection.Open();`
- C. Delete this line of code:  
`dataTable.AcceptChanges();`
- D. Delete this line of code:  
`da.Dispose();`

**Answer: C**

**Explanation:** The `DataTable.AcceptChanges` method commits all the changes made to this table since the last time `AcceptChanges` was called. We should only use `AcceptChanges` after the updates have been made to the dataset.

**Reference:** .NET Framework Class Library, `DataTable.AcceptChanges` Method [C#]

#### **Incorrect Answers**

- A:** The `OleDbCommandBuilder` provides a means of automatically generating single-table commands used to reconcile changes made to a `DataSet` with the associated database. It is not useful here.
- B:** The `OleDbConnection.Open` method opens a database connection with the property settings specified by the `ConnectionString`.
- D:** The `DataAdapter.Dispose` method Releases the resources used by the `DataAdapter`. It is a good practice to use it when the dataadapter no longer will be used.

#### **QUESTION NO: 3**

**You create an ASP.NET application for TestKing. This application will display information about products that the company sells. The application uses a Microsoft SQL Server database.**

**You add two `DropDownList` controls to your .aspx page. One drop-down list box will display product information. The control for this drop-down list box is named `Products`. The other drop-down list box will display category information. The control for this drop-down list box is named `Category`. You have an open `SqlConnection` object named `con`.**

**The `Page.Load` event handler uses the following code segment to populate the drop-down list boxes by binding the `SqlDataReader`. (Line numbers are included for reference only)**

```
01 SqlCommand cmd1 = new SqlCommand("SELECT * FROM Products",con);
02 SqlDataReader dr1 = cmd1.ExecuteReader();
03 Products.DataTextField = "ProductName";
04 Products.DataValueField = "ProductID";
05 Products.DataSource = dr1;
06 Products.DataBind();
07 cmd1.CommandText = "SELECT * FROM Category";
```

```
08 SqlDataReader dr2 = cmd1.ExecuteReader();
09 Category.DataTextField = "CategoryName";
10 Category.DataValueField = "CategoryID"
11 Category.DataSource = dr2;
12 Category.DataBind();
```

**During testing, the page raises an invalid operation exception. You need to ensure that the page displays correctly without raising an exception.**

**What should you do?**

- A. Replace the code for line 02 of the code segment with the following code:  
`dr1.ExecuteReader(CommandBehavior.CloseConnection);`
- B. Add the following code between line 06 and line 07 of the code segment:  
`dr1.Close();`
- C. Replace the code for line 07 and line 08 of the code segment with the following code:  
`SqlCommand cmd2 = new SqlCommand("SELECT * FROM Category", con);`  
`SqlDataReader dr2 = cmd2.ExecuteReader();`
- D. Remove the code for line 06 of the code segment.  
Replace the code for line 12 of the code segment with the following code:  
`Page.DataBind();`

**Answer: B**

**Explanation:** You must explicitly call the Close method when you are through using the SqlDataReader to use the associated SqlConnection for any other purpose.

**Reference:** .NET Framework Class Library, SqlDataReader.Close Method [C#]

#### QUESTION NO: 4

**You are creating an ASP.NET application that performs updates to a database named TestKingDB. The application performs the updates by running a series of SQL statements. You write a procedure to run the SQL statements. The procedure accepts a connection string and an array of SQL statement as parameters.**

**You use structured exception handling in your procedure to handle any errors that occur while the statements are running. You want the procedure to terminate after handling an exception and to return the SQL statement that caused the exception. You also want to ensure that the database connection is closed before the procedure terminates, whether or not an error occurs.**

**You begin writing the procedure by using the following code:**

```
public static void ExecuteStatements(
string connectionString, string[] sql)
{
```

```

OleDbConnection cnn =
new OleDbConnection(connectionString);
OleDbCommand cmd = new OleDbCommand();
int i;
cmd.Connection = cnn;
cnn.Open();
try
{
for (i=0; i <= sql.Length - 1; i++)
{
cmd.CommandText = sql[i];
cmd.ExecuteNonQuery();
}
}
}

```

**Which code segment should you use to complete the procedure?**

- A. 

```
catch(OleDbException ex)
{
throw(ex);
}
finally
{
cnn.Close();
}
}
```
- B. 

```
catch(OleDbException ex)
{
throw(new Exception(sql[i], ex));
}
finally
{
cnn.Close();
}
}
```
- C. 

```
catch(OleDbException ex)
{
throw(ex);
}
}
cnn.Close();
```
- D. 

```
catch(OleDbException ex)
{
throw(new Exception(sql[i], ex));
```

```
}  
}  
cnn.Close();
```

**Answer: B**

**Explanation:** We create a new exception that includes the SQL statement that caused the exception. We also use the finally construct to ensure that the connection is always closed.

**Reference:** .NET Framework Class Library, OleDbException Class [C#]

**Incorrect Answers**

- A:** The scenario requires that we should include the SQL Statement that caused in the exception that is return.
- C, D:** We must use finally to close the connection.

**QUESTION NO: 5**

**You are using ASP.NET and ADO.NET to create an accounting application for TestKing. You are writing code to run a set of stored procedures that perform posting operations in a database at the end of each month.**

**You use an OleDbConnection object to connect to the database. You use an OleDbCommand object to run the stored procedures.**

**If an error occurs during execution of any of the stored procedures, you want to roll back any data changes that were posted. You want the changes to be committed only if all of the posting operations succeed.**

**You write code to catch an OleDbException object if an error occurs during the execution of a stored procedure.**

**What else should you do?**

- A. Call the BeginTransaction method of the OleDbConnection object before running the stored procedure. If an error occurs, use the OleDbConnection object to roll back the changes.
- B. Call the BeginTransaction method of the OleDbConnection object before running the stored procedures. If an error occurs, use the OleDbException object to roll back the changes.
- C. Use the BeginTransaction method of the OleDbConnection object to create an OleDbTransaction object. Assign the OleDbTransaction object to the Transaction property of your OleDbCommand object. If an error occurs, use the OleDbTransaction object to roll back the changes.
- D. Use the BeginTransaction method of the OleDbConnection object to create an OleDbTransaction object. Pass a reference to the OleDbTransaction object to each stored procedure. Use error handling inside the stored procedures to roll back the changes.

**Answer: C**

**Explanation:** First we create an OleDbTransaction object with the OleDbConnection. BeginTransaction method. We then set the Transaction property of the OleDbCommand to the OleDbTransaction object. Finally we must write appropriate error handling code which rolls back the transaction in the proper way.

**Reference:**

.NET Framework Class Library, OleDbConnection.BeginTransaction Method [C#]

.NET Framework Class Library, OleDbCommand.Transaction Property [C#]

**Incorrect Answers**

**A, B:** We must create an OleDbTransaction object for the transaction.

**D:** We should not pass a reference to the OleDbTransaction. Instead we set the OleDbCommand.Transaction property to the transaction.

**QUESTION NO: 6**

**You ASP.NET application manages order entry data by using a DataSet object named TKorderEntry. The TKorderEntry object includes two DataTable objects named orderNames and OrderDetails. A ForeignKeyConstraint object named orderDetailsKey is defined between the two DataTable objects. You attempt to delete a row in orderNames while there are related rows in OrderDetails, and an exception is generated.**

**What is the most likely cause of the problem?**

- A. The current value of **OrderDetails.KeyDeleteRule** is **Rule.Cascade**.
- B. The current value of **OrderDetails.KeyDeleteRule** is **Rule.SetNull**.
- C. The current value of **OrderDetails.KeyDeleteRule** is **Rule.SetDefault**.
- D. The current value of **OrderDetails.KeyDeleteRule** is **Rule.None**.

**Answer: D**

**Explanation:** The rule enumeration indicates the action that occurs when a ForeignKeyConstraint is enforced. None specifies that no action will occur, but exceptions are generated. This is what has occurred in this scenario.

**Reference:** .NET Framework Class Library, Rule Enumeration [C#]

**Incorrect Answers**

**A:** Cascade specifies that all rows containing that value are also deleted.

**B:** SetNull specifies that values in all child columns are set to null values.

**C:** SetDefault specifies that all child columns be set to the default value for the column.

## PART IV: Testing and Debugging (19 questions)

### SECTION 1: Create a unit test plan. (3 questions)

#### QUESTION NO: 1

**You develop an application that generates random numbers to test statistical data. The application uses the following code:**

```
Random rnd = new Random();  
short num1 = Convert.ToInt16(rnd.Next(35000));  
short num2 = Convert.ToInt16(rnd.Next(35000));  
short num3 = Convert.ToInt16(num1 / num2);
```

**When you test the application, you discover that certain exceptions are sometimes raised by this code. You need to write additional code that will handle all such exceptions. You want to accomplish this goal by writing the minimum amount of code.**

**Which code segment should you use?**

- A. 

```
try { // Existing code goes here. }  
catch (DivideByZeroException e) { // Insert error-handling code. }  
catch (OverflowException e) { // Insert error-handling code. }  
catch (NotFiniteNumberException e) { // Insert error-handling code. }
```
- B. 

```
try { // Existing code here goes. }  
catch (ArithmeticException e)  
{ // Insert error-handling code. }
```
- C. 

```
try { // Existing code goes here. }  
catch (DivideByZeroException e) { // Insert error-handling code. }  
catch (OverflowException e) { // Insert error-handling code. }
```
- D. 

```
try { // Existing code goes here. }  
catch (OverflowException e) { // Insert error-handling code. }
```

**Answer: B**

**Explanation:** **ArithmeticException** is the base class for **DivideByZeroException**, **NotFiniteNumberException**, and **OverflowException**. In general, we only use one of the derived classes of **ArithmeticException** to more precisely indicate the exact nature of the error. However, in this scenario we just want to use minimal code, so we only need to use the **ArithmeticException**.

**Reference:** .NET Framework Class Library, **ArithmeticException** Class [C#]

### Incorrect Answers

- A:** DivideByZeroException, OverflowException, and NotFiniteNumberException are all derived from ArithmeticException. We only need to use ArithmeticException.
- C:** We need to catch **NotFiniteNumberExceptions** as well.
- D:** The OverflowException is thrown when an arithmetic, casting, or conversion operation in a checked context results in an overflow. However, we need to catch the **DivideByZeroException** and **NotFiniteNumberException** as well.

### QUESTION NO: 2

You write code to perform standard financial calculations that are required by TestKing. The code accepts input parameters such as interest rate and investment amount. It then calculates values based on different predetermined scenarios.

You want to create a control that encapsulates this functionality. You want to be able to easily use this control by dragging it from the toolbox onto your Web forms. You also plan to include full support for visual design tools.

You want to create a project to test the control.

Which two courses of action should you take? (Each correct answer presents part of the solution. Choose two)

- A. Create a Web user control.
- B. Create a Web custom control.
- C. Create a new Web Form project.  
Use the COM Components tab of the Customize Toolbox dialog box to specify the new control.
- D. Create a new Web Form project.  
Use the .NET Framework Components tab of the Customize Toolbox dialog box to specify the new control.
- E. Create a new Web Form project.  
Select Add Reference from the Project menu and browse to the new control.

**Answer: B, D**

### Explanation:

- B:** Web custom controls are compiled components that run on the server and that encapsulate user-interface and other related functionality into reusable packages. They can include all the design-time features of standard ASP.NET server controls, including full support for Visual Studio design features such as the Properties window, the visual designer, and the Toolbox.
- D:** Procedure to add a Web custom control to the Toolbox:
1. On the **Tools** menu, click **Customize Toolbox**.
  2. On the **.NET Framework Components** tab of the **Customize ToolBox** dialog box, click the **Browse** button. Find Web custom control, select it, and click **Open** to add it to the list of components in the **Customize Toolbox** dialog box.
  3. Select the Web custom control in the list of .NET Framework components and click **OK**.

**Reference:**

Visual Basic and Visual C# Concepts, Introduction to Web Custom Controls

Visual Basic and Visual C# Concepts, Walkthrough: Creating a Web Custom Control

**Incorrect Answers**

- A:** A Web user control is similar to a complete Web Forms page, with both a user interface page and a code-behind file. A Web user control would not be appropriate in this scenario.
- C:** A Web user control is not a COM component.
- E:** This is not the proper procedure.

**QUESTION NO: 3**

**You are debugging an ASP.NET application that was written by other developers at TestKing. The developers used Visual Studio .NET to create the application. A TextBox control on one of the .aspx pages incorrectly identifies valid data values as being invalid.**

**You discover that the validation logic for the TextBox control is located within a method that is defined in client-side code. The client-side code is written in Visual Basic Scripting Edition. You want to verify that the validation method is receiving valid input parameters when the page is running. You need to perform this task by stepping through the client-side code as it runs.**

**Which four courses of action should you take? (Each correct answer presents part of the solution. Choose four)**

- A. In Internet Explorer, clear the Disable script debugging check box in the advanced options and browse to the page that contains the client-side code.
- B. In Visual Studio .NET, select Debug Processes from the Tools menu and attach to the local copy of IExplore.exe.  
In the Running Document window, select the .aspx page that you want to debug.
- C. Create a new active solution configuration named Client and copy the settings from the Release configuration.  
Select the new configuration in the Configuration Manager.
- D. Set the following attribute in the application's Web.config file:  
`debug="true"`
- E. In Solution Explorer, open the source for the .aspx file that you want to debug and select Start from the Debug menu.
- F. In Visual Studio .NET, set a breakpoint or add a Stop statement in the client-side code where you want to begin interactive debugging.
- G. In Internet Explorer, perform the actions that cause the client-side code to run.

**Answer: A, B, F, G**

**Explanation:**

- A:** To debug script you must enable script debugging.  
**To enable script debugging**

1. In Internet Explorer, click the **Tools** menu and choose **Internet Options**.
2. Click the **Advanced** tab.
3. Under the **Browsing** category, clear the **Disable Script Debugging** checkbox.

**B:** From within Visual Studio, you can use debugger commands to attach to the browser process (Iexplore.exe) and break into the script.

**F:** In Visual Studio .NET we set breakpoint, Stop statements in the client-side code.

**G:** We perform the actions in Internet Explorer that causes the client-side code to run.

**Reference:**

Visual Basic and Visual C# Concepts, Introduction to Web Application Debugging

Visual Studio, Debugging Client-Side Scripts in a Web Page

**Incorrect Answers**

**C, D, E:** These steps are not required.

## SECTION 2: Implement tracing.

SUBSECTION A: Add trace listeners and trace switches to an application. (2 questions)

**QUESTION NO: 1**

**You Create an ASP.NET application for a bank. The application provides account management functionality.**

**A page named AccountWithdrawal.aspx contains a method named WithdrawFunds. The WithdrawFunds method is defined in the following code segment. (Line numbers are included for reference only)**

```
1 private double WithdrawFunds(double Amount)
2 {
3
4 m_dAccountBalance -= Amount;
5 return m_dAccountBalance;
6 }
```

**The callers of this method need to verify that sufficient funds exist in the account before attempting the withdrawal. During unit testing, you want to receive notification when a call is made requesting a withdrawal amount for which the account does not have sufficient funds available.**

**You plan to build the production version of your application by using the Release Build Configuration in Visual Studio .NET. You need the testing instrumentation to be included but not enabled in the application when the application is deployed to production. You need to have the ability to enable the instrumentation after deploying it to production without requiring the application to be rebuilt.**

**Which code should you insert at line 3 of the code segment?**

- A. `Debug.Assert(m_dAccountBalance - Amount >=0, "Insufficient funds for withdrawal.");`
- B. `Trace.Assert(m_dAccountBalance - Amount >=0, "Insufficient funds for withdrawal.");`
- C. `Debug.WriteLine(m_dAccountBalance - Amount >=0, "Insufficient funds for withdrawal.");`
- D. `Trace.WriteLineIf(m_dAccountBalance - Amount >=0, "Insufficient funds for withdrawal.");`

**Answer: B**

**Explanation:** As we want to the ability to enable the instrumentation after deployment we must use tracing. The `Trace.Assert` statement will stop the execution and display the message when the condition is appropriate.

**Note:** The term instrumentation refers to an ability to monitor or measure the level of a product's performance and to diagnose errors.

**Reference:** Visual Basic and Visual C# Concepts, Introduction to Instrumentation and Tracing

#### Incorrect Answers

- A, C:** Debug assertions would only enable tracing on in the development environment, not on the deployed systems.
- D:** The `Trace.WriteLineIf` method writes information about the trace without stopping the execution. It is better to use an `Assert` statement, since we need to ensure that the end user is notified of the condition.

#### QUESTION NO: 2

You create an ASP.NET application and deploy it on a test server named `TestKingSrv`. The application consists of a main page that links to 30 other pages containing ASP.NET code.

You want to accomplish the following goals:

- Enable tracing on all the pages in the application except the main page.
- Display trace output for up to 40 requests.
- Ensure that trace output is appended to the bottom of each of the pages that will contain trace output.
- Ensure that any configuration changes affect only this application.

You need to accomplish these goals with the minimum amount of development effort.

Which three actions should you take? (Each correct answer presents part of the solution. Choose three)

- A. Add the following element to the `Web.config` file:  
`<trace enabled="true" pageOutput="true"/>`
- B. Add the following attribute to the `Trace` element of the application's `Web.config` file:  
`requestLimit=40`

- C. Add the following attribute to the Trace element of the application's Machine.config file:  
`requestLimit=40`
- D. Set the Trace attribute of the Page directive to true for each page except the main page.
- E. Set the Trace attribute of the Page directive to false for the main page.
- F. Set the TraceMode attribute of the Page directive to SortByTime for the main page.

**Answer: A, B, E**

**Explanation:**

- A:** You can enable tracing for an entire application in the web.config file in the application's root directory. We should use the **trace** element and set the **enabled** attribute to **true**.  
**Note:** If the **pageOutput** attribute is set to true trace information is displayed both on an application's pages and in the .axd trace utility,
- B:** We should also set the RequestLimit attribute of TraceElement, the number of trace requests to store on the server, to 40, since the default value is 10.
- E:** When you enable tracing for an entire application in the web.config file (A), trace information is gathered and processed for each page in that application. To disable tracing for a particular page in the application, set the Trace attribute in that page's @ Page directive to false.

**Reference:** .NET Framework Developer's Guide, Enabling Application-Level Tracing

**Incorrect Answers**

- C:** A Machine.config file is the base configuration for all .NET assemblies running on the server. It is not related to a single application.
- D:** We must disable tracing for the main page.
- F:** The TraceMode attribute is used to specify the order in which you want your trace messages to appear. However, there is no such requirement in this scenario.

SUBSECTION B: Display trace output. (4 questions)

**QUESTION NO: 1**

You create an ASP.NET application named TKProject on your client computer. The application has a page named ProjectCalendar.aspx. This page is located in a virtual directory named Scheduling, which is a child of the TKProject root directory. ProjectCalendar.aspx uses cookies to track modifications to the schedule during a user's session so that the user can undo modifications if necessary.

You deploy your application on a computer named TestKingSrv. Users report that the undo functionality stops working after they execute a specific sequence of actions. You need to view the cookie values after the sequence of actions to help identify the cause of the problem.

You add the following element to the Web.config file:

```
<trace enabled="true" pageOutput="false"/>
```

You want to display the trace output information on your client computer.

**Which URL should you use?**

- A. HTTP://TestKingSrv/TKProject/Scheduling/ProjectCalendar.aspx?Trace=true
- B. HTTP://TestKingSrv/TKProject/Scheduling/ProjectCalendar.aspx?trace.axd
- C. HTTP://TestKingSrv/TKProject/Scheduling/ProjectCalendar.aspx
- D. HTTP://TestKingSrv/TKProject/ProjectCalendar.aspx?trace.axd
- E. HTTP://TestKingSrv/TKProject/ProjectCalendar.aspx?trace.axd
- F. HTTP:// TestKingSrv/TKProject/trace.axd

**Answer: F**

**Explanation:**

Trace.axd is an Http Handler that we can use to request application trace details. To use trace.axd, simply request trace.axd in the same application directory, not the virtual directoy, that the request for the sample application was made. The output provided by tracing view, either through Trace.axd or on a page, provides six sections of detail:

- **Cookies collection**—Any cookies that the client sends in the request headers are parsed, and their names, values, and sizes are displayed.
- **Request details**
- **Trace information**
- **Control tree.**
- **Headers collection.**
- **Server variables**

**Reference:** 70-305/70-315 Training kit, Reading the Trace log, pages 298-299  
ASP.NET Columns: Nothin' but ASP.NET, Tracing

## **QUESTION NO: 2**

**You are creating an ASP.NET application for an online banking site. You need to allow customers to transfer funds between accounts. You write a component in Visual C# .NET to handle transfer of funds. This component is used by the page named FundsTransfer.aspx.**

**For unit testing, you add the following code segment to the TransferFunds method of your component. (Line numbers are included for reference only)**

```
1 HttpContext ctx;  
2 ctx = HttpContext.Current;  
3 ctx.Trace.Write("Funds transfer requested.");
```

**You want to be able to view the trace output on the FundsTransfer.aspx page.**

**What should you do?**

- A. Add code to the FundsTransfer.aspx page that instantiate a Trace listener.

- B. Enable tracing in the Page directive for the FundsTransfer.aspx page.
- C. Add the following attribute to the Machine.config file:  
`<trace enabled="true">`
- D. Modify line 3 of the code segment as follows:  
`System.Diagnostics.Trace.WriteIf(  
ctx.IsDebuggingEnabled, "Funds transfer requested.");`

**Answer: B**

**Explanation:** You can control whether tracing is enabled or disabled for a page with the Trace attribute of the @ Page directive.

**Reference:** .NET Framework Developer's Guide, Enabling Tracing for a Page

**Incorrect Answers**

- A:** This is not the procedure to configure tracing of a page.
- C:** This would enable tracing of all application on this computer.
- D:** This would only write the trace message if current HTTP request is in debugging mode. Furthermore, we need to enable tracing of the page.

**QUESTION NO: 3**

TestKing is developing an ASP.NET application for producing comparative insurance quotes from multiple insurance carries. TestKing wants the application to provide quotes to a user after the user answers questions about individual insurance needs. You deploy a copy of the application to TestKing's testing environment so that you can perform unit testing.

The Machine.config file on the testing server contains the following element:

```
<trace enabled="false" pageOutput="false"/>
```

The Web.config file for your application contains the following element:

```
<trace enabled="false" pageOutput="false"/>
```

When you run the application, you find that not all insurance carries are being displayed on the quote result page. You attempt to view the trace output information for the quote results page by browsing to the trace.axd URL for your application. No trace information is shown.

You want to be able to examine trace output information by using trace.axd. What are two possible ways to achieve this goal? (Each correct answer presents a complete solution. Choose two)

- A. Modify the element in the Machine.config file as follows:  
`<trace enabled="true" pageOutput="false"/>`
- B. Modify the element in the Machine.config file as follows:  
`<trace enabled="true" pageOutput="true"/>`
- C. Modify the element in the Web.config file as follows:  
`<trace enabled="true" pageOutput="false"/>`
- D. Modify the element in the Web.config file as follows:  
`<trace enabled="true" pageOutput="true"/>`
- E. Modify the Page directive for the quote results page so that it contains the following entry:  
`Trace="true"`

**Answer: C, D**

**Explanation:**

The pageOutput does not affect the output of trace.axd.

- C:** We are able to examine trace output information by using trace.axd. The trace information does not appear appended to the end of the page but meets the requirement of this scenario.
- D:** We are able to examine trace output information by using trace.axd. Trace information is displayed both on an application's pages and in the .axd trace utility.

