70-483.exam.155q

Number: 70-483
Passing Score: 800
Time Limit: 120 min

https://www.gratisexam.com/

70-483

Programming in C#

Sections
1. Volume A
2. Volume B

Exam A

QUESTION 1
You are developing an application by using C#. The application includes the following code segment. (Line numbers are included for reference only.)

```
01 public interface IDataContainer
02 {
03    string Data { get; set; }
04 }
05 void DoWork(object obj)
06 {
07
08    if (dataContainer != null)
09    {
10       Console.WriteLine(dataContainer.Data);
11    }
12 }
```

The `DoWork()` method must not throw any exceptions when converting the obj object to the IDataContainer interface or when accessing the Data property.

You need to meet the requirements. Which code segment should you insert at line 07?

A. var dataContainer = (IDataContainer)obj;
B. dynamic dataContainer = obj;
C. var dataContainer = obj is IDataContainer;

D. var dataContainer = obj as IDataContainer;

Correct Answer: D
Section: Volume A
Explanation

Explanation/Reference:
Explanation:
As - The as operator is like a cast operation. However, if the conversion isn't possible, as returns null instead of raising an exception.

References: http://msdn.microsoft.com/en-us/library/cscsdfbt(v=vs.110).aspx

QUESTION 2
You are creating an application that manages information about zoo animals. The application includes a class named Animal and a method named Save.

The `Save()` method must be strongly typed. It must allow only types inherited from the Animal class that uses a constructor that accepts no parameters.

You need to implement the `Save()` method.
Which code segment should you use?

A.
```
public static void Save<T>(T target) where T : new(), Animal
{
   ...
}
```

B.
```
public static void Save<T>(T target) where T : Animal
{
   ...
}
```

C.
```
public static void Save<T>(T target) where T : Animal, new()
{
   ...
}
```

D.
```
public static void Save(Animal target)
{
   ...
}
```

A. Option A
B. Option B
C. Option C
D. Option D

Correct Answer: C
Section: Volume A
Explanation

Explanation/Reference:
Explanation:
When you define a generic class, you can apply restrictions to the kinds of types that client code can use for type arguments when it instantiates your class. If client

code tries to instantiate your class by using a type that is not allowed by a constraint, the result is a compile-time error. These restrictions are called constraints. Constraints are specified by using the where contextual keyword.

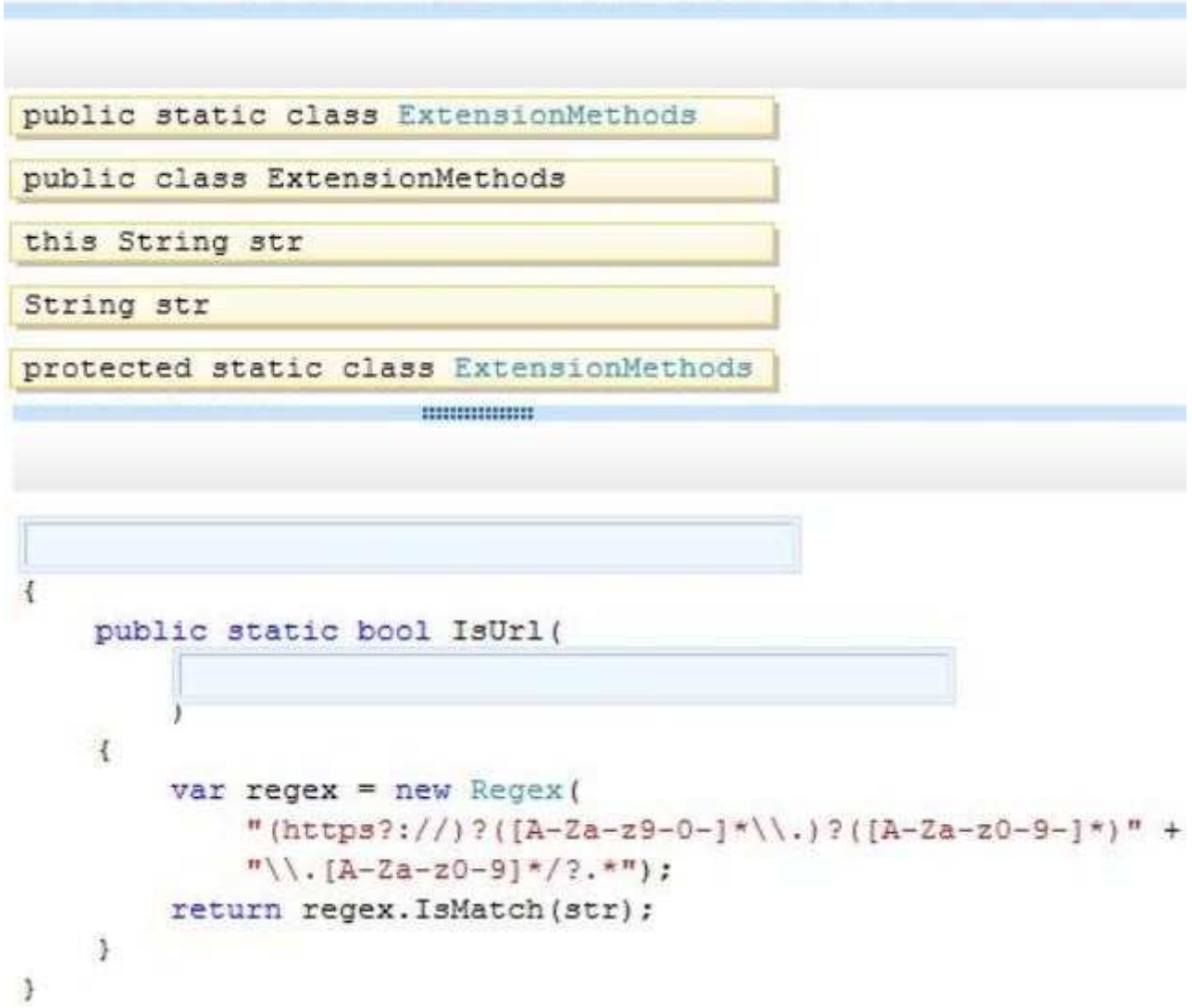
References: http://msdn.microsoft.com/en-us/library/d5x73970.aspx

QUESTION 3
DRAG DROP
You are developing a class named ExtensionMethods.