**Note 1:** If you want trace information to appear appended to the end of the page that it is associated with, set the pageOutput attribute in the tracing configuration section of the web.config file to true. If you want tracing information to be displayed only in the trace viewer, set this attribute to false. If you enable application-level tracing, but you do not want trace information displayed for some pages of the application, use the @ Page directive to set the Trace attribute to false for those pages you do not want trace information displayed in.

**Note 2:** The enabled attribute of the Trace element specifies whether trace output is rendered at the end of each page. The pageOutput attribute of the Trace element specifies whether trace output is rendered at the end of each page.

**Reference:**

- .NET Framework General Reference, <trace> Element
- .NET Framework Developer's Guide, Enabling Tracing for a Page
- .NET Framework Developer's Guide, Enabling Application-Level Tracing

**Incorrect Answers**

- A, B:** The configuration in the Web.config file overrides the configuration in the Machine.config file. We must modify the Web.config file or configure tracing on a page separately.
- E:** The trace element cannot be placed in the page itself.

**QUESTION NO: 4**

**You are creating an ASP.NET application for TestKing's human resources (HR) department. Users in the HR department will use the application to process new employees. The application automates several activities that include creating a network login account, creating an e-mail account, registering for insurance benefits, and other activities.**

**During integration testing of your application, you need to verify that the individual activities run successfully and in the proper order.**

**Each page in your application includes the following elements in the Page directive:**

```
Debug="True"
Trace="True"
```

**You want each page to provide execution information in the Web browser immediately after the page's normal display output. You need to add instrumentation to the code in your pages to accomplish this goal.**

**Which statement should you use?**

- A. `Trace.Write();`
- B. `Debug.Print();`
- C. `System.Diagnostics.Trace.Write();`
- D. `System.Diagnostics.Debug.Write();`
- E. `System.Diagnostics.Debugger.Log();`

**Answer: A**

**Explanation:** We simply use the `Trace.Write` method.

**Incorrect Answers**

**B, D, E:** As we want to test the product during integration we need to trace the application, not only debug it.

**C:**

**SECTION 3: Debug, rework, and resolve defects in code.**

**SUBSECTION A: Configure the debugging environment. (3 questions)**

**QUESTION NO: 1**

**You use Visual Studio .NET on your client computer to develop an ASP.NET application on a remote server. The application provides asset management functionality.**

Another developer at TestKing uses Visual C# .Net to develop a custom component named AssetManagement. Your ASP.NET application uses this custom component. The AssetManagement component defines an Asset class that exposed a public method named DepreciateAssets(). You deploy AssetManagement to the remote server that hosts your ASP.NET application. You also add the source files of AssetManagement to your ASP.NET application.

You are debugging an .aspx page in your application by using the Visual Studio .NET interactive debugger. The code in the page creates an instance of the Assets class and then calls the DepreciateAssets() method of that instance.

You attempt to step into a call to the DepreciateAssets() method. Instead of showing the first line of code in the DepreciateAssets() method, the interactive debugger moves to the next line of code in the .aspx page.

You need to enable the interactive debugger to step into the code within the Assets class. What should you do in Visual Studio .NET?

- A. Configure Visual Studio .NET to enable just-in-time debugging for native programs.
- B. Configure Visual Studio .NET to allow editing of Visual C# files while debugging.
- C. In the Configuration Manager, select the Debug configuration and rebuild the AssetManagement component.
- D. In the Configuration Manager, select the Debug configuration and rebuild the ASP.NET application.

**Answer: C**

**Explanation:** No matter how you start debugging, make sure you build the Debug version of the class library first and make sure the Debug version is in the location where the application expects to find it.

**Reference:** Visual Studio, Debugging Preparation: Class Libraries

#### **Incorrect Answers**

- A:** Just-In-Time debugging is a technique for debugging a program that is started outside of Visual Studio.
- B:** This will not help us debug the component.
- D:** We only have to build the debug version of the class, not rebuild the entire application.

#### **QUESTION NO: 2**

You are using your computer to debug and ASP.NET application. Your login account has administrative permissions for your computer. The application contains several existing ASP pages that use server-side scripts. These server-side scripts are written in Microsoft Visual Basic Scripting Edition.

You locate a line of VBScript code in an existing ASP page that might be incorrect. You add a breakpoint on the line. When you run the application, everything appears to work properly, but the breakpoint is not invoked. When you examine the breakpoint in the VBScript code, you see the following ToolTip: "The breakpoint will not currently be hit. No symbols have been loaded for this document."

You want the breakpoint to be invoked when you run the application in Debug mode.

**What should you do?**

- A. Open the Configuration Manager and set the **Active Solution Configuration** option to **Debug**.
- B. Select the ASP page in Solution Explorer.  
Set the **Build Action** property to **Compile**.
- C. Open the property pages for the ASP.NET application and select the **Enable ASP Debugging** check box.
- D. Select **Options** from the **Tools** menu.  
Select the **Debugging** folder.  
In the **General** category, select the Insert breakpoints in Active Server Pages for breakpoints in client script check box.

**Answer: C**

**Explanation:** We need to enable debugging for the application.

D is false because the user has set a breakpoint in the SERVER side script and NOT the CLIENT side script.

### **QUESTION NO: 3**

**You company's project team develops an order fulfillment ASP.NET application. The application is hosted on a single server named TestKing1.**

**You are responsible for verifying and correcting problems identified by the quality assurance team. The quality assurance team reports that freight costs are not being calculated accurately. You need to replicate the problem in order to resolve it.**

**You attempt to use the interactive debugger from your client computer to step through the ASP.NET application code on TestKing1. You are not able to initiate a debugging session, and the following entry is added to the Application event log on your computer: "DCOM got error 'General access denied error' from the computer TestKing1 when attempting to activate the server."**

**You need to enable remote debugging.**

**What should you do?**

- A. Add your user account to the Power Users group on your client computer.
- B. Add your user account to the Power Users group on TestKing1.
- C. Add your user account to the Debugger Users group on your client computer.
- D. Add your user account to the Debugger Users group on TestKing1.

**Answer: D**

**Explanation:** The remote server must grant the debugger access. To grant access to a user, you must add the user to the Debugger User group on the server. This permission is required even if the debugger user is Administrator on the remote server.

**Reference:** Visual Studio, Debugging Web Applications on a Remote Server

**Incorrect Answers**

**A, B:** The Power Users group does not allow remote debugging.

**C:** The user should be added to the Debugger Users group on the Server, not on the client computer.

SUBSECTION B: Create and apply debugging code to components, pages, and applications. (3 questions)

**QUESTION NO: 1**

You create an ASP.NET application for a consulting company TestKing Insurance. TestKing uses the application to perform time tracking and to generate billing invoices. The accounts receivable department uses a page named PrepareInvoices.aspx to issue invoices to clients at the end of each month. During testing of the application, you discover that some invoices are being generated with negative values for the total amount due. The total amount due is calculated within a function named CalculateTotalDue, which is defined in the PrepareInvoices.aspx page. The call to CalculateDue is contained in the following code segment from PrepareInvoices.aspx. (Line numbers are included for reference only)

```
1 double TotalAmountDue;  
2 totalAmountDue = CalculateTotalDue();  
3 totalAmountDue -= totalAmountDue * discountRate;
```

You need to stop execution of the code within PrepareInvoices.aspx and enter the interactive debugger when CalculateTotalDue returns a negative value.

What should you do?

A. Modify the code segment as follows:

```
double totalAmountDue;  
totalAmountDue = CalculateTotalDue();  
System.Diagnostics.Debug.Assert(totalAmountDue >= 0);  
totalAmountDue -= totalAmountDue * discountRate;
```

B. Modify the code segment as follows:

```
double totalAmountDue;  
totalAmountDue = CalculateTotalDue();  
totalAmountDue -= totalAmountDue * discountRate;  
System.Diagnostics.Debug.Assert(totalAmountDue >= 0);
```

- C. In the Watch window, add a watch expression of **totalAmountDue < 0**, and select the **Break When Value Is True** option.
- D. Set a breakpoint on line 3 of the code segment.  
Define a condition for the breakpoint to break when **totalAmountDue < 0** is true.
- E. Set a breakpoint on line 2 of the code segment.  
Define a condition for the breakpoint to break when **totalAmountDue < 0** is true.

**Answer: D**

**Explanation:** The debugger breaks execution of the program when execution reaches a breakpoint or when an exception occurs. Here we set a function breakpoint with a condition. We must set the breakpoint on line 3 since we want line 2 to execute.

**Reference:** Visual Studio, Breakpoints

#### **Incorrect Answers**

- A:** Debug.Assert displays custom messages when the condition is false. However, Debug.Assert does not enter interactive debugger mode.
- B:** Debug.Assert displays custom messages when the condition is false. However, Debug.Assert does not enter interactive debugger mode. Furthermore the Debug.Assert statement should be placed immediately after the functioning call.
- C:** The Watch Window is used to evaluate variables and expressions and keep the results. We cannot set conditions in the Watch window.
- E:** If we put the breakpoint on line 2 the breakpoint will be triggered before line 2 is executed.

#### **QUESTION NO: 2**

**You create an ASP.NET application for TestKing. Your application contains a method named nextBusinessDay. This method uses a date parameter and returns the next date that is not a holiday or weekend day.**

**You are debugging a page named ProjectTimeLine.aspx. You need the execution to break on the following line of code when the value of the dStartDate variable changes:**

```
dStartDate = nextBusinessDay(dStartDate);
```

**What should you do?**

- A. Set a breakpoint on the line of code and open the BreakPoint Properties dialog box.  
Specify the following breakpoint condition:  
`dStartDate !=dStartDate`  
Select the is true option.

B. Set a breakpoint on the line of code and open the BreakPoint Properties dialog box.

Specify the following breakpoint condition:

`dStartDate`

Select the has changed option.

C. Add the following statement immediately after the call to `nextBusinessDay`:

```
System.Diagnostics.Debug.Assert(  
dStartDate !=dStartDate, "dStartDate has changed.");
```

D. Add the following statement immediately after the call to `nextBusinessDay`:

```
System.Diagnostics.Trace.Assert(  
dStartDate !=dStartDate, "dStartDate has changed.");
```

**Answer: B**

**Explanation:** Breakpoints are used to stop a project at a particular line of code. Further conditions for the breakpoint can also be set. In this scenario we specify the condition to be the name of the variable. We also select the **has changed** option.

**Note:** There are four types of breakpoints:

- A function breakpoint causes the program to break when execution reaches a specified location within a specified function.  
We need to specify a function breakpoint in this scenario.
- A file breakpoint causes the program to break when execution reaches a specified location within a specified file.
- An address breakpoint causes the program to break when execution reaches a specified memory address.
- A data breakpoint causes the program to break when the value of a variable changes.  
Visual Basic and C# do not support data breakpoints.

**Reference:**

Visual Studio, Breakpoints

Visual Studio, Assertions in Managed Code [C#]

**Incorrect Answers**

**A:** The conditions `dStartDate <> dStartDate` is nonsense. It would always be false.

**C, D:** As we want to break out of the code we should use breakpoints not assertions. Furthermore, the condition of the assertions, `dStartDate <> dStartDate` is nonsense.

**Note:** The difference between the Debug and Trace classes is how they are handled in release builds. By default, Debug methods and properties are automatically stripped out of code compiled for release. Trace methods and properties are retained in release code by default..

**QUESTION NO: 3**

**You create an ASP.NET application for an online shopping site. The application uses a Microsoft SQL Server 2000 database named TestKingSales. The database contains a stored procedure named**

**getProductsByCategory** that returns all products that match a specified category code. The category code is supplied as a parameter named **@ProdCode**.

The application includes a page named **ShowProducts.aspx**. You are using Visual Studio .NET to debug **ShowProducts.aspx**.

**ShowProducts.aspx** uses the **getProductsByCategory** stored procedure to populate a **DataSet** object. You set a breakpoint within **getProductsByCategory** so that you can step through the stored procedure within the debugger.

Which you are debugging **getProductsByCategory**, you need to view the current value of **@ProdCode**. What should you do?

- A. Open the Locals debugging window.
- B. Open the Modules debugging window.
- C. Add the following line of code to **getProductsByCategory**:  
`Print @ProdCode`  
Open the Output debugging window and select Debug as the source from the drop-down list box.
- D. Add the following line of code to **getProductsByCategory**:  
`SELECT @ProdCode As DebugOutput`  
Open the Output debugging window and select Database Output as the source from the drop-down list box.

**Answer: A**

**Explanation:** The Locals window displays variables local to the current context if the debugger is in break mode.

**Reference:** Visual Studio, Using the Locals Window

#### **Incorrect Answers**

- B:** The Modules window lists the modules (DLLs and EXEs) used by your program and shows relevant information for each.
- C, D:** SQL statements would not provide the required functionality.

SUBSECTION C: Provide multicultural test data to components, pages, and applications. (0 questions)

SUBSECTION D: Execute tests. (2 questions)

#### **QUESTION NO: 1**

You are maintaining an ASP.NET application. Another developer at TestKing wrote the following code for the **WebForm1.aspx** file:

```
<%@ Page language="c#" Codebehind="WebForm1.aspx.cs"
Inherits="WebForm1"%>
<HTML>
<body MS_POSITIONING="GridLayout">
<form id="Form1" method="post" runat="server">
<asp:Button id="Button1" style="Z-INDEX: 101;
LEFT: 203px; POSITION: absolute; TOP: 206px"
runat="server" Text="Submit" Width="132px"
Height="25px"></asp:Button>
</form>
</body>
</HTML>
```

**You are debugging the application and set a breakpoint in the Page.Load event handler. You notice that when you click the Submit button, the application stops at your breakpoint twice for each time that you click the button.**

**You need to ensure that you stop at the breakpoint only once for each time that you click the Submit button.**

**What should you do?**

- A. Add the following attribute to WebForm1.aspx:  
smartNavigation="true"
- B. Add the following attribute to WebForm1.aspx:  
smartNavigation="false"
- C. Add the following attribute to the Page directive:  
AutoEventWireup="true"
- D. Add the following attribute to the Page directive:  
AutoEventWireup="false"

**Answer: D**

**Explanation:** If you do set AutoEventWireup to true, Visual Studio will generate code to bind the events and the page framework will automatically call events based on their names. This can result in the same event code being called twice when the page runs. As a consequence, you should always leave AutoEventWireup set to false when working in Visual Studio.

**Reference:**

Visual Basic and Visual C# Concepts, ASP.NET Server Control Event Model  
.NET Framework Class Library, Page.SmartNavigation Property [C#]

**Incorrect Answers**

**A, B:** Smart navigation does not address the problem of this scenario.

**Note:** When a page is requested by an Internet Explorer 5 browser, or later, smart navigation enhances the user's experience of the page by performing the following:

- eliminating the flash caused by navigation.

- persisting the scroll position when moving from page to page.
- persisting element focus between navigations.
- retaining only the last page state in the browser's history.

**C:** We want to set `AutoEventWireup` to false, not to true.

## QUESTION NO: 2

You create an ASP.NET application for an insurance company TestKing Insurance. The application is used to generate automobile insurance quotes. One page in the application allows the user to enter a vehicle identification number (VIN). The page provides manufacturing information on the identified vehicle, and that information is used in rating the vehicle for insurance.

The only control on the page is a `TextBox` control for entering the VIN. You define an event handler for the change event of the `TextBox` control. The event handler performs the vehicle lookup in the database. The `AutoPostBack` attribute of the `TextBox` control is set to `True`.

During testing, you attempt to browse to the page by using Internet Explorer on one of your test computers. You discover you do not receive vehicle information after entering a valid VIN and using the TAB key to move out of the text box. This problem does not occur when you use other test computers that are running Internet Explorer.

What should you do?

- Configure Internet Explorer to allow scripting.
- Configure Internet Explorer to allow page transitions.
- In the Page directive, set the `SmartNavigation` attribute to “True”.
- In the Page directive, set the `AutoEventWireup` attribute to “True”.

**Answer: A**

**Explanation:** For the `AutoPostBack` property to work properly, the user's browser must be set to allow scripting. This is the default in most cases. However, some users disable scripting for security reasons.

**Reference:** Visual Basic and Visual C# Concepts, ASP.NET Server Control Event Model

SUBSECTION E: Resolve errors and rework code. (2 questions)

## QUESTION NO: 1

You create an ASP.NET application named Inventory. This application will be used by customers on the Internet.

During the beta test period, you ensure that the actual ASP.NET error message is displayed whenever an error is encountered. Both developers and beta testers see the actual text of the error message. You perform beta testing of other applications on the same beta test server during the beta testing period for Inventory. All of the other applications display ASP.NET error messages.

After the beta testing period is complete, the beta test server is promoted to a production server. You want all applications to display a single, user-friendly error message. You want to configure Inventory and the production server to meet these goals. You want to perform this task by using the minimum amount of administrative effort.

Which two actions should you take? (Each correct answer presents part of the solution. Choose two)

- A. Set the mode parameter of the customErrors element in the Web.config file for Inventory to “On”.
- B. Remove the customErrors element from the Web.config file for Inventory.
- C. Set the mode parameter of the customErrors element in the Inventory.config file to “On”.
- D. Remove the customErrors element from the Inventory.config file.
- E. Set the mode parameter of the customErrors element in the Machine.config file to “On”.
- F. Remove the customErrors element from the Machine.config file.

**Answer: B, E**

**Explanation:**

- B:** We should remove the customized error message for the Web.config file for the Inventory application.
- E:** We should define a single customized error message for all application on the server. This is done by setting the **mode** attribute to **on** in the Machine.config file.

**Note:** The <customErrors> Element provides information about custom error messages for an ASP.NET application. The mode attribute specifies whether custom errors are enabled, disabled, or shown only to remote clients. The value of **on** specifies that custom errors are enabled.

**Reference:** .NET Framework General Reference, <customErrors> Element

#### **Incorrect Answers**

- A:** We want to remove the error messages which are specific to the application.
- C:** We use the Web.config and the Machine.config files, not Inventory.config, to configure appropriate error messages.
- D:** A Web.config file is used for the Inventory application. No Inventory.config is used.
- F:** We want to add one single customized error messages for all application on the server. We should add, not remove, a customErrors element to the Machine.config file.

#### **QUESTION NO: 2**

You are creating an ASP.NET page for TestKing. The company wants to use this page to allow customers to enter their addresses. You create a user control named CustomerAddress. You define this control in a file named CustomerAddress.ascx. You place this file in a folder named AddressControls.

**You create a page in the same folder to test your control. You add the following directive to the top of your test page:**

```
<%@ Register Tagprefix="TK" Tagname="CustomerAddress"
Namespace="CustomerAddress.ascx" %>
```

**You add the following tag to your test page:**

```
<TK:CustomerAddress runat="server"/>
```

**When you open the test page, you receive the following error message: “Parser Error – Description: An error occurred during the parsing of a resource required to service this request.”**

**You need to change the directive to correct this error.**

**Which directive should you use?**

- A. `<%@ Register Tagprefix="TK" Tagname="CustomerAddress" Namespace=".\\AddressControls\\CustomerAddress.ascx" %>`
- B. `<%@ Register Tagprefix="TK" Tagname="CustomerAddress" Src="CustomerAddress.ascx" %>`
- C. `<%@ Register Tagprefix="TK" Tagname="CustomerAddress" Assembly="CustomerAddress" %>`
- D. `<%@ Reference control="CustomerAddress.ascx" %>`

**Answer: B**

**Explanation:** This is a correct syntax. We use the Tagprefix, Tagname and Src attributes.

**Note:** The `<%@ Register>` element associates aliases with namespaces and class names for concise notation in custom server control syntax.

**Reference:** .NET Framework General Reference, [@ Register](#)

**Incorrect Answers**

- A:** If we use the Namespace attribute we should use the Assembly attribute as well.
- C:** If we specify an assembly we must also specify a Namespace..
- D:** The `<%@ Reference >` element declaratively indicates that another user control or page source file should be dynamically compiled and linked against the page in which this directive is declared.

## PART V: Deploying a Web Application (5 questions)

### SECTION 1: Plan the deployment of a Web application.

#### SUBSECTION A: Plan a deployment that uses removable media. (2 questions)

##### QUESTION NO: 1

**You create an ASP.NET application named MyApp that will be installed on a Web server named TestKingSrv.**

**You create a Web setup project to deploy your ASP.NET application and add it to your solution. You set the Configuration Manager to Release mode and create a deployment package for your application. You copy the deployment package to a CD-ROM and take it to TestKingSrv.**

**You log on to TestKingSrv and run the deployment package from your CD-ROM. During the setup process, you receive the following error message.**

**“The specified path “http://TestKingSrv/MyApp’ is unavailable. The Internet Information Server might not be running or the path exists and is redirected to another machine. Please check the status of the virtual directory in the Internet Service Manager”.**

**You verify that Internet Information Services (IIS) is running on TestKingSrv and that the specified path does not exist. You want to install the application on TestKingSrv.**

**What should you do?**

- A. Launch the deployment package in Administrative mode by using the /a command line option.
- B. Log off and log on again by using an account that has Administrator privileges on TestKingSrv.
- C. Create an ISS virtual directory named MyApp and configure it with Write permissions.
- D. Copy the deployment package from the CD-ROM to a local folder on TestKingSrv and then run the deployment package.

**Answer: C**

**Explanation:** The IIS virtual directory must be named correctly and configured with Write permissions.

##### **Incorrect Answers**

- A:** The problem can only be solved by correctly creating a virtual directory.
- B:** This is not a privilege issue
- D:** Copy the deployment package from the CD-ROM to a local folder on Server1 and then running it will not solve the problem.

## QUESTION NO: 2

You create an ASP.NET application that will be sold to TestKing's corporate customers. The corporate customers will buy your application and run it on their intranets.

You create a Web setup project for your application and add it to your ASP.NET solution. You also add a file named Readme.txt to the Web setup project.

You create the deployment package and install it on a test server. You notice that the deployment package installed Readme.txt in the Web application folder. You want the deployment package to add a shortcut to Readme.txt to the desktop on the server computer.

What should you do?

- A. Add Readme.txt to your solution and rebuild the deployment package.
- B. Select Readme.txt in the Web setup project.  
Change the TargetName property to DESKTOP\Readme.txt.
- C. In the Web setup project, add the User's Desktop folder to the File System on Target Machine node.  
Add a shortcut to Readme.txt in the User's Desktop folder.
- D. In the Web setup project, add a custom folder to the File System on Target Machine node.  
Name the folder Server Desktop and add a shortcut to Readme.txt in that folder.

**Answer: C**

**Explanation:** The **User's Desktop folder** contains files and folders that appear on the desktop on a per-user basis. We should add an appropriate shortcut to this folder in the Web setup project.

**Note:** Special folders are folders in the File System Editor that represent predefined Windows folders. Using special folders in a deployment project allows you to choose a destination folder on a target computer without knowing the actual path to that folder.

**Reference:** Visual Studio, Special Folders and Custom Folders

### Incorrect Answers

- A:** We need to create a shortcut to the Readme.txt file.
- B:** The TargetName property specifies a name for a file when it is installed on a target computer. The file is renamed during installation if it differs from the source file name. However, it is not useful in this scenario.
- D:** Custom folders are not required.  
**Note:** Custom folders are special folders that represent folders on a target computer. Unlike special folders, custom folders do not necessarily depend on existing folders on the target, but rather allow you to create new folders at install time.

SUBSECTION B: Plan a Web-based deployment. (0 questions)

SUBSECTION C: Plan the deployment of an application to a Web garden, a Web farm, or a cluster. (0 questions)

SECTION 2: Create a setup program that installs a Web application and allows for the application to be uninstalled. (1 question)

**QUESTION NO: 1**

**You are planning the deployment of an ASP.NET application named TestKApp. TestKApp uses a Visual Studio .NET component named DataAccess that will be shared with other applications on your Web server.**

**You are using Visual Studio .NET to create a Windows Installer package. You need to deploy DataAccess and the ASP.NET application so that they can be uninstalled later if necessary.**

**What should you do?**

- A. Create a setup project for DataAccess.  
Add the ASP.NET application in a custom action.
- B. Create a setup project for the ASP.NET application.  
Create another setup project for DataAccess.
- C. Create a Web setup project for the ASP.NET application.  
Add a project output for DataAccess.
- D. Create a Web setup project for the ASP.NET application.  
Add a merge module for DataAccess.

**Answer: D**

**Explanation:** To deploy a Web application to a Web server, you create a Web Setup project. We should use a merge module in order to be able to uninstall the DataAccess component later.

**Note:** Merge module projects are used to package files or components that will be shared between multiple applications. They create a merge module (.msm) file that includes all files, resources, registry entries, and setup logic for your component. The resulting .msm file can then be merged into other deployment projects, insuring consistent installation of your component across multiple applications.

**Reference:**

Visual Studio, Deployment Projects

Visual Studio, Creating or Adding a Merge Module Project

**Incorrect Answers**

**A, B:** We cannot use a setup project to deploy an ASP.NET Web application. Setup projects are used for Windows applications.

**C:** A project output cannot be uninstalled separately.

### SECTION 3: Deploy a Web application. (1 question)

#### QUESTION NO: 1

**You are creating an ASP.NET application for an insurance company TestKing Insurance. The company will use your ASP.NET application to record insurance claims.**

**Another development team creates a redistributable component that will be used by your ASP.NET application. The component requires several registry entries to be created during installation so that the component will run properly. The same component might be used by other ASP.NET applications in the future.**

**The development team gives you the source code to the component as well as all of the project files for the component. You add the component project to your ASP.NET application. You need to create a deployment package for your application. You want to include the redistributable component with your deployment package.**

**What should you do?**

- A. Create a setup project for the redistributable component.  
Create a Web setup project for your ASP.NET application.
- B. Create a merge module project for your ASP.NET application.  
Create a setup project for redistributable component and add the merge module for your ASP.NET application to the project.
- C. Create a merge module project for both your ASP.NET application and the redistributable component.  
Create a Web setup project and add both merge modules to the project.
- D. Create a merge module project for the redistributable component.  
Create a Web setup project for your ASP.NET application and add the merge module for the redistributable component to the project.

**Answer: D**

**Explanation:** We create a merge module for the redistributable component. We then integrate the merge module into the Web setup project.

**Note:** Merge module projects are used to package files or components that will be shared between multiple applications. They create a merge module (.msm) file that includes all files, resources, registry entries, and

setup logic for your component. The resulting .msm file can then be merged into other deployment projects, insuring consistent installation of your component across multiple applications.

**Reference:** Visual Studio, Creating or Adding a Merge Module Project

**Incorrect Answers**

- A:** A setup project is used for Windows applications.  
**B, C:** We should not create a merge module from the application.

**SECTION 4: Add assemblies to the global assembly cache. (1 question)**

**QUESTION NO: 1**

**You create an assembly to access data in a relational database named TestKingData. This assembly will be used by several ASP.NET applications on your Web server.**

**You need to ensure that all your applications can access the assembly. Which two actions should you take? (Each correct answer presents part of the solution. Choose two)**

- A. Run the Assembly Registration tool (Regasm.exe).
- B. Run the String Name tool (Sn.exe).
- C. Run the Installer tool (Installutil.exe).
- D. Run the Global Assembly Cache tool (Gacutil.exe).

**Answer: B, D**

**Explanation:**

- B:** The Strong Name tool helps sign assemblies with strong names.  
**D:** There are two ways to install an assembly into the global assembly cache:
- Using Microsoft Windows Installer 2.0. This is not an option here.
  - Using the Global Assembly Cache tool (Gacutil.exe).

**Reference:**

.NET Framework Developer's Guide, Working with Assemblies and the Global Assembly Cache  
.NET Framework Developer's Guide, Installing an Assembly into the Global Assembly Cache

**Incorrect Answers**

- A:** The Assembly Registration tool reads the metadata within an assembly and adds the necessary entries to the registry, which allows COM clients to create .NET Framework classes transparently.  
**C:** The Installer tool allows you to install and uninstall server resources by executing the installer components in a specified assembly.



## PART VI: Maintaining and Supporting a Web Application (16 questions)

### SECTION 1: Optimize the performance of a Web application. (14 questions)

#### QUESTION NO: 1

**You are creating an ASP.NET page for TestKing. You create a DataGrid control that displays past purchases made by the user. The DataGrid control is populated from an existing database when the page is created.**

**The page contains TextBox controls that allow users to update their personal information, such as address and telephone number.**

**You need to ensure that the page is refreshed as quickly as possible when users update their contact information.**

**What should you do?**

- A. Set the Enabled property of the DataGrid control to **false**.
- B. Set the EnableViewState property of the DataGrid to **false**.
- C. Write code in the Page.Load event handler that populates the DataGrid control only when the IsPostBack property of the page is **false**.
- D. Write in the Page.Load event handler that populates the DataGrid control only when the IsPostBack property of the page is **true**.

**Answer: D**

**Explanation:** The Page.IsPostBack property gets a value indicating whether the page is being loaded in response to a client postback, or if it is being loaded and accessed for the first time. The value is true if the page is being loaded in response to a client postback; otherwise, false. By adding code in the Page Load event handler that populates the Data Grid control when the IsPostBack property is true we ensure that the page is refreshed as quickly as possible.

**Reference:** .NET Framework Class Library, Page.IsPostBack Property [C#]

#### Incorrect Answers

- A:** The DataGrid control has an Enabled property, but no Enable property. Furthermore, the Enable property only indicates if the control is enabled or not.
- B:** The Control.EnableViewState property indicates whether the server control persists its view state, and the view state of any child controls it contains, to the requesting client.
- C:** The DataGrid should only be populated when the user updates the contact information. This occurs when the IsPostBack property is true, not false.

**QUESTION NO: 2**

**You are creating an ASP.NET page for TestKing. The page contains a DataGrid control that displays all the current prices for the commodities that TestKing purchases. The page also contains a Button control that refreshes the data in the DataGrid control.**

**The DataGrid control needs to be repopulated each time the page is displayed. The data is accessed through a DataView object stored in the Session object. You want to ensure the fastest load time for the page.**

**What should you do?**

- A. Set the DataSource property and call the DataBind method of the DataGrid control in the Click event handler for the Button control.
- B. Set the DataSource property and call the DataBind method of the DataGrid control in the Start event handler for the Session object.
- C. Set the EnableViewState property of the DataGrid control to false.
- D. Set the EnableViewState property of the DataGrid control to true.

**Answer: C**

**Explanation:** There are times when it is appropriate to disable view state, particularly to improve application performance. As in this scenario, where we are loading a database request into a server control, set this property to false. If you do not, processor time will be wasted loading view state into the server control that will only be overridden by the database query.

**Reference:** .NET Framework Class Library, Control.EnableViewState Property [C#]

**Incorrect Answers**

**A, B, D:** We disable the ViewState to improve performance. ViewState is enabled by default.

**QUESTION NO: 3**

**You are creating an ASP.NET application for TestKing's Travel. TestKing's Travel uses a Microsoft SQL Server 2000 database to store information about vacation packages. Your application will allow a user to request information about vacation packages for a specific destination.**

**You want to display this data to the user in a DataGrid. You want the data to be displayed in read-only form.**

**The user's travel destination is contained in a form level string variable named destinationCode. In your Page.Load event handler, you create a SqlConnection object named SqlConnection1, initialize it, and call its Open() method. When your code runs the query, you want the data to be returned as quickly as possible.**

**You define the following local variable to hold the destination code:**

```
string dest = destinationCode;
```

### What should you do?

- A. Create a stored procedure named GetDestinations and then use the following code to retrieve the data:

```
SqlCommand cmd =  
new SqlCommand("GetDestinations",  
sqlConnection1);  
cmd.CommandType = CommandType.StoredProcedure;  
SqlParameter parm =  
new SqlParameter("@DestinationCode", dest);  
cmd.Parameters.Add(parm);  
SqlDataReader sqlDataReader1 = cmd.ExecuteReader();
```

- B. Create a stored procedure named GetDestinations and then use the following code to retrieve the data:

```
string qry =  
"EXEC GetDestinations WHERE DestID = " + dest + "";  
SqlDataAdapter da =  
new SqlDataAdapter(qry, sqlConnection1);  
DataSet ds = new DataSet();  
da.Fill(ds);
```

- C. Use the following code to retrieve the data:

```
string qry =  
"SELECT * FROM Destination WHERE DestID =  
" + dest + "";  
SqlCommand cmd = new SqlCommand(qry,  
sqlConnection1);  
cmd.CommandType = CommandType.Text;  
SqlDataReader sqlDataReader1 = cmd.ExecuteReader();
```

- D. Use the following code to retrieve the data:

```
string qry =  
"SELECT * FROM Products WHERE DestID = @DestID";  
SqlCommand cmd = new SqlCommand(qry;  
sqlConnection1);  
cmd.CommandType = CommandType.Text;  
SqlParameter parm = new SqlParameter("@DestID",  
dest);  
cmd.Parameters.Add(parm);  
SqlDataReader sqlDataReader1 = cmd.ExecuteReader();
```

**Answer: A**

**Explanation:** We should use a stored procedure to retrieve the data. It is more efficient than using a SQL statement.

**Note:** A stored procedure is a batch of SQL Statements that is located on the SQL Server. This saves network bandwidth as the SQL Statements do not have to be sent from the client to the SQL Server computer. Furthermore, SQL Server compiles the stored procedures and selects an optimal execution plan. This saves time as well.

**Reference:** SQL Server Books Online, Creating a Stored Procedure

#### **Incorrect Answers**

**B:** GetDestinations is a stored procedure. We cannot use it in a SQL Statement such as:  
`EXEC GetDestinations WHERE DestID =`

**C, D:** Instead of using SQL statements, we should use a stored procedure since it would improve performance.

#### **QUESTION NO: 4**

**You are creating a shopping cart application for TestKing. The application loads the category and product data only once in each user's session.**

**You create two DataTable objects. One DataTable object is named Categories, and the other DataTable object is named Products. The Categories object remains static, but the Products object is modified when the user selects products and enters quantities to purchase.**

**You want to minimize the time it takes the page to reload after each change.**

**Which pair of statements should you use?**

- A. `Cache["Categories"] = Categories;`  
`Session["Products"] = Products;`
- B. `Session["Categories"] = Categories;`  
`Cache["Products"] = Products;`
- C. `Session["Categories"] = Categories;`  
`Session["Products"] = Products;`
- D. `Cache["Categories"] = Categories;`  
`Cache["Products"] = Products;`

**Answer: A.**

**Explanation:** The Categories object remains static within the application. It is therefore possible, and preferable, to use the Cache class for the Categories object. Products, on the other hand, can be modified and should be stored in the session state.

**Note:** The Cache class, with instances private to each application, and its lifetime is tied to that of the application. When the application is restarted, the instance of its Cache object is recreated.

**Reference:** .NET Framework Developer's Guide, Caching Application Data

#### **Incorrect Answers**

**B:** Products does not remain static within the application. We cannot use the Cache class for Products.

- C:** It is possible to use session state for Categories, though it would not be as efficient as the Cache class.
- D:** Products does not remain static within the application. We cannot use the Cache class for Products.

#### **QUESTION NO: 5**

**You are creating an ASP.NET application for TestKing. Users will use the application to produce reports. The data for the application is stored in a Microsoft SQL Server 2000 database named TestKingSrv.**

**You expect many users to use the application simultaneously. You want to optimize the response time when the users are retrieving data for the reports.**

**You create a procedure to retrieve the data from the database. You store a valid connection string in a variable named connString in the procedure.**

**You need to add code to the procedure to connect to the database.**

**Which code segment should you use?**

- A. `OleDb.OleDbConnection cnn = new OleDb.OleDbConnection(connString);`
- B. `SqlClient.SqlConnection cnn = new  
SqlClient.SqlConnection(connString);`
- C. `ADODB.Connection cnn = new ADODB.Connection();`
- D. `SQLDMO.Database cnn = new SQLDMO.Database();`

**Answer: B**

**Explanation:** We use SqlConnections to connect to SQL Server with Version 7.0 and later.

**Reference:** .NET Framework Developer's Guide, .NET Data Providers [C#]

#### **Incorrect Answers**

- A:** For SQL Server 7.0 and later we should use a SqlConnection, not an OleDbConnection, for highest efficiency.
- C, D:** ADODB and SQLDMO are legacy formats, which should be avoided.

#### **QUESTION NO: 6**

**Your ASP.NET application TestKingApp displays sales data on a page. You want to improve performance by holding the page in memory on the server for one hour. You want to ensure that the page is flushed from memory after one hour, and that the page is re-created when the next request for the page is received.**

**What should you do?**

- A. Initialize a new instance of the Cache class in the Application.Start event handler.

- B. Initialize a new instance of the Timer class in the Page.Load event handler.
- C. Set the Duration attribute of the OutputCache directive in the page.
- D. In the Web.config file, set the timeout attribute of the sessionState element.

**Answer: C**

**Explanation:** ASP.NET allows you to cache the entire response content for dynamic pages on HTTP 1.1 capable mechanisms, including browsers, proxy servers, and the origin Web server where your application resides. This provides a powerful way for you to increase the performance of your Web applications. Called output caching, it allows subsequent requests for a particular page to be satisfied from the cache so the code that initially creates the page does not have to be run upon subsequent requests.

To set output-cache expirations for a page declaratively” Include an @ OutputCache directive in the page (.aspx file) that you want to output cache. The directive must include a Duration attribute.

**Reference:**

.NET Framework Developer's Guide, Caching ASP.NET Pages [C#]

.NET Framework Developer's Guide, Setting Expirations for Page Caching [C#]

#### **QUESTION NO: 7**

**You create an ASP.NET application that is deployed on TestKing’s intranet. Sales representatives use this application to connect to a database while they are speaking to customers on the telephone. Your code is running under the security context of the user who requested the page.**

**The application requires each sales representative to supply a unique user name and password to access the application. These individual user names and passwords are included in the ConnectionString property settings that your code uses to connect to the database. All users have the same access rights to the database.**

**Sales representatives report that it takes a long time to access the database. You test the application and discover that a new connection is created each time a sales representative connects to the database. You want to reuse connections in order to reduce the time it takes to access the database.**

**What should you do?**

- A. Modify the connection string to specify Windows Integrated authentication.
- B. Modify the connection string to increase the connection timeout setting.
- C. Modify the connection string so that it uses a single application user name and password for every connection to the database.
- D. Modify the connection string so that it uses a login user named that is a member of the sysadmin fixed server role.

**Answer: C**

**Explanation:** In order to avoid the creation of a new connection we should use a single application user name and password.

**Incorrect Answers**

- A:** Windows Integrated authentication would still require a separate connection for each user.
- B:** Increasing the timeout setting would increase the connection time. However, a new connection would still be created for each user.
- D:** Running the connection in the security context of the sysadmin role would be a security risk.

**QUESTION NO: 8**

**As a software developer at TestKing you create an ASP.NET application for online ordering. You need to store a small amount of page-specific information on pages that are submitted to the server. This information does not need to be secured. The page must work properly for browsers that do not support cookies. You anticipate that the volume of orders on the site will be high, and you need to conserve server resources.**

**What should you do?**

- A. Store the information in application state variables.
- B. Store the information in session state variables.
- C. Store the information in a Microsoft SQL Server database.
- D. Store the information in hidden fields on the page.

**Answer: D**

**Explanation:** The advantages of hidden fields are

- No server resources are required. Server resources will be conserved.
- Broad support. It will work on browsers that do not support cookies.

The lack of security, a drawback of hidden fields, is not a problem, since the information does not need to be secured.

**Note:** State management is the process by which you maintain state and page information over multiple requests for the same or different pages. ASP.NET provides multiple ways to maintain state between server round trips.

**Reference:** Visual Basic and Visual C# Concepts, State Management Recommendations

**Incorrect Answers**

- A:** We want to conserve server resources, so we should avoid using application state variables. Application state requires server memory, which can affect the performance of the server as well as the scalability of the application.
- B:** Session state variables stay in memory until they are either removed or replaced, and therefore can degrade server performance.
- C:** We do not need a complex SQL Server solution.

**QUESTION NO: 9**

You are developing an ASP.NET application for TestKing's intranet. Employees will use the application to administer their employee benefits. The benefits information is stored in a Microsoft SQL Server database named Benefits.

An employee can select benefits options from 10 different drop-down list boxes. The values for each list are stored in separate tables in the Benefits database. The values that are available for employees to choose can change once each year during the benefits enrollment period.

You want to minimize the number of times your application must access the Benefits database to obtain the values for the drop-down list box.

Which two courses of action should you take? (Each correct answer presents part of the solution. Choose two)

- A. Create one stored procedure that returns the result for all 10 drop-down list boxes.  
Create one DataTable object for each of the 10 drop-down list boxes.  
Use a SqlDataReader object to populate 10 DataTable objects by calling the NextResult() method.  
Bind the drop-down list boxes to the DataTable objects.
- B. Create a stored procedure that returns the result set for all 10 drop-down list boxes.  
Bind the drop-down list boxes to the DataReader object.
- C. Create one DataTable object for each of the 10 drop-down list boxes.  
Create a stored procedure for each of the 10 tables.  
Use a SqlDataReader object to populate the 10 DataTable objects.  
Bind the drop-down list boxes to the DataTable objects.
- D. Store the result sets for the 10 drop-down list boxes in a DataSet object.  
Add the DataSet objects to the Cache object for the application.
- E. Store the result sets for the 10 drop-down list bikes in a file on the user's computer by using the DataSet.WriteXml() method.

**Answer: A, D**

**Explanation:**

- A:** We want to use a single result set provided by a single stored procedure. We are able to use the NextResult() method to retrieve each result in the result set.  
We also need one DataTable for each drop-down list box and one SqlDataReaderObject.  
**Note:** The SqlDataReader.NextResult method advances the data reader to the next result, when reading the results of batch Transact-SQL statements.
- D:** We use a DataSet object to store the result sets for the drop-down list boxes. We cache the result by adding the DataSet object to the Cache object.

**Reference:**

.NET Framework Class Library, SqlDataReader Class [C#]

.NET Framework Class Library, SqlDataReader.NextResult Method [C#]

**Incorrect Answers**

- B:** You can use the ADO.NET DataReader to retrieve a read-only, forward-only stream of data from a database. However, in this scenario we should use SqlDataReader.
- C:** It would be more effective to create a single stored procedure that returns a single result set.
- E:** A cache object is preferred to a file in this scenario.

**QUESTION NO: 10**

**You are creating an ASP.NET application that uses the Microsoft SQL Server .NET Data Provider to connect to TestKing's database. Your database administrator reports that, due to heavy usage of the application, data requests are being blocked while users wait for new connections to be created. You want to improve throughput by setting a minimum connection pool size of 10.**

**What should you do?**

- A. Add a connection element under an appSettings element in the Web.config file for your application, and specify a minimum size of 10 for the connection pool.
- B. Add a connection element under an appSettings element in the Machine.config file on your Web server, and specify a minimum size of 10 for the connection pool.
- C. Add a Min Pool Size property to the connection string you use when opening a connection, and specify a minimum size of 10 for the connection pool.
- D. Add a Min Pool Size property to your ADO.NET connection objects, and assign a value of 10 to the property.

**Answer: C**

**Explanation:** The Min Pool Size property of the connection string denotes the minimum number of connections maintained in the pool.

**Reference:** .NET Framework Developer's Guide, Connection Pooling for the SQL Server .NET Data Provider

**Incorrect Answers**

- A, B:** The appSettings element contains custom application settings. However, Minimum pool size should be configured in the connection string, not in the custom application settings.
- D:** Min Pool Size is not a property of a connection object. It is an attribute in the connection string.

**QUESTION NO: 11**

**You are creating an ASP.NET page for TestKing. The page uses string concatenation to gather data from multiple e-mail messages and format the data for display on the page. You want to ensure that the page displays as quickly as possible.**

**What should you do?**

- A. Write code that uses the Append method of the StringBuilder object.
- B. Write code that uses the Substring method of the String object.
- C. Write code that uses the Concat method of the String object.
- D. Write code that uses the plus-sign (+) operator to concatenate the strings.

**Answer: A**

**Explanation:** The StringBuilder.Append method appends the string representation of a specified object to the end of this instance. The StringBuilder class represents a string-like object whose value is a mutable sequence of characters. The value is said to be mutable because it can be modified once it has been created by appending, removing, replacing, or inserting characters.

**Reference:** .NET Framework Class Library, StringBuilder.Append Method [C#]

**Incorrect Answers**

- B:** The Substring method is used to select a part of a string, not to concatenate multiple strings.
- C:** The String.Concat method Concatenates one or more instances of String, or the String representations of the values of one or more instances of Object. However, compared to the Append method of the StringBuilder object, the Concat method creates new instances, and is therefore not the preferred method.
- D:** This is not the best solution.

**QUESTION NO: 12**

**You create an ASP.NET application that produces sales reports for the TestKing corporation. The sales data is stored in a Microsoft SQL Server database that is used for transaction processing. The application consists of complex Transact-SQL statements.**

**Many users report that the report generation is taking longer to run each day. You need to improve response times.**

**What are two possible ways to achieve this goal? (Each correct answer presents a complete solution. Choose two)**

- A. Use an OleDbDataAdapter indexes exist on the SQL Server tables.
- B. Ensure that appropriate indexes exist in the SQL Server tables.
- C. Rewrite your SQL statements to use aliases for all table names.
- D. Rewrite your direct SQL statements as stored procedures and call the stored procedures from your application.
- E. Configure queries to run in the security context of the user who is running the query.

**Answer: B, D**

**Explanation:**

- B:** We use an index to speed access to data in a database table.

**Note:** When Microsoft SQL Server executes a query, the query optimizer evaluates the costs of the

available methods for retrieving the data and uses the most efficient method. SQL Server can perform a table scan, or it can use an index if one exists.

**D:** A stored procedure is a batch of SQL Statements that is located on the SQL Server. This saves network bandwidth as the SQL Statements do not have to be sent from the client to the SQL Server computer. Furthermore, SQL Server compiles the stored procedures and selects an optimal execution plan. This saves time as well.