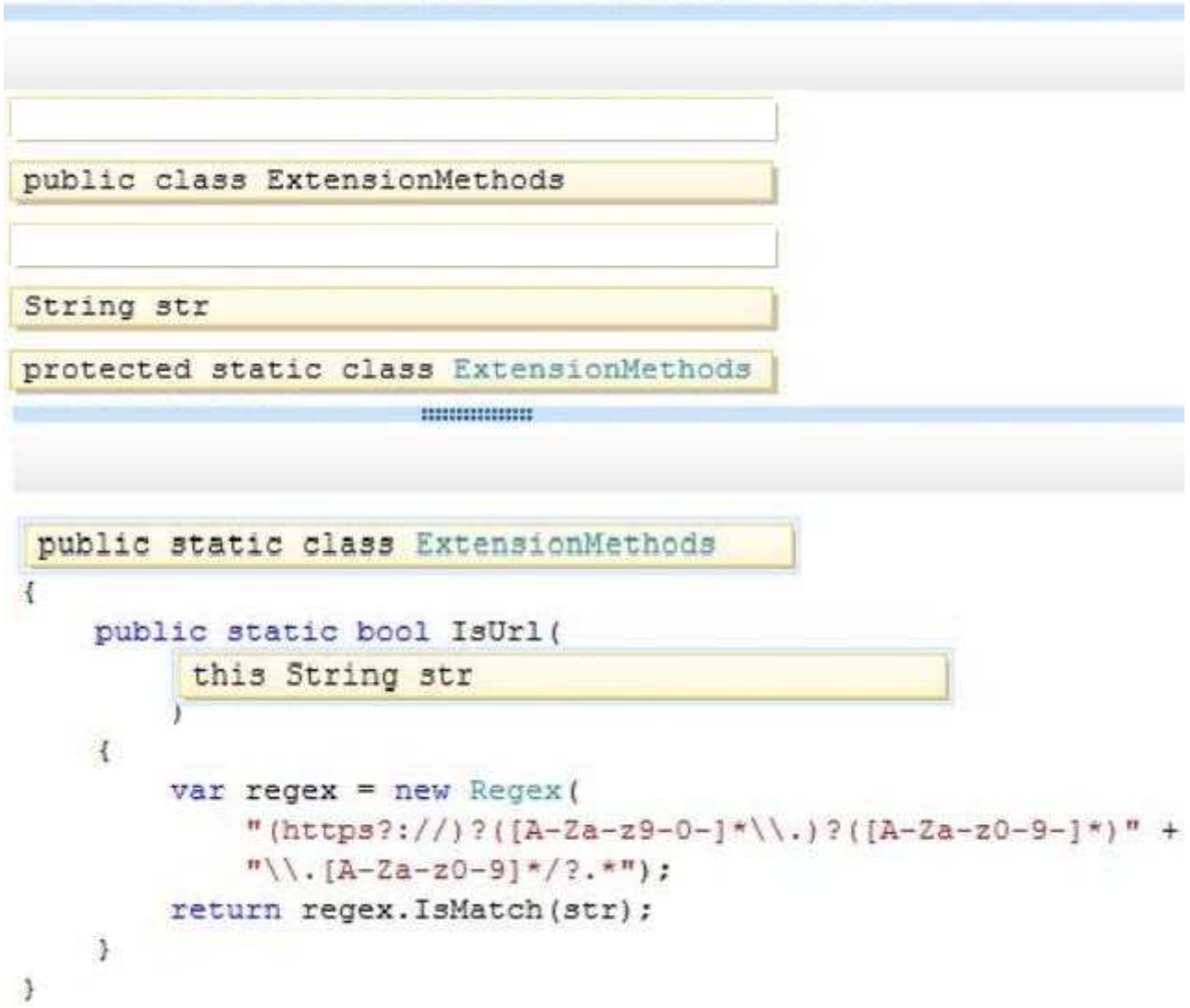
You need to ensure that the ExtensionMethods class implements the `IsEmail()` method on string objects.

How should you complete the relevant code? (To answer, drag the appropriate code segments to the correct locations in the answer area. Each code segment may be used once, more than once, or not at all. You may need to drag the split bar between panes or scroll to view content.)

Select and Place:



Correct Answer:



Section: Volume A
Explanation

Explanation/Reference:

QUESTION 4
You are developing an application. The application includes classes named Employee and Person and an interface named IPerson.

The Employee class must meet the following requirements:
- It must either inherit from the Person class or implement the IPerson interface.
- It must be inheritable by other classes in the application.

You need to ensure that the Employee class meets the requirements.

Which two code segments can you use to achieve this goal? (Each correct answer presents a complete solution. Choose two.)

A.
```
sealed class Employee : Person
{
   ...
}
```

B.
```
abstract class Employee : Person
{
   ...
}
```

C.
```
sealed class Employee : IPerson
{
   ...
}
```

D.
```
abstract class Employee : IPerson
{
   ...
}
```

A. Option A
B. Option B
C. Option C

D. Option D

Correct Answer: BD
Section: Volume A
Explanation

Explanation/Reference:
Explanation:
Sealed - When applied to a class, the sealed modifier prevents other classes from inheriting from it.

References: http://msdn.microsoft.com/en-us/library/88c54tsw(v=vs.110).aspx

QUESTION 5
You are developing an application that will convert data into multiple output formats.