**Reference:**

SQL Server Books Online, Creating an Index

SQL Server Books Online, Creating a Stored Procedure

**Incorrect Answers**

**A:** OleDbDataAdapter can be used to access SQL Server databases. However, they introduce overhead.

**C:** Aliasing the table names would not improve performance.

**E:** The security context of the Stored Procedure does not affect performance.

**QUESTION NO: 13**

**You are creating an ASP.NET page for selling movie tickets. Users select a region, and then they select from a list of cities in that region. The site displays the names and locations of movie theaters in the city selected by the user.**

**Your company, TestKing Brothers, maintains a list of theaters in a database table that includes the city, name, and street address of each theater. You want to minimize the time required to retrieve and display the list of theater names after a user selects the region and city.**

**What should you do?**

- A. Modify the connection string to add the packet size property and set its values to 8192.
- B. Add the following directive to the page:  
`OutputCache VaryByParam="city"`
- C. Add the following directive to the page:  
`OutputCache VaryByControl="region;city"`
- D. Modify the connection string to keep your database's connection pool as small as possible.

**Answer: B**

**Explanation:** You can vary user control output to the cache by specifying the user control name and the parameter. We use the VaryByParam attribute of the @ OutputCache

**Reference:** .NET Framework Developer's Guide, Caching Multiple Versions of a User Control, Based on Parameters [C#]

**Incorrect Answers**

- A:** The Packet Size property of the Connection string is the size in bytes of the network packets used to communicate with an instance of data provider. It is not an optimal property to change to optimize data retrieval.
- C:** The company database does not seem to include a region column.
- D:** If we keep the connection pool small we would allow less simulation connections. However, this would not minimize the required to retrieve and display the data.

#### **QUESTION NO: 14**

**You create an ASP.NET application to provide online order processing to TestKing customers. A page named ShippingInformation.aspx contains a Web Form with controls for collecting shipping location information. The Web Form contains the following elements:**

- **Four TextBox controls for entry of name, street address, city, and postal code.**
- **A DropDownList control that consists of the full names of 150 countries.**
- **A Button control named shipItButton.**

**The Click event handler for shipItButton is located in the code-behind file for ShippingInformation.aspx. None of the other controls on the Web Form define server-side event handlers.**

**The Click event handler for ShipItButton redirects the user to a page named ShippingConfirmation.aspx. The ShippingConfirmation.aspx page provides the confirmation status of the shipping request submission to the user.**

**Users who access the application by using dial-up connections report that ShippingInformation.aspx processes very slow after the user clicks the shipItButton. Users on high-bandwidth network connections do not report the same issue.**

**You need to decrease the delay experienced by the dial-up users. What should you do?**

- A. Add the following attribute to the Page directive for ShippingInformation.aspx:  
EnableViewState="False"
- B. Add the following attribute to the Page directive for ShippingInformation.aspx:  
SmartNavigation="True"
- C. Add the following attribute to the OutputCache directive for ShippingInformation.aspx:  
Location="server"
- D. Add the following attribute to the OutputCache directive for ShippingInformation.aspx:  
Location="client"

**Answer: A**

**Explanation:** The Page.EnableViewState property gets or sets a value indicating whether the page maintains its view state, and the view state of any server controls it contains, when the current page request ends. You can use the ViewState property to save your values independent of control state between round trips to the server. The ViewState property is stored in the page in a hidden form field. However, this introduces higher network load when the page is redisplayed.

**Reference:** .NET Framework Class Library, Page.EnableViewState Property [C#]

**Incorrect Answers**

- B:** The SmartNavigation property does not affect problems of this scenario.
- C:** Server side caching would not decrease network traffic.  
**Note:** The OutputCache directive declaratively controls the output caching policies of an ASP.NET page or a user control contained in a page.
- D:** Client side caching would not so useful in this scenario.

**SECTION 2: Diagnose and resolve errors and issues. (2 questions)**

**QUESTION NO: 1**

**You create an ASP.NET application. You implement tracing and debugging instrumentation. The application is deployed on TestKing's intranet.**

**After working with the application for several days, users report that some pages are displaying errors that incorrectly identify valid date values as being invalid.**

**You need to gather debugging information from the application while it is running in the production environment. You need to perform this task with the least impact on the performance of the application.**

**What should you do?**

- A. Enable Debug mode in the application's Web.config file on the production server.  
Use Visual Studio .NET on your client computer to select **Debug Processes** from the Tools menu and attach to the aspnet\_wp.exe process on the production server.
- B. Enable Debug mode in the application's Web.config file on the production server.  
Use Visual Studio .NET on your client computer to open the application project on the production server and select **Start** from the **Debug** menu.
- C. Enable application tracing and disable tracing page output in the application's Web.config file on the production server.  
View the debugging information on the trace.axd page.
- D. Enable application tracing and disable tracing page output in the application's Web.config file on the production server.  
Run the DbgClr.exe and attach to the aspnet\_wp.exe process on the production server.

**Answer: A**

**Explanation:** We should use remote debugging to minimize the impact on the product server. Remote debugging is the scenario in which you run Visual Studio .NET on one machine (the client) and debug a Web application running on another machine (the server). For remote ASP.NET debugging the aspnet\_wp.exe process must be debugged.

**Reference:** Visual Studio, ASP.NET Debugging: System Requirements

**Incorrect Answers**

**B, C, D:** Running the debug process on the production server would unnecessarily decrease the performance of the production server.

**Note:** Microsoft common language runtime Debugger (DbgCLR.exe), which is a Windows debugger.

**QUESTION NO: 2**

You create a new ASP.NET application named TestKSalesReports on your development computer. You add code to the default WebForm1. To test the code's functionality, you copy the entire TestKSalesReports folder from the C:\inetpub\wwwroot folder on your computer to the C:\inetpub\wwwroot folder on a separate Microsoft Windows 2000 Server computer named TestKing1. TestKing1 hosts several ASP.NET applications.

When you use the browser on your computer to open the copy of the application hosted on TestKing1, you receive the following error message:

"It is an error to use a section registered as allowDefinition='MachineToApplication' beyond application level."

You want to correct this error without altering the other Web sites that are hosted on TestKing1. What should you do?

- A. Use Internet Information Services (IIS) to create a virtual directory that points to the TestKSalesReports folder on TestKing1.
- B. Remove the following element from the Web.config file in C:\inetpub\wwwroot\TestKSalesReports on TestKing1:  
`<authentication mode="Windows" />`
- C. Remove the following element from the Web.config file in C:\inetpub\wwwroot on TestKing1:  
`<authentication mode="Windows" />`
- D. Move the TestKSalesReports folder on TestKing1 up one level, so that it is a subfolder of the inetpub folder.

**Answer: B**

**Explanation:** You may have defined a section in your application's web.config file that is not configurable on our shared web hosting platform. Remove or comment out any configuration sections from your web.config file that are not supported. In this scenario we edit the Web.config file in C:\inetpub\wwwroot\TestKSalesReports on TestKing1.

**Incorrect Answers**

- A:** Create a virtual directory would solve the problem.
- C:** We must edit the application's web.config file, not the Web.config file in the root directory.
- D:** Moving the application directory would not solve the problem.

## PART VII: Configuring and Securing a Web Application (14 questions)

### SECTION 1: Configure a Web application.

#### SUBSECTION A: Modify the Web.config file. (5 questions)

##### QUESTION NO: 1

**You create an ASP.NET application for tracking student examinations at the local TestKing Certification school. You use Microsoft Windows authentication. Students are members of a group named Students, and teachers are members of a group named Teachers.**

**The root folder for your application is named Exams. The Exams folder displays information about pending examinations. The Exams folder has a subfolder named Grades. Both Students and teachers can access pages in Exams. Only teachers can access page in Grades.**

**You create the following entries in the Web.config file in Exams. (Line numbers are included for reference only)**

```
1 <authentication mode="Windows" />
2 <authorization>
3   <allow roles="Students, Teachers" />
4   <deny users="*" />
5 </authorization>
```

**You create the following entries in the Web.config file in Grades. (Line numbers are included for reference only.)**

```
1 <authentication mode="Windows" />
2 <authorization>
3   <allow roles="Teachers" />
4   <deny users="*" />
5 </authorization>
```

**When teachers try to access pages in the Grades folder, they receive an error message that reads in part: "An error occurred during the processing of a configuration file required to service this request."**

**You need to ensure that teachers can access pages in the Grades folder.  
What should you do?**

- A. Remove line 1 in the Web.config file in Grades.
- B. Modify line 4 in the Web.config file in Grades as follows:  
`<allow users="*" />`

- C. Add the following line between line 1 and line 2 in the Web.config file in Exams:  
`<identity impersonate="true" />`
- D. Add the following line between line 1 and line 2 in the Web.config file in Grades:  
`<identity impersonate="true" />`
- E. Add the following line between line 1 and line 2 in the Web.config file in Grades:  
`<identity impersonate="false" />`

**Answer: A**

**Explanation:** The error messages indicate an incorrect line in the configuration file. The first line with the authentication mode element should be removed.

**Reference:**

.NET Framework General Reference, <authentication> Element

.NET Framework General Reference, <authorization> Element

**Incorrect Answers**

**B:** We only want Teachers to have access to the Grades folder. We cannot allow everyone access.

**C, D, E:** Impersonate does not apply to this scenario.

**Note:** Impersonation is when ASP.NET executes code in the context of an authenticated and authorized client.

## QUESTION NO: 2

**You create an ASP.NET application that contains confidential information. You use form-based authentication to validate users. You need to prevent unauthenticated users from accessing the application.**

**What should you do?**

- A. Set a Page directive in the start page of your application to redirect users to a login page.
- B. Set a Page directive in the start page of your application to disallow anonymous users.
- C. In the authorization section of the Machine.config file, set the users attribute to the allow element to “?”.
- D. In the authorization section of the Web.config file, set the users attribute of the deny element to “?”.

**Answer: D**

**Explanation:** ASP .NET maintains security (and other) configuration settings in XML configuration files. Specifically ASP .NET security configuration is contained in the Web.config file. Specifying <deny users=“?”> in Web.config disallows anonymous access.

## QUESTION NO: 3

**You are configuring your ASP.NET application TestKingApp. TestKingApp will be hosted on a Web server that also runs other applications.**

**You want to prevent any changes to the configuration settings of your application after the application is deployed.**

**What should you do?**

- A. In the Machine.config file, set the allowOverride attribute in the location element to False.  
Make no other changes to the Machine.config file.
- B. In the Web.config file, set the allowOverride attribute in the location element to False.  
Make no other changes to the Web.config file.
- C. In the Machine.config file, set the allowOverride attribute in the appSettings element to False.  
Make no other changes to the Machine.config file.
- D. In the Web.config file, set the allowOverride attribute in the appSettings element to False.  
Make not other changes to the Web.config file.

**Answer: B**

**Explanation:** Administrators can lock configuration settings by adding an `allowOverride="false"` attribute to a `<location>` directive. We should use the Web.config file of the application since we only want to lock configuration for this particular application.

**Reference:** .NET Framework Developer's Guide, Locking Configuration Settings

**Incorrect Answers**

**A:** We want to lock a single application, not all application on the computer.

**C, D:** The allowOverride attribute is used in the location element, not in the appSettings element.

**QUESTION NO: 4**

**You create an ASP.NET application. The application uses integrated security to retrieve information from a Microsoft SQL Server database named TestKingSalesOrder. You need to provide a connection string for the application to use to connect to TestKingSalesOrder. You decide to store the connection string in the Web.config file.**

**How should you set up the Web.config file?**

- A. In the configuration section, create an element named appSettings.  
Create and add element that has a key attribute set to SqlConnection, and a value attribute set to the connection string.
- B. In the configuration section, create an element named SqlConnection.  
Create a key element that has a value attribute set to the connection string.
- C. In the authorization section, create an element named SqlConnection.  
Create a key element that has a value attribute set to the connection string.
- D. In the authentication section, create an element named appSettings.  
Create an element named SqlConnection that has a value attribute set to the connection string.

**Answer: A**

**Explanation:** The appSettings element contains custom application settings. The appSetting element is placed in the configuration section. Each element added to the appSettings element has a key attribute and a value attribute. For example SqlConnection and a connection string respectively.

**Reference:**

.NET Framework General Reference, <appSettings> Element

.NET Framework General Reference, <add> Element for NameValueCollection and DictionarySectionHandler

**Incorrect Answers**

**B, C:** SqlConnection is a class, and cannot be used as an element in the configuration section of a Web.config file.

**D:** The appSetting element is placed in the configuration section, not in the authentication section.

### **QUESTION NO: 5**

**You create an ASP.NET application for TestKing. The company uses Microsoft Windows authentication. All users are in the testking domain.**

**You want to configure the application to use the following authorization rules:**

- **Anonymous users must not be allowed to access the application.**
- **All employees except Tess and King must be allowed to access the application.**

**Which code segment should you use to configure the application?**

A. `<authorization>  
<deny users="testking\tess, testking\king">  
<allow users="*">  
<deny users="?">  
</authorization>`

B. `<authorization>  
<allow users="*">  
<deny users="testking\tess, testking\king">  
<deny users="?">  
</authorization>`

C. `<authorization>  
<deny users="testking\tess, testking\king">  
<deny users="?">  
<allow users="*">  
</authorization>`

D. `<authorization>`  
`<allow users="testking\tess, testking\king">`  
`<allow users="*">`  
`</authorization>`

E. `<authorization>`  
`<allow users="*">`  
`<deny users="testking\tess, testking\king">`  
`</authorization>`

**Answer: C**

**Explanation:** First we deny Tess and King access. Then we deny anonymous users access. Finally we grant all other users access. This is proper order of the elements for the requirements of this scenario.

**Note:** The elements are processed one by one. The first matching element decides if authorization is granted or not. The order of the elements is important.

The element `<allow users="*">` allows everyone access.

The element `<deny users="?">` denies anonymous users access.

**Incorrect Answers**

**A:** Only Tess and King would be denied access since the `<allow users="*">` element proceeds the `<deny users="?">`

**B, E:** Everyone would be granted access since the `<allow users="*">` element proceeds the other elements.

**D:** We must deny Tess, King and the anonymous users access.

SUBSECTION B: Modify the Machine.config file. (0 questions)

SUBSECTION C: Add and modify application settings. (0 questions)

## SECTION 2: Configure security for a Web application.

SUBSECTION A: Select and configure authentication type. Authentication types include Windows Authentication, None, forms-based, Microsoft Passport, Internet Information Services (IIS) authentication, and custom authentication. (3 questions)

### QUESTION NO: 1

**You create an ASP.NET application named TimeSheet for TestKing's intranet. The application will be used only by employees of your company.**

**You want the application to recognize the user without forcing the user to enter a name and password. You write the following code to save the user's Microsoft Windows login name in the Session object:**

```
Session.Item("User")=User.Identity.Name;
```

**When you run the TimeSheet, the Session.Item("User") variable returns an empty string. You want to configure Internet Information Services (IIS) and your application to be able to retrieve the user name automatically.**

**What should you do?**

- A. Disable Anonymous Access for the application in IIS-
- B. Enable Basic authentication for the application in IIS
- C. Add the following element to the Web.config file for TimeSheet:  
`<identity impersonate="True" />`
- D. Add the following element to the Web.config file for TimeSheet:  
`<identity impersonate="False" />`

**Answer: A**

**Explanation:** We should configure IIS to disallow anonymous access and only use Windows authentication.

**Incorrect Answers**

- B:** We want to use Windows authentication, not Basic Authentication.  
**C, D:** Impersonating does not apply in this scenario.

## **QUESTION NO: 2**

**You are creating an order entry application named TestKiEntry. You set Orders.aspx as the start page. You want users to log on to Orders.aspx by supplying a user name and password. You create a Login.aspx page to validate the user name and password.**

**You need to ensure that users log on by using Login.aspx before they are allowed to access Orders.aspx. Which two courses of action should you take? (Each correct answer presents part of the solution. Choose two)**

- A. In the authentication section of the Web.config file, set the mode attribute of the authentication element to Forms.  
Set the name attribute of the forms element to Login.aspx.
- B. In the authentication section of the Web.config file, set the mode attribute of the authentication element to Forms.  
Set the returnUrl attribute of the forms element to Login.aspx.
- C. In the authorization section of the Web.config file, set the users attribute of the deny element to "?":

- D. In the credentials section of the Web.config file, set the users attribute of the deny element to “?”.
- E. In the credentials section of the Machine.config file, set the users attribute of the deny element to “\*”.
- F. In the authorization section of the Machine.config file, set the mode attribute of the authentication element to Forms.  
Set the policyFile attribute of the trust element to Login.aspx.
- G. Create a Page directive in Orders.aspx to load the Login.aspx page.

**Answer: B, C**

**Explanation:**

- B:** We are using Form authentication. We must specify this in the Web.config file. The mode attribute of the Authentication element is used to specify the default authentication method for an application. We use the loginURL to specify the URL to which the request is redirected for logon if no valid authentication cookie is found.
- C:** We deny access to anonymous users.

**Reference:**

- .NET Framework General Reference, <authentication> Element
- .NET Framework General Reference, <forms> Element
- .NET Framework General Reference, <deny> Element

**Incorrect Answers**

- A:** The name attribute in the Forms Element specifies the HTTP cookie to use for authentication.
- D, E:** The credentials section allows optional definition of name and password credentials within the configuration file. There cannot be a deny element within the credentials section.
- F:** The mode attribute is used in the authentication element, not in the authorization section.
- G:** A page directive cannot be used to specify the login form page.

**QUESTION NO: 3**

**You plan to deploy your ASP.NET application over TestKing’s intranet. The application uses data retrieved from a Microsoft SQL Server database. You want to use SQL Server connection pooling to optimize performance. You also need to protect confidential data stored on the server while minimizing administrative costs.**

**You need to configure security for your application. What should you do?**

- A. Use Microsoft Windows authentication in the application.  
Enable impersonation for users to access the SQL Server database from your application.
- B. Use Microsoft Windows authentication in the application.  
Use a single Windows account for users to access the SQL Server database from your application.

- C. Use form-based authentication in the application.  
Use the system administrator (sa) SQL Server login for users to access the SQL Server database from your application.
- D. Use form-based authentication in the application.  
Assign each user a separate SQL Server login to use to access the SQL Server database from your application.

**Answer: B**

**Explanation:** We should only use one account to access the SQL Server database. This ensures that connection pooling is optimized.

**Incorrect Answers**

- A:** We should only use a single account to access the SQL Server database.
- C:** Form-based authentication is less secure. Furthermore, running as the System Administrator with the sa login would compromise security.
- D:** Form-based authentication is less secure. Furthermore, creating a separate SQL Server login for each user is a daunting administrative task.

**SECTION 3: Configure authorization. Authorization methods include file-based methods and URL-based methods.**

**SUBSECTION A: Configure role-based authorization. (2 questions)**

**QUESTION NO: 1**

**You are configuring security for your ASP.NET application. The folders for your pages are located in a hierarchy as shown in the exhibit.**



**You need to allow all uses to access pages located in the Products folder and the Orders folder. You need to allow any members of the Accounting role to access pages located in the Accounting folder.**

**What are two possible waves achieve this goal? (Each correct answer presents a complete solution. Choose two)**

- A. Add code to the Global.asax file to dynamically configure access to the Accounting folder.

- B. Place the authorization settings for all roles in the Web.config file located in the Products folder.  
Use the location tag in the Web.config file to deny access to the Accounting folder for all roles except the Accounting role.
- C. Place the authorization settings for all roles in the Web.config file located in the Products folder.  
Allow access for only members of the Accounting role in the Web.config file located in the Accounting folder.
- D. Create two custom roles in the Machine.config file for the application.  
Configure one role for all users, and one role for the Accounting users.  
Deny access to the Accounting folder for all users except members of the Accounting role.

**Answer: B, C**

**Explanation:** We allow to the Products and Orders folders by placing a Web.config file with the appropriate configuration in the Products folder.

**B:** Only Accounting role gets access to the Accounting folder by explicitly denying all other users access.

**C:** We could also configure access to the by only allowing access to the folder to the Accounting role.

**Incorrect Answers**

**A:** We need to configure access to the Products and Orders folder, not only to the Accounting folder.

**D:** The machine configuration file, Machine.config, contains settings that apply to an entire computer, not just to a single application.

**QUESTION NO: 2**

**You are creating an ASP.NET application that uses role-based security to allow users to access only those pages that they are authorized to access. You use a Microsoft SQL Server database to manage the list of users and roles for the ASP.NET application. A table named Roles contains a column named RoleID and a column named RoleName. A table named Users contains a column named UserID, a column named UserName, and a column named Password. A table named UserRoles contains a column named UserID and a column named RoleID.**

**You need to create a stored procedure that returns all users who belong to a specific role. You write the following Transact-SQL code to define the stored procedure:**

```
CREATE PROCEDURE GetRoleMembers
@RoleID int
AS
```

**Which code segment should you use to complete the stored procedure?**

- A. 

```
SELECT UserRoles.UserID, Users.UserName
FROM Users
INNER JOIN
```

```
Roles UserRoles On UserRoles.RoleID = Users.UserID
WHERE UserRoles.RoleID = @RoleID
```

- B. 

```
SELECT UserRoles.UserID, Users.UserName
FROM UserRoles
INNER JOIN
Roles On UserRoles.RoleID = Roles.RoleID, Users
WHERE UserRoles.RoleID = @RoleID
```
- C. 

```
SELECT UserRoles.UserID, Users.UserName
FROM UserRoles
INNER JOIN
Users On Users.UserID = UserRoles.UserID
WHERE UserRoles.RoleID = @RoleID
```
- D. 

```
SELECT Users.UserID, Users.UserName
FROM Users, UserRoles
INNER JOIN
Roles On UserRoles.RoleID = Roles.RoleID
WHERE UserRoles.RoleID = @RoleID
```

**Answer: C**

**Explanation:** We need to join the UserRoles and the Users tables as we want to match the users with the roles of the users.

**Reference:**

SQL Server Books Online, Transact-SQL Reference, FROM Clause

**Incorrect Answers**

**A, B:** We have no need of the Roles tables. We want to match the users with the roles of the users.

**D:** The FROM clause, FROM Users, UserRoles, indicates a cross join between the User and UserRoles tables. However, we want to make an inner join on the UserRoles and the Users tables.

SUBSECTION B: Implement impersonation. (2 questions)

**QUESTION NO: 1**

**You are creating an ASP.NET application. The application will be deployed on TestKing's intranet. TestKing uses Microsoft Windows authentication.**

**You want the application to run in the security context of the user.  
What should you do?**

- A. Add the following element to the authentication section of the Web.config file:  
`<allow users="?" />`
- B. Add the following element to the system.web section of the Web.config file:  
`<identity impersonate="true" />`
- C. Use the Configuration Manager for your project to designate the user's security context.
- D. Write code in the Application\_AuthenticateRequest event handler to configure the application to run in the user's security context.

**Answer: B**

**Explanation:** The `<identity>` element controls the application identity of the Web application. By setting the impersonate attribute to true we ensure that the application is run in the security context of the user.

**Reference:** .NET Framework General Reference, `<identity>` Element

**Incorrect Answers**

- A:** This allows anonymous users. It is an irrelevant issue in this scenario.  
**C, D:** These are improper methods.

**QUESTION NO: 2**

**You create a reporting application for TestKing's Travel. You create several reports, each of which resides in its own folder under the Report folder. Each subfolder has the appropriate security rights sets for Microsoft Windows users.**

**You write a function named ListReports that generate a list of available reports. You want to configure the application and the ListReports function to find out which reports are available to the current user. If a user is logged in by using Windows authentication, you want ListReports to apply that user's rights. If the user is not logged in by using Windows authentication, you want ListReports to use the rights granted to the testkingtravel\ReportingAccount user account. The password for this user accounts is "p1testki32"**

**Which two actions should you take? (Each correct answer presents part of the solution. Choose two)**

- A. Add the following element to the Web.config file:  
`<identity impersonate="false">`
- B. Add the following element to the Web.config file.  
`<identify impersonate="true">`
- C. Add the following element to the Web.config file:  
`<identity impersonate="true"`  
`userName="margiestravel\ReportingAccount"`  
`password=" p1testki32">`

D. Add the following element to the Web.config file:

```
<authorization>  
<allow user="testkingtravel\ReportingAccount">  
</authorization>
```

E. Add code to the ListReports function to create and use a WindowsPrincipal object based on the testkingtravel\ReportingAccount user account only if no user is authenticated.

F. Add code to the ListReports function to always create and use a WindowsPrincipal object based on the testkingtravel\ReportingAccount user account.

**Answer: B, E**

**Explanation:**

**B:** We use the **impersonate** attribute of the **identity** element to specify that client impersonation is used on each request. We should use the value **true**.

**E:** If no user is authentication then we run the ListReports function in the security context of the testkingtravel\ReportingAccount user account.

**Reference:** Designing Distributed Applications with Visual Studio .NET, ASP.NET Impersonation

**Incorrect Answers**

**A:** We should specify that impersonation is used. The value should be set to true, not to false.

**C:** This enables the entire application to run as testkingtravel\ReportingAccount, regardless of the identity of the request, so long as the password is correct.

**D:** This enables the testkingtravel\ReportingAccount user account to run the application. This is not required.

**F:** We only want to use impersonation if the user is not logged on.

**SECTION 4: Configure and implement caching. Caching types include output, fragment, and data.**

**SUBSECTION A: Use a cache object. (1 question)**

**QUESTION NO: 1**

**You are a Web developer for a museum. The museum has a Microsoft SQL Server database that contains information about science experiments. The database currently contains information on 5,000 experiments. The information is updated monthly.**

**You are creating an ASP.NET application for users to find information about specific experiments. The application will run on a server that is connected to the database by a low-bandwidth leased line.**

**You want to accomplish the following two goals:**

- **Minimize the number of times the application accesses the database.**
- **Minimize the time required for each page of the application to load.**

**What should you do?**

- A. Initialize the DataSet object in the Page.Load event handler when the IsPostBack property is **false**. Store the DataSet object in an XML file on the user's computer.
- B. Create a Cache object for the application and add the DataSet object to the cache.
- C. Use the view state to maintain the DataSet object during postback events to the server.
- D. Create a Cache object for the session and add the DataSet object to the cache.

**Answer: B**

**Explanation:** The database is only updated monthly. Therefore we can store the dataset in the Application Cache with out the need for that extra over head of reading and writing into the XML file client computer for every session (not A).

SUBSECTION B: Use cache directives. (1 question)

#### **QUESTION NO: 1**

**You create an ASP.NET application for a hotel. The application contains a page that displays current weather conditions for the city in which the hotel is located. The application calls an XML Web service every 10 minutes to update the current weather conditions. A new page is then displayed for subsequent requests.**

**You want the same page to be cached and retrieved from the cache during the time between calls to the XML Web service. You decide to use a Page directive to accomplish this goal.**

**Which page directive should you use?**

- A. `<%@ Cache Seconds="600" VaryByParam="page" %>`
- B. `<%@ OutputCache Time="600" %>`
- C. `<%@ OutputCache Duration="600" VaryByParam="None" %>`
- D. `<%@ OutputCache Duration="600" %>`

**Answer: C**

**Explanation:** To set output-cache expirations for a page declaratively include an **@ OutputCache** directive in the page (.aspx file) that you want to output cache. The directive must include a **Duration** attribute, with a

positive numeric value, and a **VaryByParam** attribute. The following @ OutputCache directive sets the page's expiration to 10 minutes (600 seconds).

```
<%@ OutputCache Duration="600" VaryByParam="None" %>
```

**Reference:** .NET Framework Developer's Guide, Setting Expirations for Page Caching [C#]

#### **Incorrect Answers**

**A, B:** We should use the **Duration** attribute, not the **Seconds** or the **Time** attribute, to specify the output-cache expiration for a page.

**D:** We must use a **VaryByParam** attribute-

SECTION 5: Configure and implement session state in various topologies such as a Web garden and a Web farm.

SUBSECTION A: Use session state within a process. (0 questions)

SUBSECTION B: Use session state with session state service. (0 questions)

SUBSECTION C: Use session state with Microsoft SQL Server. (0 questions)

SECTION 6: Install and configure server services.

SUBSECTION A: Install and configure a Web server. (0 questions)

SUBSECTION B: Install and configure Microsoft FrontPage Server Extensions. (0 questions)

## Part VIII: Practice questions (78 questions)

Use these practice questions to reinforce exam concepts.

### QUESTION NO: 1

**You are a web developer for an international literary website. Your application has a lot of text content that requires translation and few executable components.**

**Which approach should you use?**

- A. Detect and redirect
- B. Use run-time adjustment
- C. Use satellite assemblies
- D. Allow the client browser to decide

### Answer: A

We should use the detect and redirect approach. We need to create a separate Web application for each supported culture, and then detect the user's culture and redirect the request to the appropriate application.

### QUESTION NO: 2

**You are creating an ASP.NET application using C# that is hosted on your company's Web server. You want to access a database with minimal effort. What should you do?**

- A. Begin a transaction.
- B. Create a connection to the database.
- C. Create a data set using an adapter object.
- D. Use the data set to display data or to change items in the database.
- E. Update the database from the data set.
- F. Close the database connection.
- G. Check for transaction errors.

### Answer: B, C, D, E, F

ADO.NET includes three key components used for most data access: database connection, data adapter, and data set. To access a database, follow these steps:

- Create a connection to the database.
- Create a data set using an adapter object.
- Use the data set to display data or to change items in the database.
- Update the database from the data set.
- Close the database connection.

ADO.NET provides typed data sets. Typed data sets use explicit names and data types that help prevent errors during programming.

**QUESTION NO: 3**

**You are creating an ASP.NET application using C# that will be used by companies to quickly create information portals customized to their business. Your application stored commonly used text strings in application variables for use by the page in your application.**

**You need your application to set these text strings to a specific value every time a new session is started. What should you do?**

- A. Add code to the Application\_OnStart event handler in the Global.asax file to set the values of the text strings.
- B. Add code to the Application\_BeginRequest event handler in the Global.asax file to set the values of the text strings.
- C. Add code to the Session\_OnStart event handler in the Global.asax file to set the values of the text strings.
- D. Include code in the Page.Load event handler for the default application page that sets the values if the text strings when the IsPostBack property of the Page object is **False**.
- E. Include code in the Page.Load event handler for the default application page that sets the values of the text strings when the IsNewSession property of the Session object is set to **True**.

**Answer: C**

The Session\_OnStart event occurs every time a new session is started.

**QUESTION 4:**

**You are a Web developer for TestKing. You create an ASP.NET application that accesses sales and marketing data. The data is stored in a Microsoft SQL Server 2000 database on a server named DenverSrv.**

**You want to add a page to your ASP.NET application to display inventory data from AirportDB. You use a SqlConnection object to connect to the database. You need to create a connection string to AirportDB in the instance of SQL Server named AirportSrv on DenverSrv.**

**Which string should you use?**

- A. `"Server=DenverSrv;Data Source=AirportSrv;Initial Catalog=AirportDB;Integrated Security=SSPI";`
- B. `"Server= DenverSrv;Data Source=AirportSrv Database=AirportDB;Integrated Security=SSPI";`
- C. `"Data Source= DenverSrv\AirportSrv;Initial Category=AirportSrv Integrated Security=SSPI";`
- D. `"Data Source= DenverSrv\AirportSrv;Database=AirportDB;Integrated Security=SSPI";`

**Answer: D**

The Data Source attribute of the connection string contains the name, instance or network address of the instance of SQL Server to which to connect. In this scenario we are to connect to the AirportSrv Instance on DenverSrv so we use DenverSrv\AirportSrv as data source.

To specify the database we should either use the Database or the Initial Catalog attribute. Here we use Database=AirportDB.

#### QUESTION NO: 5

**You are creating an online financial program for ParcelEx. The complex financial algorithm used on a Web page that you are coding changes frequently. During unit testing, you want to view the output of several variables during the calculations. However, you do not want these statements to be processed when the Web page is released into production, and execution speed is critical.**

**Given these requirements, which of the following statements should you use to view the value of a variable named lngInvestmentAmount? (Select the best choice.)**

- A. `Trace.WriteIf (blnUnitTesting, "lngInvestmentAmount = " & lngInvestmentAmount);`
- B. `Debug.Write ("lngInvestmentAmount = " & lngInvestmentAmount);`
- C. `Trace.WriteLine ("lngInvestmentAmount = " & lngInvestmentAmount);`
- D. `Debug.WriteIf (blnUnitTesting, "lngInvestmentAmount = " & lngInvestmentAmount);`

#### Answer: B

You should use the Write method of the Debug object to write the messages. The methods and properties of the Debug object are not compiled when an application is compiled in release mode. During unit testing, you will compile your application in Debug mode. Debug mode is enabled for all pages in an ASP.NET application by setting the Debug attribute of the compilation element to true in the application's Web.config file. This action will enable the calls to the Debug object, and the Write method can then be used to report information about the status of your application.

#### QUESTION NO: 6

**You are creating an application with the name TestKingWebApp . You have changed the Root namespace in the Property Pages dialog box to MyRootNamespace. You have declared two classes within the application with this code:**

```
Class MyClass1
{
' Code to complete class here.
}
Namespace MyNamespace
Public Class MyClass2
{
```

```
' Code to complete class here.  
}
```

**You need to create an instance of both classes from code that is outside the scope of MyClass1. Which of the following lines of code will properly create an instance of both classes? (Each choice presents a complete solution.) (Select 2 choices.)**

- A. `MyNamespace.MyClass1 objX = New MyNamespace.MyClass1;`  
`MyNamespace.MyClass2 objY = New MyNamespace.MyClass2;`
- B. `MyClass1 objX = New MyClass1;`  
`MyClass2 objY = New MyClass2;`
- C. `MyClass1 objX = New MyClass1;`  
`MyNamespace.MyClass2 objY = New MyNamespace.MyClass2;`
- D. `MyRootNamespace.MyClass1 objX = New MyRootNamespace.MyClass1;`  
`MyNamespace.MyClass2 objY = New MyRootNamespace.MyNamespace.MyClass2;`
- E. `MyRootNamespace.MyClass1 objX = New MyRootNamespace.MyClass1;`  
`MyRootNamespace.MyClass2 objY = New MyRootNamespace.MyClass2;`

**Answer: C, D**

The default namespace of an application is the application name. You can specify a different root namespace for an application by changing the Root namespace in the Property Pages dialog box. You may define classes under a namespace other than the application name by enclosing the class definitions within a Namespace statement. After a class is defined within a Namespace statement, the namespace must precede the class name in code. A class that is not defined within a Namespace statement may be referred to in code by its name alone or by preceding the class name with the root namespace. You do not have to specify the root namespace when referring to classes and namespaces that are defined within the application.

#### **QUESTION NO: 7**

**You have developed an educational ASP.NET application using C# that is running on your company's server. In the root directory of your application, the Web.config file contains the following XML structure:**

```
<allow roles="Managers, Executives" />  
<deny users="?" />
```

**The root directory of your application has one subdirectory named ManagersOnly. You want to allow only those users in the Managers role to access the ManagersOnly subdirectory. The Machine.config file contains the default authorization setting.**

**What action should you take to allow only users in the Managers role to access resources in the ManagersOnly subdirectory without changing the root directory's authorization settings? (Select the best choice.)**

- A. In the ManagersOnly subdirectory, modify the Web.config file's authorization settings to read as follows:

```
<allow roles="Managers" />
<deny users="*" />
```

- B. In the root directory, modify the Web.config file's authorization settings to read as follows:

```
<deny roles="Executives">
```

- C. Modify the Machine.config authorization settings to read as follows:

```
<allow roles="Managers" />
<deny users="?" />
```

- D. In the ManagersOnly subdirectory, modify the Web.config file's authorization settings to read as follows:

```
<allow roles="Managers, Executives" />
<deny roles="Executives" />
<deny users="?" />
```

**Answer: A**

To allow only users in the Managers role to access resources in the ManagersOnly subdirectory, you should modify the authorization settings of the Web.config file in the ManagersOnly subdirectory to read as follows:

```
<allow roles="Managers" />
<deny users="*" />
```

Authorization settings are established in the Machine.config and Web.config files. The Machine.config file, by default, authorizes all users to access all resources on the server. In this scenario, the Machine.config file should not be altered. Web.config files are placed in directories to control authorization for those directories and any subdirectories that do not contain a Web.config file. In this scenario, the authorization settings in the ManagersOnly subdirectory should be different than its parent directory; therefore, changes should be made only to the Web.config file in the ManagersOnly subdirectory.

**QUESTION NO: 8**

**Your application will allow users to delete records from a table named Widgets. The table contains a primary key named ComponentsID. Each row in Widgets has a related set of rows in a table named ComponentsTable. The ComponentsTable table also contains a column named ComponentsID. Whenever a row is deleted from Widgets, you want the corresponding row in ComponentsTable to be deleted automatically.**

**You have written the following code. (Line numbers are for reference purposes only.)**

```
01 Dim columnOne As DataColumn;
02 Dim columnTwo As DataColumn;
03 Dim myRelation As DataRelation;
04 columnOne = MyDataSet.Tables("Widgets").Columns("ComponentsID");
05 columnTwo = MyDataSet.Tables("WidgetDetails").Columns("ComponentsID");
06
```

07 MyDataSet.Relations.Add(myRelation)

**Which line of code should be placed in line 06? (Select the best choice.)**

- A. myRelation = New DataRelation(MyDataSet.Tables("Widgets"), columnOne, columnTwo);
- B. myRelation = New DataRelation("WidgetsWithComponents", columnOne, columnTwo);
- C. myRelation = New ForeignKeyConstraint(MyDataSet.Tables("Widgets"), columnOne, columnTwo);
- D. myRelation = New ForeignKeyConstraint("WidgetsWithComponents", columnOne, columnTwo);

**Answer: B**

The code myRelation = New DataRelation("WidgetsWithComponents", columnOne, columnTwo) should be placed in line 06. Data relationships constrain parent and child tables so that the deletion of a row in a parent table forces the related rows in the child table to be deleted as well. Creating a DataRelation object in a DataSet object automatically creates a ForeignKeyConstraint. You do not have to manually create a ForeignKeyConstraint to enforce referential integrity when you use a DataRelation object. Using DataRelation objects also allows you to easily access the child records defined by a DataRelation object in a dataset by using the GetChildRows method of the dataset.

#### **QUESTION NO: 9**

**You have written an ASP.NET application using C#, and you are ready to deploy it to a Web server. You will use a Windows Installer Web setup project to create an installation routine.**

**What action must you perform so that a virtual directory named BaldwinMuseumApp is created on the Web server?**

**(Select the best choice.)**

- A. In your application's Web.config file, create a custom attribute with the value of BaldwinMuseumApp.
- B. Set the VirtualDirectory property of the Web Application folder in the setup project to BaldwinMuseumApp.
- C. Change the name of the setup project to BaldwinMuseumApp.
- D. Create a merge module that will create the virtual directory.

**Answer: B**

To create a virtual directory named BaldwinMuseumApp on the Web server, you should set the VirtualDirectory property of the Web Application folder in the setup project to BaldwinMuseumApp. ASP.NET applications are identified by virtual directories; therefore, ASP.NET applications must reside in virtual directories. You may use the Windows Installer Web setup project to create an installation routine that will perform these tasks for you. To specify the virtual directory, click the Web Application folder in the File System Editor of the installation project. You will be able to type the virtual directory name in the VirtualDirectory property of the Properties window.

**QUESTION NO: 10**

Your company, StoreIt Inc has stored the text of several journals in a Microsoft SQL Server 7.0 database. Each sentence is stored in a separate record so that the text can be retrieved with the finest granularity. Several of these works are many thousands of printed pages in length. You are building a Web application that will allow registered users to retrieve data from these volumes. When a user of your Web application requests large amounts of text, your application must return it in the most efficient manner possible. How should you build the large String object that is required to provide the most efficient response to the user? (Select the best choice.)

- A. Use a **RichTextBox** object to hold the data as it is being concatenated.
- B. Use the **Append** method of the **String** class.
- C. Use the **String** class and the **&** operator.
- D. Use the **StringBuilder** class.

**Answer: D**

You should use the **StringBuilder** class to efficiently add data to strings. The .NET **String** data type is immutable; once created and given a value, the value cannot be changed. Because of this, the **String** class has no **Append** method. The concatenation operator **&** destroys the original string and creates a new string each time it is used. The creation and destruction of objects associated with the concatenation render the operator inefficient for repeated use. Using a **RichTextBox** object to hold the string data is impractical and does not provide the desired efficiency.

**QUESTION NO: 11**

You are the new software engineer at Clothes Inc. You are creating an ASP.NET application that will utilize an XML Web service provided from WoodBell Bank to verify credit card information. What steps should you perform in order for your application to communicate with the Web service? (Select 3 choices.)

- A. Use the **Wsd.exe** tool to create a proxy from the Web service.
- B. Use the **Vbc.exe** compiler to create an assembly from the Web service proxy.
- C. Place the compiled assembly of the proxy into the Global Assembly Cache.
- D. Place the compiled assembly of the proxy into the **\Bin** directory of your application.
- E. Place the compiled assembly of the proxy into the **\Debug** directory of your application.
- F. Use the **Sn.exe** tool to create a proxy from the Web service.
- G. Use the **InstallUtil.exe** tool to create a proxy from the Web service.
- H. Add an **@ Register** directive to the top of your application's code.
- I. Add an **@ WebService** directive to the top of your application's code.
- J. Add an **@ External** directive to the top of your application's code.

**Answer: A, B, D**

In order for your application to communicate with the Web service, you should use the **WSDL.exe** tool to create a proxy from the Web service, use the **VBC.exe** compiler to create an assembly from the Web service proxy and place the compiled assembly of the proxy into the **\Bin** directory of your application. The Web Services Description Language tool (**WSDL.exe**) generates a proxy that defines the methods that are exposed by the Web service. Be sure to specify the proper language with the **WSDL.exe** tool by using the **/language** switch. By compiling the proxy into an assembly, your application can instantiate a proxy class and access the Web service methods programmatically. ASP.NET application assemblies should reside in the **\Bin** subfolder. The **@Register** and **@WebService** directives are not required in order for your application to use the Web service.

**QUESTION NO: 12**

**You are creating an ASP.NET application that will authenticate truck drivers for drug tests. You want to prompt users for their user names and passwords.**

**Which type of authentication should you use in your application? (Select the best choice.)**

- A. Anonymous
- B. Basic and Digest
- C. Certificate
- D. Forms
- E. Windows integrated security

**Answer: B**

Basic and Digest authentication prompt users for their user names and passwords. Anonymous authentication is generally used in public Web applications that do not need to know the identity of the user. Certificate authentication uses a certificate from a third-party source. Forms authentication is a custom method of accepting and verifying a user's credentials.

**QUESTION NO: 13**

**TestKing's project team develops an order fulfillment ASP.NET application using C#. The application is hosted on a single server named TestKing1.**

**TestKing categorizes their customers by sales volume. They use three categories, in ascending order of volume, they are Bronze, Silver or Gold. Customer in higher categories pay lower prices. There seems to be an error evaluating customers' categories.**

**You are not able to initiate a debugging session, and the following entry is added to the Application event log on your computer: "DCOM got error 'General access denied error' from the computer TestKing1 when attempting to activate the server."**

**You need to enable remote debugging.**

**What should you do?**

- A. Add your user account to the Debugging Users group on TestKing1.
- B. Add your user account to the Power Users group on your client computer.

- C. Add your user account to the Power Users group on TestKing1.
- D. Add your user account to the Debugger Users group on your client computer.

**Answer: A**

The remote server must grant the debugger access. To grant access to a user, you must add the user to the Debugger User group on the server. This permission is required even if the debugger user is Administrator on the remote server.

#### QUESTION NO: 14

**You have developed a custom server control and have compiled it into a file named TestKingReport.dll. The code is displayed below:**

```
<%@ Register TagPrefix="TestkingTag" Namespace="ReportNS" Assembly="TestKingReport" %>
```

**You want to set the PageNumber property of the control to 77.**

**Which of the following lines of code should you include in your Web Form? (Select the best choice.)**

- A. < TestkingTag:ReportNS PageNumber="77" runat="server" />
- B. <myReport PageNumber="77" src="rptctrl" runat="server" />
- C. < TestkingTag:myReport PageNumber="77" runat="server" />
- D. <% Control TagName="myReport" src="rptctrl" runat="server" %>

**Answer: C**

You should include the syntax < TestkingTag:myReport PageNumber="42"

runat="server" /> in your Web Form so that your custom server control will appear on the form with the **PageNumber** property set to 77. Custom server controls can be created by deriving from an existing control, combining groups of controls together, or deriving from the **System.Web.UI.Control** namespace.

The **Register** directive allows you to include custom controls in Web Forms by using declarative syntax. The correct structure of the declarative syntax for custom web controls is *<tagprefix:tagname attributes=values runat="server" />*. The **tagprefix** is the alias given in the **Namespace** attribute of the **Register** directive. The **tagname** is the name of the public base class defined in the custom control. Public properties exposed by the control are set by attribute-value pairs. The **runat** attribute is always set to server because the control's code executes on the Web server. None of the other options represent valid syntax.

#### QUESTION NO: 15

**You need to install an online parcel tracking application and its supporting assemblies so that the application and its assemblies can be uninstalled using the Add/Remove Programs Control Panel applet? (Select the best choice.)**

- A. Use a Web installation package for the Web application. Use the Global Application Cache (GAC) utility, **GACUtil.exe**, to install the supporting assemblies into the GAC.
- B. Use Xcopy deployment for the Web application and its supporting assemblies.

- C. Use Xcopy deployment to deploy the Web application. Use merge modules to install the supporting assemblies.
- D. Use a Web installation package to install the Web application and the supporting assemblies.

**Answer: D**

You should use a Web installation package, such as Windows Installer, to install the Web application and the supporting assemblies so that the application and assemblies can be uninstalled using the **Add/Remove Programs** Control Panel applet.

#### **QUESTION NO: 16**

**You are writing code that will execute two commands, strCom1 and strCom2, within a transaction. You have written the following code. (Line numbers are for reference purposes only.)**

```
01 Dim transMain as SqlTransaction = connMain.BeginTransaction;  
02 Dim cmdMain as SqlCommand = New SqlCommand;  
03  
04 cmdMain.CommandText = strCom1;  
05 cmdMain.ExecuteNonQuery();  
06 cmdMain.CommandText = strCom2;  
07 cmdMain.ExecuteNonQuery();  
08 transMain.Commit;  
09 connMain.Close;
```

**Which of the following lines of code should be placed in line 03? (Select the best choice.)**

- A. transMain.Save;
- B. transMain.Rollback;
- C. cmdMain.Connection = connMain;
- D. cmdMain.Transaction = transMain;

**Answer: D**

A transaction is a group of commands that must either succeed or fail as a unit. Transactions are created from a **Connection** object's **BeginTransaction** method. When commands are issued within the context of a transaction, the transaction must be assigned to the **Transaction** property of a **Command** object. Otherwise, if the **Transaction** property of the **Command** object has not been set, then an exception will be thrown when the command attempts to execute.