The application includes the following code. (Line numbers are included for reference only.)

```
01 public class TabDelimitedFormatter : IOutputFormatter<string>
02 {
03   readonly Func<int, char> suffix = col => col % 2 == 0 ? '\n' : '\t';
04   public string GetOutput(IEnumerator<string> iterator, int recordSize)
05   {
06
07   }
08 }
```

You are developing a code segment that will produce tab-delimited output. All output routines implement the following interface:

```
public interface IOutputFormatter<T>
{
  string GetOutput(IEnumerator<T> iterator, int recordSize);
}
```

You need to minimize the completion time of the GetOutput() method.

Which code segment should you insert at line 06?

A.
```
string output = null;
for (int i = 1; iterator.MoveNext(); i++)
{
  output = string.Concat(output, iterator.Current, suffix(i));
}
return output;
```

B.
```
var output = new StringBuilder();
for (int i = 1; iterator.MoveNext(); i++)
{
  output.Append(iterator.Current);
  output.Append(suffix(i));
}
return output.ToString();
```

C.
```
string output = null;
for (int i = 1; iterator.MoveNext(); i++)
{
  output = output + iterator.Current + suffix(i);
}
return output;
```

D.
```
string output = null;
for (int i = 1; iterator.MoveNext(); i++)
{
  output += iterator.Current + suffix(i);
}
return output;
```

A. Option A
B. Option B

C. Option C
D. Option D

Correct Answer: B
Section: Volume A
Explanation

Explanation/Reference:
Explanation:
A String object concatenation operation always creates a new object from the existing string and the new data.
A StringBuilder object maintains a buffer to accommodate the concatenation of new data. New data is appended to the buffer if room is available; otherwise, a new, larger buffer is allocated, data from the original buffer is copied to the new buffer, and the new data is then appended to the new buffer.
The performance of a concatenation operation for a String or StringBuilder object depends on the frequency of memory allocations. A String concatenation operation always allocates memory, whereas a StringBuilder concatenation operation allocates memory only if the StringBuilder object buffer is too small to accommodate the new data. Use the String class if you are concatenating a fixed number of String objects. In that case, the compiler may even combine individual concatenation operations into a single operation. Use a StringBuilder object if you are concatenating an arbitrary number of strings; for example, if you're using a loop to concatenate a random number of strings of user input.

References: http://msdn.microsoft.com/en-us/library/system.text.stringbuilder(v=vs.110).aspx

QUESTION 6
You are developing an application by using C#.

The application includes an object that performs a long running process.

You need to ensure that the garbage collector does not release the object's resources until the process completes.

Which garbage collector method should you use?

A. ReRegisterForFinalize()
B. SuppressFinalize()
C. Collect()
D. WaitForFullGCApproach()

Correct Answer: B
Section: Volume A
Explanation

Explanation/Reference:

QUESTION 7
You are creating a class named Employee. The class exposes a string property named EmployeeType. The following code segment defines the Employee class. (Line numbers are included for reference only.)

```
01 public class Employee
02 {
03    internal string EmployeeType
04    {
05       get;
06       set;
07    }
08 }
```

The EmployeeType property value must be accessed and modified only by code within the Employee class or within a class derived from the Employee class.

You need to ensure that the implementation of the EmployeeType property meets the requirements.

Which two actions should you perform? (Each correct answer represents part of the complete solution. Choose two.)

A. Replace line 05 with the following code segment:protected get;
B. Replace line 06 with the following code segment:private set;
C. Replace line 03 with the following code segment:public string EmployeeType
D. Replace line 05 with the following code segment:private get;
E. Replace line 03 with the following code segment:protected string EmployeeType
F. Replace line 06 with the following code segment:protected set;

Correct Answer: BE
Section: Volume A
Explanation

Explanation/Reference:

QUESTION 8
You are implementing a method named Calculate that performs conversions between value types and reference types. The following code segment implements the method. (Line numbers are included for reference only.)

```
01 public static void Calculate(float amount)
02 {
03    object amountRef = amount;
04
05    Console.WriteLine(balance);
06 }
```

You need to ensure that the application does not throw exceptions on invalid conversions.

Which code segment should you insert at line 04?

A. int balance = (int) (float)amountRef;
B. int balance = (int)amountRef;
C. int balance = amountRef;
D. int balance = (int) (double) amountRef;

Correct Answer: A
Section: Volume A
Explanation

Explanation/Reference:

QUESTION 9
You are creating a console application by using C#.

You need to access the application assembly.

Which code segment should you use?

A. Assembly.GetAssembly(this);

B. this.GetType();
C. Assembly.Load();
D. Assembly.GetExecutingAssembly();

Correct Answer: D
Section: Volume A
Explanation

Explanation/Reference:
Explanation:
- Assembly.GetExecutingAssembly - Gets the assembly that contains the code that is currently executing.
- Assembly.GetAssembly - Gets the currently loaded assembly in which the specified class is defined.

References:
http://msdn.microsoft.com/en-us/library/system.reflection.assembly.getassembly.aspx
http://msdn.microsoft.com/en-us/library/system.reflection.assembly.getexecutingassembly(v=vs.110).aspx

QUESTION 10
You are adding a public method named UpdateScore to a public class named ScoreCard.

The code region that updates the score field must meet the following requirements:
- It must be accessed by only one thread at a time.
- It must not be vulnerable to a deadlock situation.

You need to implement the `UpdateScore()` method.

What should you do?

A. Place the code region inside the following lock statement:

```
lock (this)
{
  ...
}
```

B. Add a private object named **lockObject** to the **ScoreCard** class. Place the code region inside the following lock statement:

```
lock (lockObject)
{
  ...
}
```

C. Apply the following attribute to the **UpdateScore()** method signature:

```
[MethodImpl(MethodImplOptions.Synchronized)]
```

D. Add a public static object named **lockObject** to the **ScoreCard** class. Place the code region inside the following lock statement:

```
lock (typeof(ScoreCard))
{
  ...
}
```

A. Option A
B. Option B
C. Option C
D. Option D

Correct Answer: B
Section: Volume A
Explanation

Explanation/Reference:
References: http://blogs.msdn.com/b/bclteam/archive/2004/01/20/60719.aspx

QUESTION 11
You are developing a C# application that has a requirement to validate some string input data by using the Regex class.