#### **QUESTION NO: 17:**

**You are debugging an ASP.NET application using C# for TestKing Inc. Users will use the application to produce reports. Your application contains several Debug.WriteLine statements.**

**Which window in Visual Studio .NET should you use to inspect output from the Debug.WriteLine statements? (Select the best choice.)**

- A. Command
- B. Locals
- C. Output
- D. Breakpoints

**Answer: C**

You should use the **Output** window in Visual Studio .NET to inspect output from **Debug.WriteLine** statements. The output of **Debug** and **Trace** objects is directed to the **Output** window in Visual Studio .NET while an application is running in debug mode. The **WriteLine** method sends output to a **TraceListener**, which directs the output to the appropriate location.

#### **QUESTION NO: 18**

**You are debugging a client-side VBScript code for an online hotel booking system. While debugging a client-side VBScript code segment for a .NET Web Form, you encounter a bug in the logic of the script. You add a Stop statement to the top of the script block and start the application. When you click the button that starts the script, the Stop statement is ignored. What should you do to correct the problem? (Select the best choice.)**

- A. In Visual Studio .NET, choose **Options** from the **Tools** menu. In the **Edit and Continue** section within the **Debugging** folder, ensure that the **Enable Edit and Continue** option is selected.
- B. Write the script in JavaScript rather than VBScript.
- C. Use an **End** statement instead of a **Stop** statement.
- D. In Internet Explorer, choose **Internet Options** from the **Tools** menu. On the **Advanced** tab, ensure that the **Disable Script Debugging** check box is cleared.

**Answer: D**

In Internet Explorer, you should choose **Internet Options** from the **Tools** menu and ensure that the **Disable Script Debugging** check box on the **Advanced** tab is cleared in order to enable script debugging. **Edit and Continue** mode allows you to make changes to your source code while debugging an application. It is not necessary for **Edit and Continue** mode to be enabled in order to debug VB Script. Writing the script in JavaScript will not cause the breakpoint to behave differently. The **End** statement would cause the program to terminate; therefore, it is inappropriate for use in this situation.

#### **QUESTION NO: 19**

**You are creating an ASP.NET course registration application for the School of Renaissance Arts. This application queries a Microsoft SQL Server database and displays the results in a table. The process of querying the database and displaying the results sometimes takes several seconds to perform. You want the remaining objects to display while the data for the table is being retrieved. What action should you take to accomplish this goal? (Select the best choice.)**

- A. Do not specify a time-out in the database connection string.

- B. Place an **@ OutputCache** directive that specifies the **VaryByParam** attribute at the beginning of the Web Form.
- C. Place **@ OutputCache** tags around the code that queries the database.
- D. Create a Web user control that performs the database query for the Web Form. Cache the user control by using the **@ OutputCache** directive.

**Answer: D**

In order to display other objects on the Web Form without having to wait for the database query to return, you should create a Web user control that performs the database query for the Web Form, and you should cache the user control by using the **@ OutputCache** directive. The **@OutputCache** directive controls how a Web page or Web user control is cached. Caching can improve how quickly a Web page or parts of a Web page are displayed. The process of breaking a Web page into cached Web user controls is referred to as *fragment caching*. Fragment caching allows parts of a page that do not require much processing to appear before other parts that require greater server resources.

None of the other actions would produce the desired results. Placing an **@ OutputCache** directive at the beginning of the page would cache the whole page. **@ OutputCache** directives cannot be placed around sections of code. Not specifying a time-out in the database connection string would not cause the rest of the Web page to appear before the database query completed.

**QUESTION NO: 20**

**You are the software engineer for WoodySide Bank. One of the pages in an ASP.NET application contains the following declaration:**

```
<%@ Register Tagprefix="WoodySideBankControls"
Namespace="WoodySideBankNameSpace" Assembly="MyAssembly" %>
```

**The assembly named MyAssembly contains a custom server control named CSC1.**

**Which of the following code samples will properly render CSC1 on the Web page? (Select the best choice.)**

- A. <WoodySideBankControls:CSC1 id="Control1" runat="server" />
- B. <WoodySideBankNameSpace:CSC1 id="Control1" runat="server" />
- C. <WoodySideBankControls:Control1 id="CSC1" runat="server" />
- D. <WoodySideBankNameSpace:Control1 id="CSC1" runat="server" />

**Answer: A**

To render **CSC1** from the assembly declared as

```
<%@ Register Tagprefix="WoodySideBankControls" Namespace="WoodySideBankNameSpace"
Assembly="MyAssembly" %>
```

you should use the <WoodySideBankControls:CSC1 id="Control1" runat=server /> code sample. The syntax for instantiating a control should include the namespace alias declared in the **@ Register** directive, a unique identifier, any property or event settings and the **runat** attribute. The name of the control should be specified after the colon following the namespace alias. The **id** attribute gives the control a unique name that is used in code to refer to the control. The **runat** attribute must always have the value of **server**.

**QUESTION NO: 21**

**Which of the following are valid methods of the SqlTransaction class? (Select all choices that are correct.)**

- A. Commit
- B. Terminate
- C. Save
- D. Close
- E. Rollback

**Answer: A, C, E**

Valid methods of the **SqlTransaction** class include **Save**, **Commit** and **Rollback**. A transaction is a group of commands that must either succeed or fail as a unit. The **Commit** method posts all pending commands in the transaction to the database. The **Rollback** method cancels any pending commands in the transaction. The **Save** method establishes savepoints that are used to roll back a portion of a transaction.

**QUESTION NO: 22**

**You are developing an ASP.NET application for AmazingBooks Store. Your application will will run on multiple servers. You will be using session state to manage state information. You want to store session information in an out-of-process server.**

**Which of the following settings should you use in your Web.config file to configure the session state properly? (Select the best choice.)**

- A. <sessionState mode="Inproc" />
- B. <sessionState mode="Off" />
- C. <sessionState mode="Outproc" />
- D. <sessionState mode="StateServer" />

**Answer: D**

The correct setting you should use in your **Web.config** file to store session information in an out-of-process server is <sessionState mode="StateServer" />. Session state can be stored in one of three modes: in-process locally, out-of-process State Server and SQL Server. The session state mode is determined by the **mode** attribute of the **sessionState** element in the **Web.config** file. Valid values of the **mode** attribute are **SQLServer**, **Inproc**, **Off** and **StateServer**.

**QUESTION NO: 23**

**You have added a new Web page to your Web application to be used by all your suppliers. You need to create an XmlDocument object for use in this page.**

**Which of the following procedures will create an XmlDocument object in the newly added Web page? (Each choice describes a complete solution.) (Select all choices that are correct.)**

- A. Create the object with the line Dim xmlDoc As System.Xml.XmlDocument=CreateObject("XmlDocument").
- B. Create the object with the line Dim xmlDoc As System.Xml.XmlDocument=CreateObject("System.Xml.XmlDocument").
- C. Add the line Imports Xml to the top of the file.  
Create the object with the line Dim xmlDoc As XmlDocument = New XmlDocument().
- D. Create the object with the line Dim xmlDoc As System.Xml.XmlDocument = New System.Xml.XmlDocument().
- E. Create the object with the line Dim xmlDoc As Object = New XmlDocument().
- F. Add the line Imports System.Xml to the top of the file.  
Create the object with the line Dim xmlDoc As XmlDocument = New XmlDocument().

**Answer: D, F**

You can create an XML document by creating an instance of the **System.Xml.XmlDocument** class. You can explicitly include the **System.Xml** namespace in the object creation code, or you can import the namespace by using the **Imports** keyword at the top of the page. You must use the fully qualified namespace, **System.Xml**, with the **Imports** statement. The **CreateObject** function is used to create instances of COM objects.

#### **QUESTION NO: 24**

**You are a Web developer for TestKing. Testking has just merged with RealPass Inc. Now, you are required to perform migration of RealPass's ASP-based Web page named ProductsList.asp to ASP.NET. You want to deploy the ASP.NET version of your Web page with the minimum amount of development effort. You also want the migration to be accomplished as quickly as possible.**

**The page contains a COM component named TestKing.ProductsList. The component is written in Microsoft Visual Basic 6.0. When you open the new page, you receive the following error message: "Server error – The component 'TestKing.ProductsList' cannot be created."**

**You need to ensure that you can open the Web page successfully.**

**What should you do?**

- A. Write a manage component to perform the tasks that the TestKing.ProductsList component currently performs.
- B. Add the following line of code to the Page.Load event handler:
- C. RegisterRequiresPostBack("TestKing.ProductsList");
- D. Add the following attribute to the processModel element of the Web.config file:  
comImpersonationLevel = Delegate
- E. Set the AspCompat attribute of the Page directive to true.

**Answer: D**

If the older file contains calls to COM components — for example, ADO code then we must add the AspCompat attribute to the page directive in HTML view. The aspcompat attribute forces the page to execute in single-threaded (STA) mode.

**QUESTION NO: 25**

**You are a Web developer for TestKing. You have successfully completed a web based inventory system for TKWarehouse. Test users are complaining that certain modules are not responsive enough, since you inserted a new component.**

**Your immediate need is to ensure that your Web application displays correctly and has reasonable performance using Internet Explorer and Netscape browsers. What should you do?**

- A. Perform Unit tests.
- B. Perform Integration tests.
- C. Perform Regression tests.
- D. Perform Load tests.
- E. Perform platform tests.

**Answer: E**

Platform tests make sure that a Web application displays correctly and has reasonable performance using different browser and network connection configurations.

**QUESTION NO: 26**

**You are creating an ASP.NET application using C# in the Visual Studio .NET IDE to create financial reports for Nicemac Inc. Nicemac Inc will be upgrading its SQL 6.5 servers to Microsoft SQL 2000. You expect many users to use the application simultaneously. You want to optimize the response time when the users are retrieving data for the reports.**

**You create a procedure to retrieve the data from the database. You need to add code to the procedure to connect to the database.**

**Which code segment should you use?**

- A. `Dim connection1 As New OleDb.OleDbConnection(connString);`
- B. `Dim connection1 As New SqlClient.SqlConnection(connString);`
- C. `Dim connection1 As New ADODB.Connection();`
- D. `Dim connection1 As New SQLDMO.Database();`

**Answer: B**

We must use SqlConnections to connect to SQL Server with Version 7.0 and later.

**QUESTION NO: 27**

**John is creating a Web User Control to display financial information on a Web page. He wants the information in the Web User Control to be persisted between requests for the Web page.**

**What action should John take to ensure that the control will retain its data between page requests? (Select the best choice.)**

- A. Set the PersistState property of the Web User Control to True.
- B. Set the EnableViewState property of the Web User Control to True.
- C. Set the PersistState property of the Web User Control to False.
- D. Set the EnableViewState property of the Web User Control to False.

**Answer: B**

John should set the EnableViewState property of the Web User Control to True. This action will cause the Web User Control to maintain its state across HTTP requests. When a control's EnableViewState property is set to True, the control's data is passed between requests in a hidden field. Due to the performance penalty associated with EnableViewState, you should enable this property only when necessary. There is no PersistState property.

**QUESTION NO: 28**

**You are developing an ASP.Net application for an online wholesaler whose yearly revenues total US12 Million. The application is expected to serve hundreds of customers per day. You have a performance requirement that specifies that the server must respond within 5 seconds of a request and may have no more than 50 connections in the connection pool.**

**Which of the following connection strings specifies that? (Select the best choice.)**

- A. "user id=sa;password=alB2c3;initial catalog=MyDB;" \_  
& "data source=myServer;Connection Lifetime=5;" \_  
& "Max Pool Size=50";
- B. "user id=sa;password=alB2c3;initial catalog=MyDB;" \_  
& "data source=myServer;Connection Lifetime=50;" \_  
& "Min Pool Size=5";
- C. "user id=sa;password=alB2c3;initial catalog=MyDB;" \_  
& "data source=myServer;Connection Timeout=50;" \_  
& "Min Pool Size=5";
- D. "user id=sa;password=alB2c3;initial catalog=MyDB;" \_  
& "data source=myServer;Connection Timeout=5;" \_  
& "Max Pool Size=50";

**Answer: D**

The connection string

```
"user id=sa;password=alB2c3;initial catalog=MyDB;" _  
& "data source=myServer;Connection Timeout=5;" _  
& "Max Pool Size=50";
```

specifies that the server must respond within 30 seconds of a request and may have no more than 20 connections in the connection pool. The Connection Timeout parameter determines how many seconds should elapse before canceling the attempt. The Max Pool Size parameter determines the maximum number of connections allowed in a connection pool. The Min Pool Size parameter determines the minimum connections allowed in a connection pool. The Connection Lifetime parameter determines how many seconds should elapse before destroying a connection that has been returned to the connection pool.

#### QUESTION NO: 29

**You are creating an ASP.net application which lawyers are going to use to enter timesheet data intuitively. They will enter data using a data grid. You have added a button column to your data grid. The button column uses a custom button to allow users to initiate some calculations on the data in the grid.**

**Which event does the DataGrid control raise when the custom button is clicked? (Select the best choice.)**

- A. EditCommand
- B. OnClick
- C. ButtonClicked
- D. ItemCommand

#### Answer: D

The **ItemCommand** event is raised when any button is clicked in the **DataGrid** control.

The **DataGrid** control does not support an **OnClick** or **ButtonClicked** event. The **EditCommand** event is raised when the **Edit** button is clicked.

#### QUESTION NO: 30

**You are preparing to deploy a Web application for your client, Statespeed Airlines. The application requires, at a minimum, a Web server running Microsoft Windows XP Professional with 1 GB of RAM, 20 GB of free disk space, and Microsoft SQL Server 2000. You would like to deploy the application by using the smallest possible installation package.**

**The application uses a common assembly that is deployed with all applications created by your company. Three Microsoft SQL Server databases used by the application will be created during the installation process.**

**Based on the given information, which of the following features and options of Visual Studio .NET applications and Microsoft Windows Installer will be required to accomplish your goals? (Select 5 choices.)**

- A. a standard installation project
- B. the Custom Action Editor

- C. the Registry Editor
- D. a merge module
- E. a Cab file project
- F. Xcopy deployment
- G. the File System Editor
- H. a Web installation project
- I. the Launch Conditions Editor
- J. setting the deployment project's Bootstrapper option to None
- K. setting the deployment project's Bootstrapper option to Web Bootstrapper

**Answer: B, D, H, I, J**

Because the application is a Web application, the primary installation project will be a Web installation project rather than a standard installation project. The common assembly that is used by the application should be packaged as a merge module so that the assembly can be easily deployed with all of the applications that use it. The Launch Conditions Editor is used to ensure that the target computer meets the minimum requirements for the application. The Custom Action Editor is used to incorporate the database setup scripts into the deployment project. Finally, the **Bootstrapper** option should be set to **None** because the required bootstrapper files are distributed with Windows XP Professional, which satisfies the scenario's requirement that the application be deployed by using the smallest possible installation package.

The use of Cab files, the File System Editor, and the Registry Editor is not required to accomplish the desired results. In this scenario, you must create three databases during the deployment process; this eliminates the possibility of using Xcopy deployment, which does not provide the capability to create the required databases.

#### **QUESTION NO: 31**

**You are creating a Web application for la Zellé Computers Inc. Customers are to customize their PC using drop-down list boxes. When a value in any of these drop-down list boxes is changed, server-side code is invoked that validates the status of the value on the page. If several changes to these list boxes are made, then invoking the validation process as each change is made requires a great deal of time. You want to be able to make several changes, then click a button to run the server-side validation code. Which of the following actions should you take to quickly disable the server-side validation that occurs when a value in a drop-down list box is changed? (Select the best choice.)**

- A. Remove the SelectedIndexChanged event handlers from the DropDownList boxes.
- B. Set the AutoPostBack property of the DropDownList boxes to False.
- C. Set the EnableSessionState property of the Document object to False.
- D. Add a client-side script that inhibits the server-side code.

**Answer: B**

You should set the AutoPostBack property of the DropDownList boxes to False. The AutoPostBack property dictates whether a control's events are processed immediately by the Web server or deferred until another control, such as a command button, causes a postback to occur. Setting the AutoPostBack property to False will cause the processing of all events to be deferred until the designated submission button is clicked.

None of the other choices will prevent the list boxes from posting to the server. Client-side script cannot prevent the list boxes from posting when the AutoPostBack property of the list boxes is True. The EnableSessionState property of the Document object determines whether the page will maintain session state. Removing the SelectedIndexChanged event handlers would remove the validation code from behind each control and, therefore, is not an acceptable solution.

**QUESTION NO: 32**

**You have created an ASP.NET application that runs on your client's Web server. The web application allows its users to select online magazine subscriptions. One of the pages contains an HTML server CheckBox control that, when checked, displays a list of products in a ListBox control. You have set the AutoPostBack property of the check box to true so that the list box will immediately fill with data when the check box is clicked. Most users report that the application runs properly, but some users report that clicking the check box does not fill the list box with products.**

**Which of the following scenarios would result in the list box not updating when the check box is clicked on some users' browsers? (Select the best choice.)**

- A. Cookies have been disabled on some users' browsers.
- B. ActiveX control support has been disabled on some users' browsers.
- C. HTML version 4.0 or later is not supported by some users' browsers.
- D. Scripting has been disabled on some users' browsers.

**Answer: D**

ASP.NET applications rely on JavaScript to call server-side events. When scripting is disabled in a browser, an ASP.NET application will be unable to call any server-side event code. Because scripting has been disabled on some users' browsers in this scenario, the code to update the list box is never called. When a control's AutoPostBack property is set to true, a form post will occur when the control's Change event is raised. Change events do not normally cause a post to occur. Scripting must be enabled in browsers for the AutoPostBack property to function.

**QUESTION NO: 33**

**Your company has created an ASP.NET application. The application contains several buttons that help users navigate through the application. Everyone in your company uses Microsoft Internet Explorer version 5 or later.**

**Currently, focus moves to the first button on the form after any submit button is clicked. Many users would like focus to remain on the same button when it is clicked. Users would also like the scroll position to stay the same as they navigate between pages. For example, if a user has scrolled to the bottom of the page, then the user would like to continue to view the data at the bottom of the page after a postback. Which action should you take to implement these two suggestions? (Select the best choice.)**

- A. Set the AutoEventWireup attribute of the @ Page directive to true.
- B. Store the name of the button with focus and the page position in a Session object.
- C. Store the name of the button with focus and the page position in a hidden field.

D. Set the SmartNavigation attribute of the @ Page directive to true.

**Answer: D**

You should set the SmartNavigation attribute of the @ Page directive to true in order to retain focus on the clicked button and retain the scroll positions. SmartNavigation is only available for Internet Explorer 5 or later. Enabling the SmartNavigation feature implements the suggestions offered by the application's users and also eliminates flickering between pages.

The AutoEventWireup attribute, if set to true, causes Page events to automatically raise without explicitly coding event handlers. Visual Studio .NET will automatically create the code that will bind events when AutoEventWireup is true. Storing the button name and page position would not satisfy the scenario.

**QUESTION NO: 34**

**You have developed a Web control for Akepture Inc. that uses a custom class named CustomHTTPMessages. The CustomHTTPMessages class defines several custom message properties, including Error404Message, that are delivered to the users when various conditions are met within the Web control. An instance of CustomHTTPMessages is exposed as a property of the control named Messages. You want to set the Error404Message property of the Messages object to "Oh no! It's one of those day again. Click here to search our website."**

**Which HTML code segment will set the property correctly? (Select the best choice.)**

- A. `<my:WebControl id="AkeptureCtr" Messages-Error404Message="Oh no! It's one of those day again. Click here to search our website." ... / >`
- B. `<my:WebControl id="AkeptureCtr" CustomHTTPMessages-Error404Message="Oh no! It's one of those day again. Click here to search our website." ... / >`
- C. `<my:WebControl id="AkeptureCtr" Messages.Error404Message="Oh no! It's one of those day again. Click here to search our website." ... / >`
- D. `<my:WebControl id="AkeptureCtr" CustomHTTPMessages.Error404Message="Oh no! It's one of those day again. Click here to search our website." ... / >`

**Answer: A**

Properties of a public class that is contained in a control are referred to as

subproperties. ASP.NET uses hyphenated syntax, such as object-property to access subproperties. In this scenario, you should use the syntax Messages-Error404Message to set the property.

**QUESTION NO: 35**

**Your company's testing server has crashed due to hard disk failure. Your ASP.Net application is due by noon tomorrow. In order to quickly resume your testing, you have no choice but to use HARRISBURGPRODUCTIONSERVER\_01, one of the servers from your production server farm, as a test server. You remove HARRISBURGPRODUCTIONSERVER\_01 from production service and update its copy of your application with the latest code changes.**

**Later, some of your team members inform you that they are not getting enough error information from HARRISBURGPRODUCTIONSERVER\_01 when an error occurs in the application. Instead, they receive the custom error message that is intended for your end users. This custom message suppresses details about the error.**

**Which of the following steps should you take to provide your team with detailed error information? (Select the best choice.)**

- A. Set the value of the mode attribute of the <customErrors> tag in the Web.config file to On.
- B. Set the value of the mode attribute of the <customErrors> tag in the Web.config file to RemoteOnly.
- C. Set the value of the mode attribute of the <customErrors> tag in the Web.config file to Off.
- D. Set the value of the mode attribute of the <customErrors> tag in the Web.config file to 0.
- E. Set the value of the mode attribute of the <customErrors> tag in the Web.config file to 4.

**Answer: C**

You should set the value of the mode attribute of the <customErrors> tag in the Web.config file to off. This will prevent custom error processing from occurring, and the default error messages, which provide more detailed information, will be displayed to the users. None of the other choices will accomplish the desired result.

**QUESTION NO: 36**

**CitiCar Inc has just launched its latest sports car. For publicity, it is organizing a luckydraw. You are responsible for creating the ASP.NET application that will record each customer's entry. It is possible that thousands of entries could be posted at any given time. Your application will be hosted on a Web farm of twenty Web servers. As customers enter information into your application, maintaining state information will be important. This information should be stored securely and should be capable of being restored in the event that a Web server is restarted. Customers will enter data into three separate pages in your application.**

**Which of the following methods of storing state information should you use? (Select the best choice.)**

- A. View State
- B. Hidden fields
- C. State Server
- D. Application state
- E. SQL Server

**Answer: E**

ASP.NET applications should store session state by using Microsoft SQL Server when state data should be secure and capable of being restored after a Web server restart. Due to the stateless nature of HTTP-based applications, a method of storing state information between round trips must be implemented. Session state can be stored in one of three modes: in-process locally, out-of-process State Server and SQL Server. The session state mode is determined by the mode attribute of the sessionState element in the Web.config file. By storing session data in a SQL Server database, the data will not be lost when a server restarts.

Application state is shared by all sessions of an ASP.NET application, and, therefore, is not suited for this scenario. Data stored in View State or hidden fields is not considered secure. View State and hidden fields can also slow performance when passing large amounts of data between the browser and server. Using State Server mode satisfies most of the requirements of the scenario but cannot retain state information during a server restart.