The application includes a method named `ContainsHyperlink`. The `ContainsHyperlink()` method will verify the presence of a URI and surrounding markup.

The following code segment defines the `ContainsHyperlink()` method. (Line numbers are included for reference only.)

```
01 bool ContainsHyperlink(string inputData)
02 {
03   string regExPattern = "href\\s*=\\s*(?:\"(?<1>[^\"]*)\"|(?<1>\\S+))";
04
05   return evaluator.IsMatch(inputData);
06 }
```

The expression patterns used for each validation function are constant.
You need to ensure that the expression syntax is evaluated only once when the Regex object is initially instantiated.

Which code segment should you insert at line 04?

A.
```
var evaluator = new Regex(regExPattern, RegexOptions.CultureInvariant);
```

B.
```
var evaluator = new Regex(inputData);
```

C.
```
var assemblyName = "Validation";
var compilationInfo = new RegexCompilationInfo(inputData, RegexOptions.IgnoreCase, "Href", assemblyName,
true);
Regex.CompileToAssembly(new[] { compilationInfo }, new AssemblyName(assemblyName));
var evaluator = new Regex(regExPattern, RegexOptions.CultureInvariant);
```

D.
```
var evaluator = new Regex(regExPattern, RegexOptions.Compiled);
```

A. Option A
B. Option B
C. Option C
D. Option D

Correct Answer: D

Section: Volume A
Explanation

Explanation/Reference:
Explanation:
RegexOptions.Compiled - Specifies that the regular expression is compiled to an assembly. This yields faster execution but increases startup time. This value should not be assigned to the Options property when calling the CompileToAssembly method.

References:
http://msdn.microsoft.com/en-us/library/system.text.regularexpressions.regexoptions.aspx
http://stackoverflow.com/questions/513412/how-does-regexoptions-compiled-work

QUESTION 12
You are developing an application by using C#.

You have the following requirements:
- Support 32-bit and 64-bit system configurations.
- Include pre-processor directives that are specific to the system configuration.
- Deploy an application version that includes both system configurations to testers.
- Ensure that stack traces include accurate line numbers.

You need to configure the project to avoid changing individual configuration settings every time you deploy the application to testers.

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

A. Update the platform target and conditional compilation symbols for each application configuration.
B. Create two application configurations based on the default Release configuration.
C. Optimize the application through address rebasing in the 64-bit configuration.
D. Create two application configurations based on the default Debug configuration.

Correct Answer: BD
Section: Volume A
Explanation

Explanation/Reference:

QUESTION 13
You are developing a method named CreateCounters that will create performance counters for an application.

The method includes the following code. (Line numbers are included for reference only.)

```
01 void CreateCounters()
02 {
03   if (!PerformanceCounterCategory.Exists("Contoso"))
04   {
05     var counters = new CounterCreationDataCollection();
06     var ccdCounter1 = new CounterCreationData
07     {
08       CounterName = "Counter1",
09       CounterType = PerformanceCounterType.SampleFraction
11     };
12     counters.Add(ccdCounter1);
13     var ccdCounter2 = new CounterCreationData
14     {
15       CounterName = "Counter2",
16
17     };
18     counters.Add(ccdCounter2);
19     PerformanceCounterCategory.Create("Contoso", "Help string",
20      PerformanceCounterCategoryType.MultiInstance, counters);
21   }
22 }
```

You need to ensure that Counter1 is available for use in Windows Performance Monitor (PerfMon).

Which code segment should you insert at line 16?

A. CounterType = PerformanccCounterType.RawBase
B. CounterType = PerformanceCounterType.AverageBase
C. CounterType = PerformanceCounterType.SampleBase
D. CounterType = PerformanceCounterType.CounterMultiBase

Correct Answer: C
Section: Volume A

Explanation

Explanation/Reference:
Explanation:
PerformanceCounterType.SampleBase - A base counter that stores the number of sampling interrupts taken and is used as a denominator in the sampling fraction. The sampling fraction is the number of samples that were 1 (or true) for a sample interrupt. Check that this value is greater than zero before using it as the denominator in a calculation of SampleFraction.

PerformanceCounterType.SampleFraction - A percentage counter that shows the average ratio of hits to all operations during the last two sample intervals. Formula: ((N 1 - N 0) / (D 1 - D 0)) x 100, where the numerator represents the number of successful operations during the last sample interval, and the denominator represents the change in the number of all operations (of the type measured) completed during the sample interval, using counters of type SampleBase. Counters of this type include Cache\Pin Read Hits %.

References: http://msdn.microsoft.com/en-us/library/system.diagnostics.performancecountertype.aspx

QUESTION 14
You are developing an application that will transmit large amounts of data between a client computer and a server.

You need to ensure the validity of the data by using a cryptographic hashing algorithm.

Which algorithm should you use?

A. HMACSHA256
B. RNGCryptoServiceProvider
C. DES
D. Aes

Correct Answer: A
Section: Volume A
Explanation

Explanation/Reference:
Explanation:
The .NET Framework provides the following classes that implement hashing algorithms:
- HMACSHA1.
- MACTripleDES.
- MD5CryptoServiceProvider.
- RIPEMD160.
- SHA1Managed.
- SHA256Managed.
- SHA384Managed.

- SHA512Managed.

HMAC variants of all of the Secure Hash Algorithm (SHA), Message Digest 5 (MD5), and RIPEMD-160 algorithms.