**QUESTION NO: 37**

**As a software developer at ForwardThinking Inc., which specializes in parcel delivery. Because the shipping market is declining, the company wants to offer a new service to independent transportation brokers. Their system already caters to existing independent customers which are typically small businesses and individuals.**

**You are required to create an ASP.NET application using C# that uses role-based security to allow brokers to access only those pages that they are authorized to access. You use a Microsoft SQL Server database to manage the list of users and roles for the ASP.NET application. A table named Roles contains a column named RoleID and a column named RoleName. A table named Users contains a column named UserID, a column named UserName, and a column named Password. A table named UserRoles contains a column named UserID and a column named RoleID.**

**You need to create a stored procedure that returns all users who belong to a specific role. You write the following Transact-SQL code to define the stored procedure:**

```
CREATE PROCEDURE GetRoleMembers
@RoleID int
AS
```

**Which code segment should you use to complete the stored procedure?**

- A. 

```
SELECT UserRoles.UserID, Users.UserName
FROM Users
```
- B. 

```
SELECT UserRoles.UserID, Users.UserName
FROM UserRoles
INNER JOIN
Users On Users.UserID = UserRoles.UserID
WHERE UserRoles.RoleID = @RoleID
```
- C. 

```
SELECT UserRoles.UserID, Users.UserName
FROM UserRoles
```

```
INNER JOIN
Roles On UserRoles.RoleID = Roles.RoleID, Users
WHERE UserRoles.RoleID = @RoleID
```

D. 

```
SELECT Users.UserID, Users.UserName
FROM Users, UserRoles
INNER JOIN
Roles On UserRoles.RoleID = Roles.RoleID
WHERE UserRoles.RoleID = @RoleID
```

E. 

```
SELECT Users.UserID, Users.UserName
FROM Users, UserRoles
INNER JOIN
Roles On UserRoles.RoleID = Roles.RoleID
```

**Answer: B**

We need to join the UserRoles and the Users tables as we want to match the users with the roles of the users.

**QUESTION NO: 38**

**Your ASP.NET application displays student transcript data on a page. Users report slow loading. You want to improve performance by holding the page in memory on the server for one hour. You want to ensure that the page is flushed from memory after one hour, and that the page is re-created when the next request for the page is received.**

**What should you do?**

- A. Set the Name attribute of the OutputCache directive in the page.
- B. Initialize a new instance of the Cache class
- C. Initialize a new instance of the Timer class
- D. Set the Duration attribute of the OutputCache directive in the page.
- E. In the Web.config file, set the timeout attribute of the sessionState element.
- F. In the Web.config file, remove the timeout attribute of the sessionState element.

**Answer: D**

ASP.NET allows you to cache the entire response content for dynamic pages on HTTP 1.1 capable mechanisms, including browsers, proxy servers, and the origin Web server where your application resides. This provides a powerful way for you to increase the performance of your Web applications. Called output caching, it allows subsequent requests for a particular page to be satisfied from the cache so the code that initially creates the page does not have to be run upon subsequent requests.

**QUESTION NO: 39**

**You create an ASP.NET application for Buysell Inc. to facilitate online auctions. You need to ensure that every page displays the company name at the left hand side. Billy has already created a Web custom control that encapsulates the company name in a paragraph element. Your control class named BuysellLogo inherits from the Control class.**

**The following HTML code displays the company name:**

```
<p> Buysell Inc</p>
```

**You need to write code in the BuysellLogo class to display the company logo.  
Which code should you use?**

- A. Protected Overrides OnPreRender(ByVal e As \_  
System.EventArgs)  
{  
Me.Controls.Add \_  
(New LiteralControl("<p> Buysell Inc </p>"));  
}
- B. Protected Overrides RenderChildren(writer As \_  
System.Web.UI.HtmlTextWriter)  
{  
writer.Write("<p> Buysell Inc </p>");  
}
- C. Protected Overrides OnInit(e As EventArgs)  
Me.Controls.Add \_  
{  
(New LiteralControl("<p> Buysell Inc </p>"));  
}
- D. Protected Overrides Render(ByVal output As \_  
System.Web.UI.HtmlTextWriter)  
{  
output.Write("<p> Buysell Inc </p>");  
}

**Answer: D**

You create a rendered custom control's appearance by overriding the base class's Render method and writing to the method's output argument using the HtmlTextWriter utility methods. The most direct approach is to use the Write methods to add the HTML directly to the HtmlTextWriter.

**QUESTION NO: 40**

**You are creating an ASP.NET application. The application will be deployed on TestKing's intranet. TestKing uses Microsoft Windows authentication.**

**More than 150 users will use the ASP.NET application simultaneously. The project manager wants you to use connection pooling.**

**What should you do?**

- A. Add the following element to the authentication section of the Web.config file:  
`<allow users="?"/>`
- B. Use the Configuration Manager for your project to designate the user's security context.
- C. Write code in the Application\_AuthenticateRequest event handler to configure the application to run in the user's security context.
- D. Add the following element to the system.web section of the Web.config file:  
`<identity impersonate="true"/>`

**Answer: B**

By impersonating, we can pool connections. The <identity> element controls the application identity of the Web application. By setting the impersonate attribute to true we ensure that the application is run in the security context of the user.

#### **QUESTION NO: 41**

**You are creating an ASP.NET application that will run on your company's intranet. You want to control the browser window and respond immediately to non-post-back events. Which should you use?**

- A. Server-side code
- B. Use the Browser object's VBScript or JavaScript properties to test if the browser can run scripts
- C. Use the Browser object's Cookies
- D. Client-side scripts

**Answer: D**

Client-side scripts let you control the browser window, respond immediately to non-post-back events, and perform other tasks that are not possible from server-side code.

#### **QUESTION NO: 42**

**You create an ASP.NET page for TKOnlineLibraries Inc. Customers of TKOnlineLibraries Inc. use Internet Explorer 5 and above.**

**You want the pop-up window to display text that identifies the author of the book.**

**What should you do?**

- A. For each image, set the AlternateText property to specify the text you want to display, and set the ToolTip property to **True**.
- B. In the onmouseover event handler for each image, add code that calls the RaiseBubbleEvent() method of the System.Web.UI.WebControls.Image class.

- C. In the onmouseover event handler for each image, add code that calls the ToString() method of the System.Web.UI.WebControls.Image class.
- D. For each image, set the ToolTip property to specify the text you want to display.

**Answer: D**

WebControl.ToolTip property gets or sets the text displayed when the mouse pointer hovers over the Web server control. The use of the ToolTip property meets the requirement of this scenario.

**QUESTION NO: 43**

**You develop a Web application used by TKSouvenirs' Purchasing Department executives that generates many types of reports. One type displays billing information over specified timeframes. You must ensure that this report is generated with minimum network traffic. What should you do?**

- A. Use Microsoft SQL Server indexes to optimize the data calculations
- B. Implement the calculations in a business layer class
- C. Implement the calculations in a data layer class
- D. Use Microsoft SQL Server stored procedures for the data calculations

**Answer: D**

When SQL statements and conditional logic are written into a stored procedure, they become part of a single execution plan on the server. The results do not have to be returned to the client to have the conditional logic applied; all of the work is done on the server.

**QUESTION NO: 44**

**You are creating an ASP.NET application using C# for a courier company. Using the new system, customers can query the status of their shipment by using a Web browser.**

**Another development team creates a delivery vehicle scheduling component that will be used by your ASP.NET application. The component requires several registry entries to be created during installation so that the component will run properly. The same component might be used by other ASP.NET applications in the future.**

**You need to create a deployment package for your application. You want to include the redistributable component with your deployment package.**

**What should you do?**

- A. Create a setup project for the redistributable component.  
Create a Web setup project for your ASP.NET application.
- B. Create a merge module project for your ASP.NET application.  
Create a setup project for redistributable component and add the merge module for your ASP.NET application to the project.

- C. Create a merge module project for the redistributable component.  
Create a Web setup project for your ASP.NET application and add the merge module for the redistributable component to the project.
- D. Create a merge module project for both your ASP.NET application and the redistributable component.  
Create a Web setup project and add both merge modules to the project.

**Answer: C**

We create a merge module for the redistributable component. We then integrate the merge module into the Web setup project.

**QUESTION NO: 45**

**You create an ASP.NET application for an online payment company, FastPay Inc. The application provides account management functionality.**

**A page named AccountWithdrawal.aspx contains a method named WithdrawFunds. The WithdrawFunds method is defined in the following code segment. (Line numbers are included for reference only.)**

```
1 Private Double WithdrawFunds(Double Amount) _  
2 {  
3     m_dAcctBal -= DblAmt  
4     Return m_dAcctBal  
5  
6 }
```

**Your company's policy requires you to have the ability to enable the instrumentation after deploying it to production without requiring the application to be rebuilt.**

**Which code should you insert at line 2 of the code segment?**

- A. `Debug.Assert(m_dAcctBal - DblAmt >=0, _  
 "Insufficient funds for withdrawal.");`
- B. `Debug.WriteLineIf(m_dAcctBal - >=0, _  
 "Insufficient funds for withdrawal.");`
- C. `Trace.WriteLineIf(m_dAcctBal - DblAmt >=0, _  
 Insufficient funds for withdrawal.);`
- D. `Trace.Assert(m_dAcctBal - DblAmt >=0, _  
 "Insufficient funds for withdrawal.");`

**Answer: D**

As we want the ability to enable the instrumentation after deployment we must use tracing. The `Trace.Assert` statement will stop the execution and display the message when the condition is appropriate.

**QUESTION NO: 46**

**You are creating an ASP.NET application for an online Test Center for TestKing.**

**After the user ends the test, the application needs to submit the answers to the ProcessTestAnswers.aspx page without the user's knowledge. The ProcessTestAnswers.aspx page processes the answers but does not provide any display information to the user.**

**When the processing is complete, PassFailStatus.aspx displays the results to the user.**

**You need to add a line of code to PassFailStatus.aspx to perform the functionality in ProcessTestAnswers.aspx. Which line of code should you use?**

- A. `Server.Execute("ProcessTestAnswers.aspx") ;`
- B. `Response.Redirect("ProcessTestAnswers.aspx") ;`
- C. `Response.WriteFile("ProcessTestAnswers.aspx") ;`
- D. `Server.Transfer("ProcessTestAnswers.aspx", True) ;`

**Answer: A**

The `HttpServerUtility.Execute` method executes a request to another page using the specified URL path to the page. The `Execute` method continues execution of the original page after execution of the new page is completed.

**QUESTION NO: 47**

**You are the new programmer for an ASP.NET application for NorthSouthTraders. NorthSouthTraders operates retail stores in 16 countries worldwide. The company sells a wide variety of furniture, dining and kitchen goods, bath end bedding accessories and other specialty items for the home. Products are delivered to retail stores from regional distribution centers.**

**This application displays information about products that the NorthSouthTraders sells. The application uses a Microsoft SQL Server database. You have just made some changes to accommodate new features into the application.**

**(Line numbers included for reference only.)**

```
01 SqlCommand cmd1 = new SqlCommand("SELECT * FROM "_"
   & "Products", con;
02 SqlDataReader dr1;
03 dr1 = cmd1.ExecuteReader();
04 Products.DataTextField = "ProductName";
05 Products.DataValueField = "ProductID";
06 Products.DataSource = NorthSouthTraders1;
07 Products.DataBind();
08 SqlDataReader dr2;
09 cmd1.CommandText = "SELECT * FROM Category";
10 dr2 = cmd1.ExecuteReader();
11 Category.DataTextField = "CategoryName";
12 Category.DataValueField = "Category ID";
```

```
13 Category.DataSource = NorthSouthTraders2;  
14 Category.DataBind();
```

**During regression testing, the page raises an invalid operation exception. You need to ensure that the page displays correctly without raising an exception. What should you do?**

- A. Add the following code between line 07 and line 08 of the code segment:  
`NorthSouthTraders1.Close()`
- B. Replace the code for line 03 of the code segment with the following code:  
`NorthSouthTraders1.ExecuteReader(CommandBehavior.CloseConnection)`
- C. Replace the code for line 09 and line 10 of the code segment with the following code:  
`Dim cmd2 as New SqlCommand"SELECT * FROM Category", con)`  
`NorthSouthTraders2 = cmd2.ExecuteReader()`
- D. Remove the code for line 07 of the code segment.  
Replace the code for line 14 of the code segment with the following code:  
`Page.DataBind()`

**Answer: A**

You must explicitly call the Close method when you are through using the SqlDataReader to use the associated SqlConnection for any other purpose.

#### **QUESTION NO: 48**

**You create an ASP.NET application named TKFabricsRetailer for TKFabricsRetailer Inc. The application has a page named ProductDetails.aspx. This page is located in a virtual directory named ProductsCatalog, which is a child of the TKFabricsRetailer root directory. ProductDetails.aspx uses cookies to track modifications to the product's details so that the company users can undo modifications if necessary.**

**You deploy your application on a computer named FabricSrv. Users report that the undo functionality stops working after they execute a specific sequence of actions. You need to view the cookie values after the sequence of actions to help identify the cause of the problem.**

**You add the following element to the Web.config file:**

```
<trace enabled="true" pageOutput="false"/>
```

**You want to display the trace output information on your client computer. Which URL should you use?**

- A. `HTTP:// FabricSrv /TKFabricsRetailer/ProductsCatalog/ProductDetails.aspx?Trace=true`
- B. `HTTP:// FabricSrv /TKFabricsRetailer/ProductsCatalog/ProductDetails.aspx?trace.axd`
- C. `HTTP:// FabricSrv /TKFabricsRetailer/ProductsCatalog/ProductDetails.aspx`
- D. `HTTP:// FabricSrv /TKFabricsRetailer/ProductDetails.aspx?trace.axd`
- E. `HTTP:// FabricSrv /TKFabricsRetailer/ProductDetails.aspx?trace.axd`
- F. `HTTP:// FabricSrv /TKFabricsRetailer/trace.axd`

**Answer: F**

Trace.axd is an Http Handler that we can use to request application trace details. To use trace.axd, simply request trace.axd in the same application directory, not the virtual directory, that the request for the sample application was made. The output provided by tracing view, either through Trace.axd or on a page, provides six sections of detail:

**QUESTION NO: 49**

**You create an ASP.NET application for Regalia Bank. The project manager requires a standard appearance for all Web applications. Standards are expected to change periodically. You need to enforce these standards and reduce maintenance time.**

**What should you do?**

- A. Create a Microsoft Visual Studio .NET Enterprise template.
- B. Create a sample HTML page.
- C. Create a sample ASP.NET Web form.
- D. Create a cascading style sheet.

**Answer: D**

Cascading style sheet helps us maintain standards and reduce maintenance time

**QUESTION NO: 50**

**BizFlier Airlines uses an external vendor to provide flight scheduling services. Fifteen dedicated terminals communicate with the vendor's mainframe computer. As part of your company's plan to phase out the terminals, you are in charged of building an ASP.NET application that communicates with the Web service provided by the external vendor. Your application builds a DataSet object, dsBizFlier, from data that is received from the Web service. The contents of the dataset are displayed in a DataGrid control. Users of your application are able to modify the data in the data grid. After a user has finished modifying data, the user can submit the data changes to the Web service by clicking a button. When the button is clicked, a new DataSet object named dsMod should be created and filled with only the modified rows of dsBizFlier. The data in dsModified will be sent to the Web service.**

**Which of the following lines of code should you use to fill dsModified with modified rows from dsBizFlier? (Select the best choice.)**

- A. dsBizFlier.Fill(dsModified);
- B. dsModified = dsBizFlier.Copy(DataRowState.Modified);
- C. dsModified = dsBizFlier.GetChanges();
- D. dsBizFlier.Fill(dsModified, DataRowState.Modified);

**Answer: C**

You should use the code `dsModified = dsBizFlier.GetChanges()` to fill the `dsModified` dataset with rows that have been modified in the `dsBizFlier` dataset. The `GetChanges` method returns a copy of the dataset that includes only the rows that have been modified since the last `AcceptChanges` method was called. The `GetChanges` method can also be filtered by specifying a member of the `DataRowState` enumeration. For example, the code `dsModified = dsBizFlier.GetChanges(DataRowState.Added)` will return only the rows that have been added to the `dsBizFlier` dataset.

#### QUESTION NO: 51

**Your team builds a daily release of your new online loan processing application for testing by the quality assurance(QA) team. You find that the volume of bugs is threatening your project schedule. The following example is a typical bug:**

- **Unit tests reveal errors in the Dataset object.**

**You need to write code that will handle errors in the DataSet object. You want to see the errors that may exist in any of the rows in the dataset. You have written the following code. (Line numbers are for reference only.)**

```
01 Dim drErrors As DataRow, iIndex as Integer
02 If myDataSet.Tables("Table1").HasErrors Then
03
04 For iIndex = 0 to drErrors.GetUpperBound(0)
05 Console.WriteLine(drErrors(iIndex).RowError)
06 Next
07 End If
```

**Which of the following lines of code should reside on line 03? (Select the best choice.)**

- A. `drErrors = myDataSet.Tables("Table1").GetErrors();`
- B. `drErrors = myDataSet.Clone();`
- C. `drErrors = myDataSet.Tables.Clone();`
- D. `drErrors = myDataSet.Clone.GetErrors();`

#### **Answer: A**

The code that should reside on line 03 is `drErrors = myDataSet.Tables("Table1").GetErrors`. The `GetErrors` method of the `DataTable` class returns an array of `DataRow`s that contain errors. The `HasErrors` property on line 02 returns a `True` value if the table contains errors. If the dataset in this scenario, `myDataSet`, contained more than one table, it would have been more efficient to check the `HasErrors` method of the dataset rather than checking the `HasErrors` method of each table. None of the other choices should be placed on line 03 because they would not return the rows containing errors.

#### QUESTION NO: 52

**You are developing an ASP.Net application which provides course scheduling and course registration in a project module named `TkCourseManagement`. Your solution will consist of a new administrative application and associated user applications. You are now performing unit tests. You attempt to step into**

**a call to the RegisterStudents() method. Instead of showing the first line of code in the RegisterStudents() method, the interactive debugger moves to the next line of code in the .aspx page.**

**You need to enable interactive debugger to step into the code within the Assets class.**

**What should you do in Visual Studio .NET?**

- A. Configure Visual Studio .NET to enable just-in-time debugging for native programs.
- B. In the Configuration Manager, select the Debug configuration and rebuild the TkCourseManagement project.
- C. Configure Visual Studio .NET to allow editing of Visual Basic files while debugging.
- D. In the Configuration Manager, select the Debug configuration and rebuild the ASP.NET application.

**Answer: B**

You must build the Debug version of the class library first and make sure the Debug version is in the location where the application expects to find it.

#### **QUESTION NO: 53**

**You create an online ordering ASP.NET application for Healthlife Inc. Healthlife manufactures and sells health supplements on a whole sale basis to more than 5,000 customers. You need to store a small amount of page-specific information on pages that are submitted to the server. This information does not need to be secured. A few customers report that they are unable to check out successfully. You anticipate that the volume of orders on the site will be high, and you need to conserve server resources.**

**What should you do?**

- A. Store the information in application state variables.
- B. Store the information in session state variables.
- C. Store the information in a Microsoft SQL Server database.
- D. Store the information in hidden fields on the page.

**Answer: D**

**Explanation:** Hidden fields must be used in this situation since some customers may have disabled cookies.

The advantages of hidden fields are

- No server resources are required. Server resources will be conserved.
- Broad support will work on browsers that do not support cookies.

#### **QUESTION NO: 54**

**You are creating an ASP.NET page that displays inventory figures for selected products of Duraware. Data is stored in a Microsoft SQL Server database named DurawareDB. The identification number of an item is stored in a string variable named ItemID, and the SQL statement for your query is stored in a variable named SQL.**

**You use the following line of code to construct the SQL query:**

```
SQL = "SELECT SupplierID, RangeID, ReorderID, UnitsOnHand, UnitsSold FROM InventoryTable"
```

```
+ " WHERE ProductID = " + ItemID;
```

**You want to assign the UnitsOnHand quantity to a variable named DurawareOnHand, Which line of code should you use?**

- A. `DurawareOnHand = reader.GetInt16(0);`
- B. `DurawareOnHand = reader.GetInt16(1);`
- C. `DurawareOnHand = reader.GetInt32(1);`
- D. `DurawareOnHand = reader.GetInt32(3);`

**Answer: D**

The SQL Server datatype **int** corresponds to 32-bit Visual Basic .NET integers. We must therefore use the `GetInt32` method which gets the value of the specified column as a 32-bit signed integer. We must specify the 3<sup>rd</sup> column as we want to retrieve the value of the UnitsOnHand column which is listed first in the SQL `SELECT` statement. The `GetInt32` parameter, which specifies the ordinal of the column, is 0 based. We should use the 3 value of the parameter to retrieve the appropriate column.

#### **QUESTION NO: 55**

**You are creating an ASP.NET application for your company TestKing. TestKing data is stored in a Microsoft SQL Server 6.5 database.**

**The Web application enables supervisors to use the Internet to perform the following actions:**

- **Add and remove new helpdesk executives from the list of employees on job probation.**
- **For helpdesk executive, view a summary of calls answered to date.**
- **For each call, view details.**

**What should you do?**

- A. Use a `SqlConnection` object to connect to the database, and use a `SqlCommand` object to run a stored procedure that returns the data.
- B. Use an `OleDbConnection` object to connect to the database, and use an `OleDbCommand` object to run a stored procedure that returns the data.
- C. Configure SQL Server to support HTTP access, and create an XML template to run a stored procedure that returns the data in XML format.
- D. Use COM interop to create an `ADODB.Connection` object, and use an `ADODB.Command` object to run a SQL statement that returns the data.

**Answer: B**

**Explanation:** We need to use an `OleDbConnection` to connect to SQL Server Version 6.5 (or earlier).

#### **QUESTION NO: 56**

**You are creating an ASP.NET application for Transnational Movers Inc. Transnational Movers Inc will be using an XML Web service that their shipping partner has implemented. You have access to the XML Web service.**

**You want to create a class that calls the XML Web service.**

**What should you do?**

- A. Select Add Web Service from the Project menu in Visual Studio .NET and browse to the XML Web service.
- B. Select Add Reference from the Project menu in Visual Studio .NET and browse to the XML Web service.
- C. Select Add Web Reference from the Project menu in Visual Studio .NET and browse to the XML Web service.
- D. Run the Type Library Importer (Tlbimp.exe) and provide it with the URL for the XML Web service.
- E. Run the Web Services Discover tool (Disco.exe) and provide it with the URL for the XML Web service.

**Answer: C**

**Explanation:** You can add a Web reference to projects that use XML Web services that are published on the Internet or on your local Web servers.

**To add a Web reference to a project**

- 1. In **Solution Explorer**, select a project that supports adding Web references.
- 2. On the **Project** menu, choose **Add Web Reference**.
- 3. In the **Add Web Reference** dialog box, type the URL for the XML Web service in the **Address** text box, and then choose the **Arrow Icon**.
- 4. Verify that the items in the **Available References** box are the items you want to reference in your project, and then choose **Add Reference**.
- 5. In **Solution Explorer**, expand the **Web References** folder to note the namespace for the Web reference classes that are available to the items in your project.

**QUESTION NO: 57**

**You are creating an ASP.NET page for TestKing Test Center. You create a DataGrid control that displays past exams taken by customers. The DataGrid control is populated from an existing database when the page is created.**

**The page contains TextBox controls that allow customers to update their personal information, such as address and telephone number.**

**You need to ensure that the page is refreshed as quickly as possible when users update their contact information.**

**What should you do?**

- A. Set the Enable property of the DataGrid control to false.
- B. Write in the Page.Load event handler that populates the DataGrid control only when the IsPostBack property of the page is true.
- C. Set the EnableViewState property of the DataGrid to false.
- D. Write code in the Page.Load event handler that populates the DataGrid control only when the IsPostBack property of the page is false.