CryptoServiceProvider implementations (managed code wrappers) of all the SHA algorithms.
Cryptography Next Generation (CNG) implementations of all the MD5 and SHA algorithms.
http://msdn.microsoft.com/en-us/library/92f9ye3s.aspx#hash_values

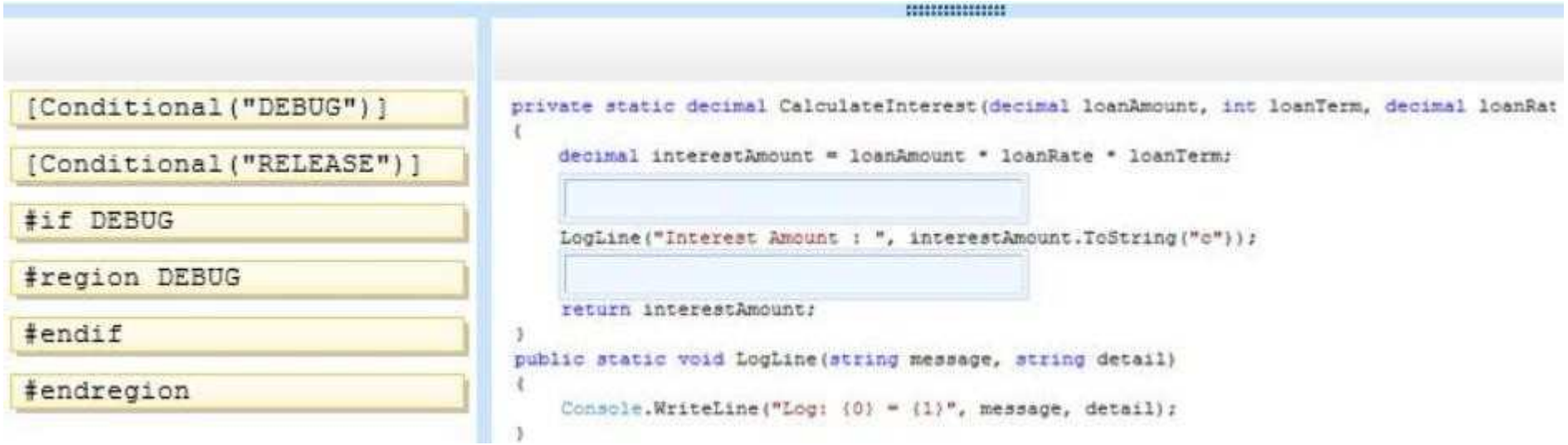
QUESTION 15
DRAG DROP
You are testing an application. The application includes methods named CalculateInterest and LogLine. The `CalculateInterest()` method calculates loan interest. The `LogLine()` method sends diagnostic messages to a console window.

You have the following requirements:
- The `CalculateInterest()` method must run for all build configurations.
- The `LogLine()` method must be called only for debug builds.

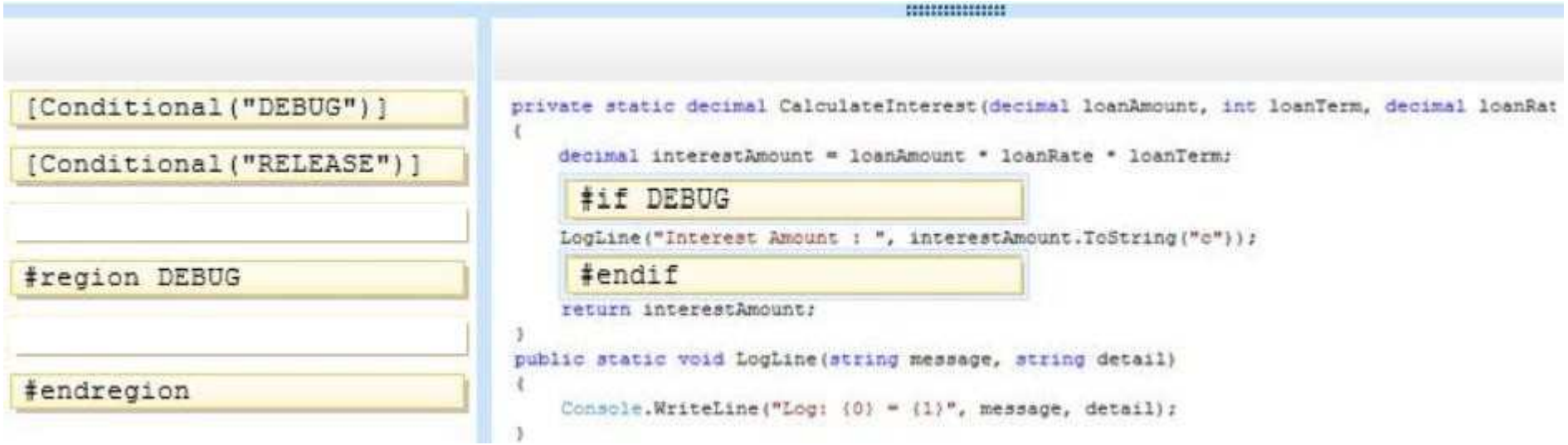
You need to ensure that the methods run correctly.

How should you complete the relevant code? (To answer, drag the appropriate code segments to the correct locations in the answer area. Each code segment may be used once, more than once, or not at all. You may need to drag the split bar between panes or scroll to view content.)

Select and Place:



Correct Answer:



Section: Volume A
Explanation

Explanation/Reference:

QUESTION 16
You are developing an assembly that will be used by multiple applications.

You need to install the assembly in the Global Assembly Cache (GAC).

Which two actions can you perform to achieve this goal? (Each correct answer presents a complete solution. Choose two.)

A. Use the Assembly Registration tool (regasm.exe) to register the assembly and to copy the assembly to the GAC.
B. Use the Strong Name tool (sn.exe) to copy the assembly into the GAC.
C. Use Microsoft Register Server (regsvr32.exe) to add the assembly to the GAC.
D. Use the Global Assembly Cache tool (gacutil.exe) to add the assembly to the GAC.
E. Use Windows Installer 2.0 to add the assembly to the GAC.

Correct Answer: DE
Section: Volume A

Explanation

Explanation/Reference:
Explanation:
There are two ways to deploy an assembly into the global assembly cache:
Use an installer designed to work with the global assembly cache. This is the preferred option for installing assemblies into the global assembly cache.

Use a developer tool called the Global Assembly Cache tool (Gacutil.exe), provided by the Windows

Software Development Kit (SDK).

Note:
In deployment scenarios, use Windows Installer 2.0 to install assemblies into the global assembly cache. Use the Global Assembly Cache tool only in development scenarios, because it does not provide assembly reference counting and other features provided when using the Windows Installer.

References: http://msdn.microsoft.com/en-us/library/yf1d93sz%28v=vs.110%29.aspx

QUESTION 17
You are debugging an application that calculates loan interest. The application includes the following code. (Line numbers are included for reference only.)

```
01 private static decimal CalculateInterest(decimal loanAmount, int loanTerm, decimal loanRate)
02 {
03
04   decimal interestAmount = loanAmount * loanRate * loanTerm;
05
06   return interestAmount;
07 }
```

You need to ensure that the debugger breaks execution within the CalculateInterest() method when the loanAmount variable is less than or equal to zero in all builds of the application.

What should you do?

A. Insert the following code segment at line 03:Trace.Assert(loanAmount > 0);
B. Insert the following code segment at line 03:Debug.Assert(loanAmount > 0);
C. Insert the following code segment at line 05:Debug.Write(loanAmount > 0);
D. Insert the following code segment at line 05:Trace.Write(loanAmount > 0);

Correct Answer: A

Section: Volume A
Explanation

Explanation/Reference:
Explanation:
By default, the Debug.Assert method works only in debug builds. Use the Trace.Assert method if you want to do assertions in release builds. For more information, see Assertions in Managed Code.

References: http://msdn.microsoft.com/en-us/library/kssw4w7z.aspx

QUESTION 18
You are developing an application that accepts the input of dates from the user.

Users enter the date in their local format. The date entered by the user is stored in a string variable named inputDate. The valid date value must be placed in a DateTime variable named validatedDate.

You need to validate the entered date and convert it to Coordinated Universal Time (UTC). The code must not cause an exception to be thrown.

Which code segment should you use?

A.
```
bool validDate = DateTime.TryParse(inputDate,
 CultureInfo.CurrentCulture, DateTimeStyles.AdjustToUniversal | DateTimeStyles.AssumeLocal,
out validatedDate);
```

B.
```
bool validDate = DateTime.TryParse(inputDate,
 CultureInfo.CurrentCulture, DateTimeStyles.AssumeUniversal, out validatedDate);
```

C.
```
bool validDate = true;
try
{
  validatedDate = DateTime.Parse(inputDate);
}
catch
{
  validDate = false;
}
```

D.
```
validatedDate = DateTime.ParseExact(inputDate, "g",
 CultureInfo.CurrentCulture, DateTimeStyles.AdjustToUniversal | DateTimeStyles.AssumeUniversal);
```

A. Option A
B. Option B
C. Option C
D. Option D

Correct Answer: A
Section: Volume A
Explanation

Explanation/Reference:
Explanation:
AdjustToUniversal parses s and, if necessary, converts it to UTC.
Note: The DateTime.TryParse method converts the specified string representation of a date and time to its DateTime equivalent using the specified culture-specific format information and formatting style, and returns a value that indicates whether the conversion succeeded.

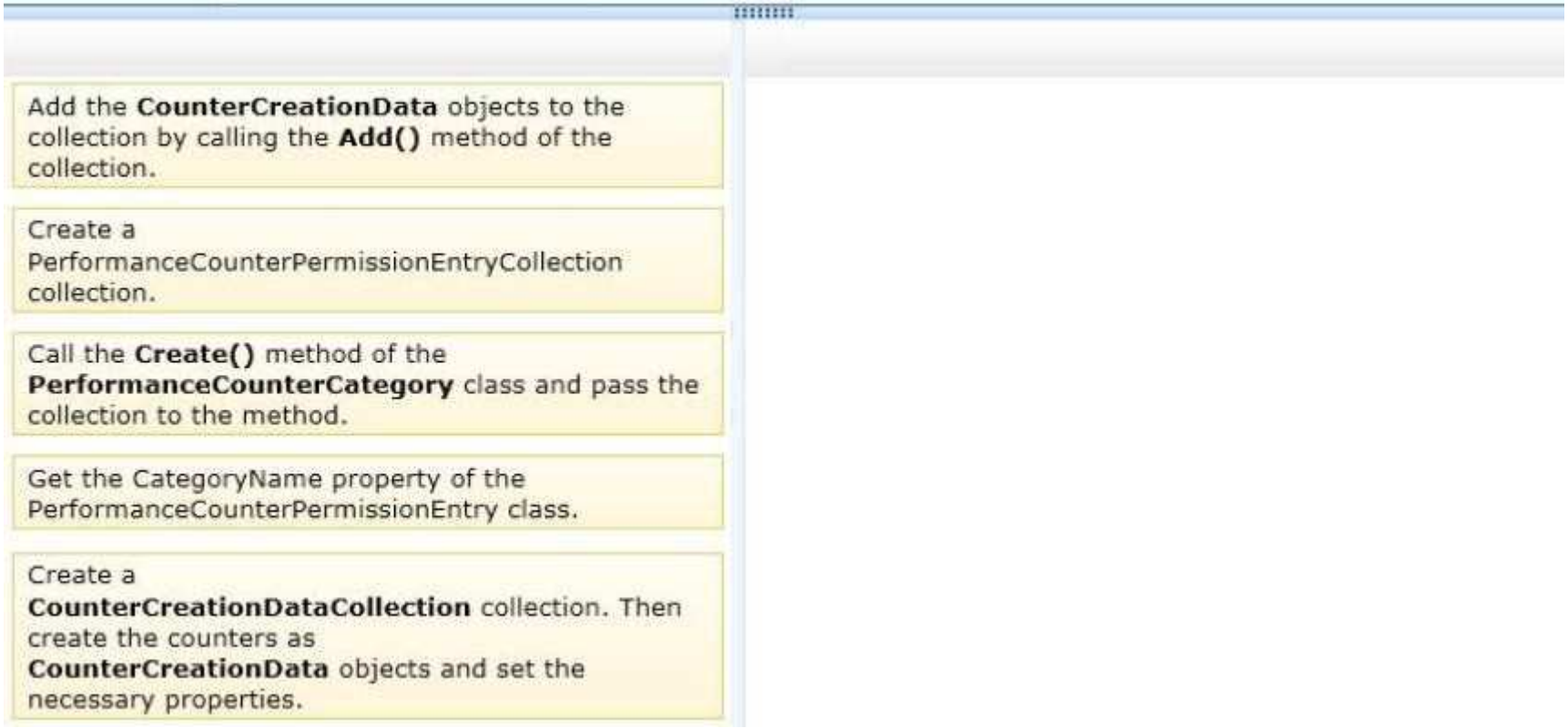
QUESTION 19

DRAG DROP
You are developing an application by using C#. The application will process several objects per second.