**Answer: B**

**Explanation:** The Page.IsPostBack property gets a value indicating whether the page is being loaded in response to a client postback, or if it is being loaded and accessed for the first time. The value is true if the page is being loaded in response to a client postback; otherwise, false. By adding code in the Page Load event handler that populates the Data Grid control when the IsPostBack property is true we ensure that the page is refreshed as quickly as possible.

**QUESTION NO: 58**

**You are creating a new ASP.NET page named TranscriptInfo that displays student transcript information for their subjects. When a student logs on to the Web site, the page retrieves the current subjects from a database. GradesList will be accessed by several thousand students.**

**When transcript data is retrieved for a user, the grades remain valid for as long as the user continues to access the page. Users are allowed to keep the data for a semester.**

**When GradesList is posted back to the server, you want to ensure that the grade listing was not altered on the user's computer. You also want to minimize the memory resources consumed on the Web server.**

**Which three parameters should you add to the Page directive in ItemList? (Each correct answer presents part of the solution. Choose three)**

- A. EnableSessionState="True"
- B. EnableSessionState="False"
- C. EnableSessionState="ReadOnly"
- D. EnableViewState="True"
- E. EnableViewState="False"
- F. EnableViewStateMac="True"
- G. EnableViewStateMac="False"

**Answer: B, D, F**

**Explanation:**

To minimize the memory resources consumed on the Web server we need to use view state instead of session state. Setting EnableViewState to true will only cost us bandwidth, not memory resources.

**QUESTION NO: 58**

**You are contracted to create an ASP.Net web site for TKPowerLight Inc. TKPowerLight Inc is a large regional provider of electrical services for residential and business customers. The database stores and manipulates data in a Microsoft SQL Server database TKPowerLightDB. One of the pages in the application will be used for performing month-end operations to calculate the electricity bill of customers.**

**When a user clicks a button on the page, you want your code to run several stored procedures to calculate the month-end balances. These procedures must all succeed before the calculated balances can**

**be stored in the database. If any of the procedures fail, then you do not want to store any of the month-end calculated balances. While the procedures are running, you do not want any users to be able to edit, add, or delete the tables affected by the procedures.**

**What should you do?**

- A. Set the IsolationLevel property of a SqlTransaction object to IsolationLevel.Serializable.  
Assign the SqlTransaction object to the Transaction property of the SqlCommand object.  
Use a SqlCommand object to run the stored procedures.
- B. Create a class derived from System.EnterpriseServices.ServicesComponent to run the stored procedures.  
Annotate the class by using a TransactionAttribute type of attribute.  
Set the Value property of the attribute to **TransactionOption.RequiresNew**.
- C. Create a master stored procedure.  
Use this master stored procedure to call the other stored procedures that perform the month-end operations.  
Add WITH REPEATABLE READ to the master stored procedure.
- D. Use structured exception handling to catch a SqlException if one of the stored procedures fails.  
Use the Procedure property of the SqlException to identify which stored procedure generated the exception, and call a stored procedure to reserve the previous calculations.

**Answer: A**

We should use a Transaction to ensure that either all stored procedures will succeed or if one stored procedure fails, the whole transaction will be backtracked. Furthermore, in order to protect the data in tables during the transaction, we should use the highest transaction isolation level of Serializable. We use a SqlCommand object to run the stored procedure. We set the Transaction property of the SqlCommand to the SqlTransaction object we created.

#### **QUESTION NO: 59**

**You are creating an ASP.NET page for selling intercity airline flights tickets. Users select a region, and then they select from a list of cities in that region. The site displays the names and locations of airports in the city selected by the user.**

**Your company, TestKingFlyAway Inc, maintains a list of airports in a database table that includes the city, airport name, and airport code of each airport. You want to minimize the time required to retrieve and display the list of airport names after a user selects the region and city.**

**What should you do?**

- A. Modify the connection string to add the packet size property and set its values to 8192.
- B. Add the following directive to the page:  
`OutputCache VaryByControl="region;city"`
- C. Modify the connection string to keep your database's connection pool as small as possible.
- D. Add the following directive to the page:  
`OutputCache VaryByParam="city"`

**Answer: D**

You can vary user control output to the cache by specifying the user control name and the parameter. We use the VaryByParam attribute of the @ OutputCache

**QUESTION NO: 60**

**You are creating an ASP.NET application using C# for ShalomInc. ShalomInc is an international hotel resort which has just acquired LebanonResorts Inc. Your application must consolidate data with a few requirements. The new application will be used to identify potential customers.**

**Your application will call an XML Web service run by LebanonResorts Inc. The XML Web service will return an ADO.NET DataSet object containing a list of companies that purchase wine. You want to merge this DataSet object into a DataSet object containing a list of companies that are potential customers.**

**You specify LebanonResorts as the name of the DataSet object from LebanonResorts Inc, and you specify customerProspects as the name of the DataSet object containing potential customers. After the data merge, ShalomInc will include the company names in LebanonResorts.**

**The two DataSet objects contain tables that have the same names and primary keys. The tables in the two DataSet objects contain columns that have the same names and data types. A table in LebanonResorts also contains additional columns that you do not want to add to ShalomInc. If ShalomInc included any tables containing rows with pending changes, you want to preserve the current values in those rows when the merge occurs.**

**Which line of code should you use to merge the LebanonResorts DataSet object into ShalomInc DataSet object?**

- A. ShalomInc.Merge (LebanonResorts, true, MissingSchemaAction.Ignore);
- B. ShalomInc.Merge (LebanonResorts, true, MissingSchemaAction.AddWithKey);
- C. LebanonResorts.Merge (ShalomInc, true, MissingSchemaAction.Ignore);
- D. LebanonResorts.Merge (ShalomInc, true, MissingSchemaAction.Add);

**Answer: A**

The DataSet.Merge (DataTable, Boolean, MissingSchemaAction) method merges this DataTable with a specified DataTable preserving changes according to the specified argument, and handling an incompatible schema according to the specified argument.

As we want to merge the DataSets into the LebanonResorts DataSet we should apply the merge method on LebanonResorts.

The Ignore MissingSchemaAction ignores the extra columns. This meets the requirement not to add the extra columns from the table in LebanonResorts that contains additional columns.

**QUESTION NO: 61**

**You are creating a localized ASP.Net website to be used by your customers in Prague, Hamburg, Pennsylvania, Beijing and London. You need to determine which satellite assembly is used to load localized resources.**

**Which of the following should you use in your application? (Select the best choice.)**

- A. Set the culture and uiCulture attributes of the globalization element in Web.config
- B. Set the CurrentCulture property
- C. Use the Thread class's CurrentUICulture
- D. Use the Request object's UserLanguages

**Answer: C**

We must use the Thread class's CurrentUICulture to determine which satellite assembly is used to load localized resources.

**QUESTION NO: 62**

**DayStar Inc has posts important notices on its intranet website. Information includes the company's current stock price, corporate announcements, business-related news items, and recognition of employee birthdays and service anniversaries. The website is shut down at midnight for backup. The daily information must be extracted from a database and stored in an XML file each day. This should be done before the home page is displayed to the first user who accesses the intranet application.**

**In which file should you place the code that will build this XML file? (Select the best choice.)**

- A. the Global.asax file
- B. the AssemblyInfo.vb file
- C. the Web.config file
- D. the application's startup form

**Answer: A**

You should place the code to build the XML data file in the Global.asax file. The Global.asax file contains application-level and session-level event handlers. The Application\_OnStart event handler is called each time the application is started, which occurs daily the first time a page of the application is opened. If the code were placed in the application's startup form, then the file would be recreated each time a new user accessed the application. The Web.config file has no mechanism for creating an XML data file. The AssemblyInfo.vb file is typically used to hold an application's global attributes.

**QUESTION NO: 63**

**CustomCompo Inc sells customized server controls for ASP.Net using C#. You are developing a custom server control that will be used by your customers' ASP.NET applications. Your control contains a TextBox control. Your custom control will allow developers to set properties of the text box, such as ForeColor, Font, and BackColor.**

**Which of the following actions should you take to allow ASP.NET applications to access the text box's properties? (Select the best choice.)**

- A. Declare the text box as Public myTextBox as TextBox.
- B. Create a public field for each exposed text box property.
- C. Declare a namespace.

D. Create a public property for each exposed text box property.

**Answer: D**

**QUESTION NO: 63**

**Which of the following lines of code will cause a compilation error? (Select all choices that are correct.)**

- A. Session("MyVal")=777;
- B. Session("MyVal").Contents=777;
- C. Session.Contents("MyVal")=777;
- D. Session.Add("MyVal")=777;
- E. Session.Contents.Add("MyVal")=777;

**Answer: B, E**

Only choices a, c and d are correct. Values can be stored in a **Session** object either by calling the **Add** method or by stating a key/value pair. The following lines of code will both add the value **99** to a key name of **MyVal**:

Session("MyVal")=777

Session.Add("MyVal")=777

The **Contents** property of the **Session** object provides compatibility with previous versions of ASP. The code Session.Contents("MyVal")=99 is also a valid method of adding the value **99** to a key name of **MyVal**.

**QUESTION NO: 64**

**Your ASP.NET application manages order entry data by using a DataSet object named TKorderEntry. You are creating a Transact-SQL statement that will return the value of an Identity column in the OrderEntry table.**

**Which T-SQL function should you use in your query to determine the value of the Identity column? (Select the best choice.)**

- A. IDENT\_SEED
- B. DATALENGTH
- C. IDENT\_INCR
- D. SCOPE\_IDENTITY

**Answer: D**

The T-SQL function that you should use in your query to determine the value of the Identity column is SCOPE\_IDENTITY. The SCOPE\_IDENTITY function returns the value of the Identity column of the row that was most recently added to a table. Identity columns are columns that contain a unique number and are used to uniquely identify each row. By using this value as an output parameter in an INSERT stored procedure, it is possible to automatically update datasets with the value of Identity or Autonumber columns in scenarios where multiple users will be inserting rows into the same table.

**QUESTION NO: 65**

You are developing an ASP.Net application for customers of BlueSky International Airlines to view their reservations.

You want the FlightNumber field to be displayed in the first <td> element of the table of information fields. You need to add code to the <td> element of the table to display the FlightNumber.

Which code should you use?

- A. `<td><%=FlightNumber%></td>`
- B. `<td><script runat="server">FlightNumber</script></td>`
- C. `<td><script>document.write("FlightNumber");</scripts></td>`
- D. `<td>=FlightNumber</td>`

**Answer: A**

**Explanation:** FlightNumber is a public property contained on the Web server. We reference it with the `<%=FlightNumber%>` element

**QUESTION NO: 66**

You are creating an ASP.NET application using C# for BlossomsFlowers Inc that will allow customers to buy flowers on their Web site. Your application allows users to place items in a virtual shopping cart, verify the total amount of their purchase, and press a Submit button to process the order. Code on the server handles the submitButton.Click event and creates an order in the company's database. When a customer clicks on the Submit button, you would like a pop-up window to appear before the order is created. The pop-up window should ask the customers whether they are certain that they want to check out.

Which steps should you take to implement this behavior? (Each choice presents a part of the solution.) (Select two choices.)

- A. Create a client-side function named VerifyOrder that will generate the pop-up window.
- B. Include the following line in the Web page:  
`<INPUT TYPE="Submit" Runat="server"  
Value="Check Out" onclick="submitButton_click"  
onserverclick="VerifyOrder()" />`
- C. Create a server-side function named VerifyOrder that will generate the pop-up window.
- D. Include the following line in the Web page:  
`<INPUT TYPE="Submit" Runat="server"  
Value="Check Out" onclick="submitButton_click" />`
- E. Incorporate code into the submitButton\_Click event handler that will generate the pop-up window.

F. Include the following line in the Web page:

```
<INPUT TYPE="Submit" Runat="server"
Value="Check Out" onclick="VerifyOrder()"
onserverclick="submitbutton_click" />
```

**Answer: A, F**

To display a pop-up window before an order is submitted, you should create a client-side function named **VerifyOrder**, that will generate the pop-up window, and you should include the following line in the Web page:

```
<INPUT TYPE="Submit" Runat="server" Value="Check Out" onclick="VerifyOrder()"
onserverclick="submitbutton_click" />
```

The HTML **Submit** button automatically submits a page to a Web server whenever the button is clicked. To be able to process client-side code before the code on the server executes, you must set the **onclick** attribute to the name of the client-side function. Also, the event that is handled by server-side code should be indicated by the **onserverclick** attribute. It is impossible to cause a pop-up window to appear on the client through server-side code.

#### QUESTION NO: 67

**Which of the following lines of code will cause a compilation error? (Each choice presents a complete solution.) (Select all choices that are correct.)**

- A. Cache.Insert("myKey", stringValue);
- B. Cache.Add("myKey") = stringValue;
- C. Cache.Session.Insert("myKey") = stringValue;
- D. Cache.Session("myKey") = stringValue;
- E. Cache("myKey") = stringValue;
- F. Cache.Add("myKey", stringValue);
- G. Cache.Item("myKey") = stringValue;

**Answer: B, C, D, G**

The following lines of code will properly cache a string of data:

```
Cache("myKey") = stringValue
Cache.Add("myKey", stringValue)
Cache.Insert("myKey", stringValue)
```

You can add data to the Cache object in three ways: by specifying a key/value pair, by using the Add method or by using the Insert method. Objects can be placed in the Cache object, which stores data as long as the application is active. Using the Cache object can increase the speed and response of your application because objects stored in the cache do not have to be created anew in successive requests. Although the Add and Insert methods are very similar, they have some differences. If you use the Insert method to add an item that already exists to the cache, the existing item will be replaced. In the same situation, the Add method will fail. The Add method returns a Cache object, whereas the Insert method does not return objects.

#### QUESTION NO: 68

You are developing an ASP.NET application using C# which provides flight booking services to customers. The IT Manager has expressed the need to be able to see trace information of the new application. You have been instructed to enable instrumentation on all of the application's pages. You should display tracing for only the first twenty five requests to your application. Trace information should appear at the bottom of each requested Web page.

What actions should you perform to meet the requirement in the most efficient manner? (Each choice presents a part of the solution.) (Select 3 choices.)

- A. Set the value of the @ Page directive's Trace attribute to true on each page that should display trace information.
- B. Configure the Web.config file in your application's root directory so that the Trace element's requestLimit attribute is set to 25.
- C. Configure the Web.config file in your application's root directory so that the Trace element's pageOutput attribute is set to true.
- D. Set the value of the @ Page directive's Trace attribute to 25 on each page that should display trace information.
- E. Configure the Web.config file in your application's root directory so that the Trace element's enabled attribute is set to true.

#### Answer: B, C, E

To enable tracing for the first twenty five requests of all pages in your application and to display trace information at the bottom of each page, you should configure the **Web.config** file so that the **Trace** element's **enabled** attribute is set to **true**, the **requestLimit** attribute is set to **20** and the **pageOutput** attribute is set to **true**. Tracing can be enabled on a page-by-page basis by using the **@ Page** directive, or it can be enabled for an entire application by configuring the **Web.config** file in the application's root directory. In this scenario, it is more efficient to enable tracing through a single setting in the **Web.config** file than to modify every page's **@ Page** directive. The **Web.config** file should include these lines:

```
<system.web>  
<trace enabled="true" pageOutput="true" requestLimit="20" />  
</system.web>
```

The **pageOutput** attribute determines where the trace information is displayed. Setting the **pageOutput** attribute to **false**, or not specifying a **pageOutput** value, will send the trace information to a **Trace.axd** file; a **true** value will send the information to both the **Trace.axd** file and the bottom of the Web page. The **requestLimit** attribute determines the number of requests for which to record trace information.

#### QUESTION NO: 69

You are creating an ASP.NET application using C# for TestKing. TestKing deploys an XML Web service that returns a list of online new articles that contain requested keywords. The Chief Information Officer has requested you to monitor the performance of the new application. Monitoring will tell TestKing when they need to scale the solution.

**You must ensure that the new application can be monitored while it is running. Which approach should you use?**

- A. TraceSwitch objects
- B. Diagnostic tools
- C. PerformanceCounter objects
- D. Windows Management Instrumentation Job Object provider

**Answer: C**

Using the PerformanceCounter object within the solution would allow developers to write performance specific information that can be monitored by Performance Monitor while the application is running.

**QUESTION NO: 70**

**Your company which sells computer hardware online, has a subsidiary in Spain. You are modifying your corporate intranet site to support users in Spain who do not speak English.**

**Which of the following actions should you take to allow either Spanish or English culture settings to be used as appropriate with the least amount of end-user interaction? (Select the best choice.)**

- A. Read the preferred culture from the properties of the Request object.
- B. Place a Web.config file that specifies the preferred culture on the client workstation.
- C. When a user accesses the intranet site for the first time, display a form that asks the user if he or she prefers to use Spanish or English. Store a cookie on the user's computer that holds the user's preference. Configure the culture settings based on the value of the cookie.
- D. Set the value of a session variable named Culture to En for English users and Fr for Spanish users.

**Answer: A**

You should read the preferred culture from the properties of the **Request** object. The **UserLanguages** property of the **Request** object contains a string array of the languages that are preferred by the user and can be used to ensure that the application responds to the user appropriately. Session and application variables are not designed to persist data indefinitely. The **Web.config** file is a server-side configuration file that has no effect when placed on the client workstation. Storing the user's preferred language in a cookie requires more intervention than necessary from the end user.

**QUESTION NO: 71**

**You are developing an ASP.Net using C# ticketing system for FASTAR-LRT. Tickets are purchased at about 270 tickets per minute.**

**You want to ensure that transactions are completed safely.**

**What isolation level should you use? (Select the best choice.)**

- A. ReadCommitted
- B. ReadUncommitted

- C. RepeatableRead
- D. Serializable

**Answer: D**

The Serializable value of the TransactionIsolationLevel enumeration specifies that no users should be able to add rows or modify data in a data set while a transaction is open. The ReadCommitted value specifies that locks are placed on the data while it is being read, but data can still be altered before the transaction is complete. No locks are held in a ReadUncommitted transaction. With RepeatableRead, a transaction will prevent others from modifying data while a transaction is open, but phantom rows can still be created.

**QUESTION NO: 72**

**You are an ASP.Net application developer. You need to find out which method is calling MethodX(), that is causing a logical error.**

**Which of the following windows should you use to view the errors? (Select the best choice.)**

- A. Locals
- B. Disassembly
- C. Call Stack
- D. Output

**Answer: C**

The Call Stack window shows the current call stack while in debug mode. The Output window displays syntax errors that occur when building an application. It also provides Debug and Trace output. By right-clicking the error and selecting Go To Error/Tag, you can navigate to the lines of code that are responsible for the errors. The Locals window displays the names and values of variables that are currently in scope. The Disassembly window displays assembly code from the compiler.

**QUESTION NO: 73**

**A company contracts you to create a Web site for customer bill payment. You are coding a user interface to calculate the sum of the amount owed to you by the customer.**

**Which of the following methods should you use to query the database? (Select the best choice.)**

- A. Read
- B. ExecuteNonQuery
- C. ExecuteScalar
- D. ExecuteReader

**Answer: C**

The ExecuteScalar method of the Command class returns the value of the first row and first column that is returned by the query. Because the method only returns a single value, it is appropriate for stored procedures and queries that return one value. The Read method of the DataReader class moves the reader to the next

record. The ExecuteNonQuery method of the Command class executes queries, such as DELETE or UPDATE, that do not return a value. The ExecuteReader method of the Command class builds a reader with data that satisfies the CommandText property.

**QUESTION NO: 74**

**You are developing an ASP.Net application. You discover that there are many errors in classes developed by your colleagues.**

**What should you do? (Select all choices that are correct.)**

- A. walking through all the code of a project
- B. combining individual components in groups and testing the group
- C. walking through the code of components that have been debugged
- D. building a demo front end to execute every method of every component and verify return values
- E. testing communication between a component and a third-party Web service
- F. walking through each stored procedure in the database
- G. inspecting the values returned from each stored procedure

**Answer: D, G**

We should perform unit testing. Unit testing is the process of analyzing the behavior of small parts of an application. Thoroughly testing individual units and measuring the results are two important concepts of unit testing. Merely walking through the code in an application or a stored procedure is not a valid method of unit testing. Valid unit testing methods include testing the values returned by individual components and verifying that those values match what is expected. Testing groups of components is considered part of integration testing and should be performed after unit testing. Testing code that has been debugged is part of regression testing.

**QUESTION NO: 75**

**You are creating an ASP.NET application for TestKing Inc. Users will use the application to produce reports. While you are debugging an application, you must be able to see when the value of a particular variable in a procedure is not zero.**

**Which method of the Debug class should you use to output the contents of the call stack when the variable is not zero? (Select the best choice.)**

- A. WriteIf
- B. WriteLineIf
- C. Assert
- D. Write

**Answer: C**

The Assert method of the Debug and Trace classes determines whether an expression evaluates to false , and if so, outputs the call stack or a specified message. The WriteIf and WriteLineIf methods send messages to the

listeners if an expression evaluates to true, but they cannot display the call stack. The Write method will output a specified message each time it is called.

**QUESTION NO: 76**

**Which of the following properties of the XmlDocument class returns the XmlDocument of the current node?**

**(Select the best choice.)**

- a. DocumentElement
- b. FirstChild
- c. LastChild
- d. OwnerDocument

**Answer: D**

The OwnerDocument property returns the XmlDocument of the current node.

The DocumentElement property returns an XmlElement object that represents the root node of an XML document. Because the DocumentElement property always refers to the root node of an XML document, it provides a relatively simple method of accessing properties of the root node. The FirstChild property returns the first child of a node. The LastChild property returns the last child of a node.

**QUESTION NO: 77**

**You are an ASP.Net application developer. You are designing a function that returns a the number of students enrolled in a course. You use the ExecuteNonQuery method of the SqlCommand class to execute a Transact-SQL statement.**

**Which of the following values will be returned by the ExecuteNonQuery method? (Select the best choice.)**

- A. an integer indicating the number of rows affected
- B. a Boolean value indicating that the command processed correctly
- C. a string with the name of the stored procedure or query string that executed
- D. a string with the description of any errors that may have occurred

**Answer: A**

The ExecuteNonQuery method is used to process Transact-SQL statements that perform DELETE, INSERT and UPDATE functions. The method returns an integer indicating the number of rows that were deleted, inserted or updated. The ExecuteNonQuery method does not return any rows, but will populate any output parameters that are present in the Command object.

**QUESTION NO: 78**

**You need to obtain the CGPA for students of the School of Business in a text format. Which of the following code fragments will set the Text property of a TextBox control to the value of the @CGPA output parameter? (Select the best choice.)**

- A. `TextBox1.Text = (string) myCommand.Parameters("@CGPA").Value;`
- B. `TextBox1.Text = myCommand.Parameters("@CGPA").Value.ToString();`
- C. `TextBox1.Text = myCommand.Parameters("@CGPA").ToString();`
- D. `TextBox1.Text = myCommand.Parameters("@CGPA").SourceColumn;`

**Answer: A**

The Value property of the SqlParameter class returns the value of the specified output parameter. The (string) typecast ensures that the value is a string before assigning the value to the text box's Text property. It is invalid syntax to append ToString to the Value property of a SqlParameter object.

The ToString property of a SqlCommand object will return the parameter name, not the value. The SourceColumn property will return the column name that is used for the Value property.