You need to create a performance counter to analyze the object processing.

Which three actions should you perform in sequence? (To answer, move the appropriate actions from the list of actions to the answer area and arrange them in the correct order.)

Select and Place:



Correct Answer:

Section: Volume A
Explanation

Explanation/Reference:
Explanation:

```
CounterCreationDataCollection counterDataCollection = new CounterCreationDataCollection(); // Box1
// Add the counter. Box 1
CounterCreationData averageCount64 = new CounterCreationData();
averageCount64.CounterType = PerformanceCounterType.AverageCount64;
averageCount64.CounterName = "AverageCounter64Sample";
counterDataCollection.Add(averageCount64);
// Add the base counter.
CounterCreationData averageCount64Base = new CounterCreationData();
```

```
averageCount64Base.CounterType = PerformanceCounterType.AverageBase;
averageCount64Base.CounterName = "AverageCounter64SampleBase";
counterDataCollection.Add(averageCount64Base); // Box 2
// Create the category. Box 3
PerformanceCounterCategory.Create("AverageCounter64SampleCategory",
"Demonstrates usage of the AverageCounter64 performance counter type.",
PerformanceCounterCategoryType.SingleInstance, counterDataCollection);
```

QUESTION 20
You are developing an application by using C#. You provide a public key to the development team during development.

You need to specify that the assembly is not fully signed when it is built.

Which two assembly attributes should you include in the source code? (Each correct answer presents part of the solution. Choose two.)

A. AssemblyKeyNameAttribute
B. ObfuscateAssemblyAttribute
C. AssemblyDelaySignAttribute
D. AssemblyKeyFileAttribute

Correct Answer: CD
Section: Volume A
Explanation

Explanation/Reference:
References: http://msdn.microsoft.com/en-us/library/t07a3dye(v=vs.110).aspx

QUESTION 21
DRAG DROP
You are developing an application that includes a class named Warehouse. The Warehouse class includes a static property named Inventory- The Warehouse class is defined by the following code segment. (Line numbers are included for reference only.)

```
01 public class Warehouse
02 {
03    static Inventory _inventory = null;
04    static object _lock = new object();
05    public static Inventory Inventory
06    {
07       get
08       {
09
10          return _inventory;
11       }
12    }
13 }
```

You have the following requirements:

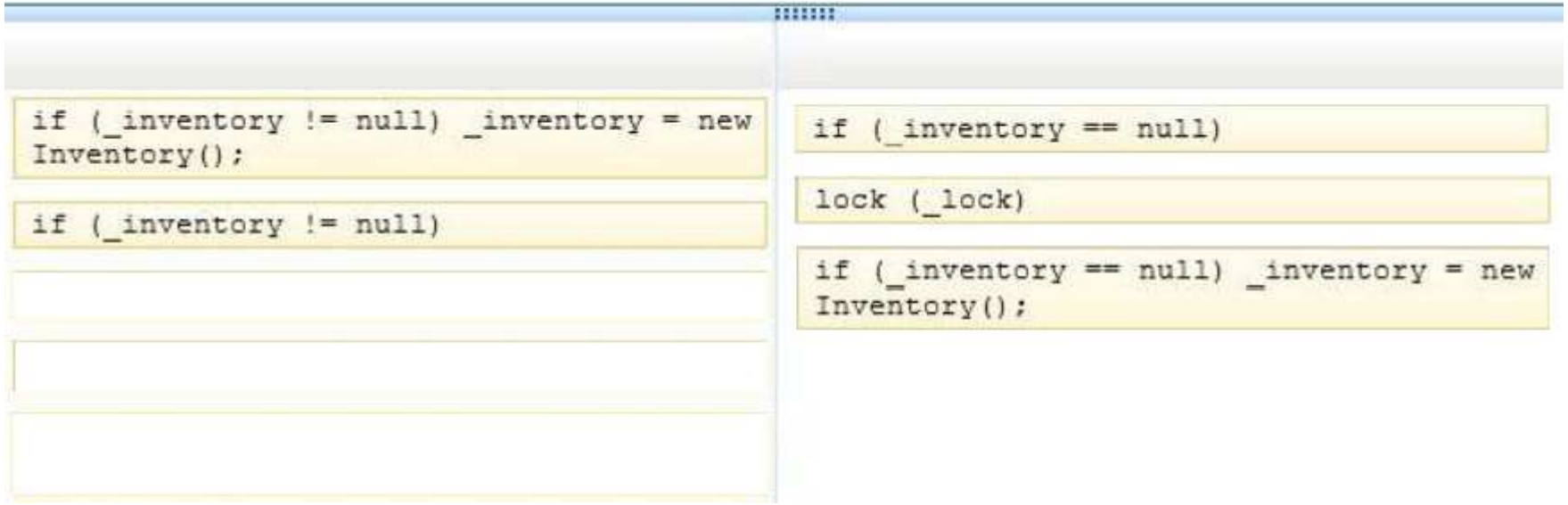
- Initialize the _inventory field to an Inventory instance.
- Initialize the _inventory field only once.
- Ensure that the application code acquires a lock only when the _inventory object must be instantiated.

You need to meet the requirements.

Which three code segments should you insert in sequence at line 09? (To answer, move the appropriate code segments from the list of code segments to the answer area and arrange them in the correct order.)

Select and Place:

Correct Answer:



Section: Volume A

Explanation

Explanation/Reference:
Explanation:
After taking a lock you must check once again the _inventory field to be sure that other threads didn't instantiated it in the meantime.

QUESTION 22
You are adding a public method named UpdateGrade to a public class named ReportCard.

The code region that updates the grade field must meet the following requirements:
- It must be accessed by only one thread at a time.
- It must not be vulnerable to a deadlock situation.

You need to implement the UpdateGrade() method.

What should you do?

A. Add a private object named **lockObject** to the **ReportCard** class. Place the code region inside the following lock statement:

```
lock (lockObject)
{
  ...
}
```

B. Place the code region inside the following lock statement:

```
lock (this)
{
  ...
}
```

C. Add a public static object named **lockObject** to the **ReportCard** class. Place the code region inside the following lock statement:

```
lock (typeof(ReportCard))
{
  ...
}
```

D. Apply the following attribute to the **UpdateGrade()** method signature:

```
[MethodImpl(MethodImplOptions.Synchronized)]
```

A. Option A
B. Option B
C. Option C
D. Option D

Correct Answer: A
Section: Volume A
Explanation

Explanation/Reference:

QUESTION 23
You are developing an application that includes a class named BookTracker for tracking library books. The application includes the following code segment. (Line numbers are included for reference only.)

```
01 public delegate void AddBookCallback(int i);
02 public class BookTracker
03 {
04   List<Book> books = new List<Book>();
05   public void AddBook(string name, AddBookCallback callback)
06   {
07     books.Add(new Book(name));
08     callback(books.Count);
09   }
10 }
11
12 public class Runner
13 {
14
15   BookTracker tracker = new BookTracker();
16   public void Add(string name)
17   {
18
19   }
20 }
```

You need to add a user to the BookTracker instance. What should you do?

A. Insert the following code segment at line 14:

```
private static void PrintBookCount(int i)
{
  ...
}
```

Insert the following code segment at line 18:

```
AddBookCallback callback = PrintBookCount;
```

B. Insert the following code segment at line 18:

```
tracker.AddBook(name, delegate(int i)
  {
    ...
  });
```

C. Insert the following code segment at line 11:

```
delegate void AddBookDelegate(BookTracker bookTracker);
```

Insert the following code segment at line 18:

```
AddBookDelegate addDelegate = (bookTracker) =>
  {
    ...
  };
addDelegate(tracker);
```

D. Insert the following code segment at line 11:

```
delegate void AddBookDelegate(string name, AddBookCallback callback);
```

Insert the following code segment at line 18:

A. Option A
B. Option B
C. Option C
D. Option D

Correct Answer: B
Section: Volume A
Explanation

Explanation/Reference:

QUESTION 24
DRAG DROP
You are implementing a method that creates an instance of a class named User. The User class contains a public event named Renamed. The following code segment defines the Renamed event:

Public event EventHandler<RenameEventArgs> Renamed;

You need to create an event handler for the Renamed event by using a lambda expression.

How should you complete the relevant code? (To answer, drag the appropriate code segments to the correct locations in the answer area. Each code segment may be used once, more than once, or not at all. You may need to drag the split bar between panes or scroll to view content.)

Select and Place:

```
user.Renamed -= delegate(object sender, RenamedEventArgs e)
user.Renamed -= (sender, e) =>
user.Renamed += delegate(object sender, RenamedEventArgs e)
user.Renamed += (sender, e) =>
users[0] = user;
users.Add(user);
users.Insert(user);
```

```
List<User> users = new List<User>();

public void AddUser(string name)
{
  User user = new User(name);
  {
    Log("User {0} was renamed to {1}", e.OldName, e.Name);
  };
}
```

Correct Answer:

```
user.Renamed -= delegate(object sender, RenamedEventArgs e)
```

```
user.Renamed -= (sender, e) =>
```

```
user.Renamed += delegate(object sender, RenamedEventArgs e)
```

```
users[0] = user;
```

```
users.Insert(user);
```

```
List<User> users = new List<User>();

public void AddUser(string name)
{
  User user = new User(name);
  user.Renamed += (sender, e) =>
  {
    Log("User {0} was renamed to {1}", e.OldName, e.Name);
  };
  users.Add(user);
}
```

Section: Volume A
Explanation

Explanation/Reference:

QUESTION 25
You are creating a console application by using C#.

You need to access the assembly found in the file named car.dll.

Which code segment should you use?

A. Assembly.Load();
B. Assembly.GetExecutingAssembly();
C. This.GetType();
D. Assembly.LoadFile("car.dll");

Correct Answer: D
Section: Volume A
Explanation

Explanation/Reference:
Explanation:
Assembly.LoadFile - Loads the contents of an assembly file on the specified path.

References: http://msdn.microsoft.com/en-us/library/b61s44e8.aspx

QUESTION 26
You are developing an application by using C#.

The application includes an object that performs a long running process.

You need to ensure that the garbage collector does not release the object's resources until the process completes.

Which garbage collector method should you use?

A. WaitForFullGCComplete()
B. WaitForFullGCApproach()
C. KeepAlive()
D. WaitForPendingFinalizers()

Correct Answer: C
Section: Volume A
Explanation

Explanation/Reference:
Explanation:
The GC.KeepAlive method references the specified object, which makes it ineligible for garbage collection from the start of the current routine to the point where this method is called.
The purpose of the KeepAlive method is to ensure the existence of a reference to an object that is at risk of being prematurely reclaimed by the garbage collector.
The KeepAlive method performs no operation and produces no side effects other than extending the lifetime of the object passed in as a parameter.

QUESTION 27
An application includes a class named Person. The Person class includes a method named `GetData`.

You need to ensure that the `GetData()` method can be used only by the Person class and not by any class derived from the Person class.

Which access modifier should you use for the `GetData()` method?

A. Public
B. Protected internal
C. Internal
D. Private
E. Protected

Correct Answer: D
Section: Volume A
Explanation

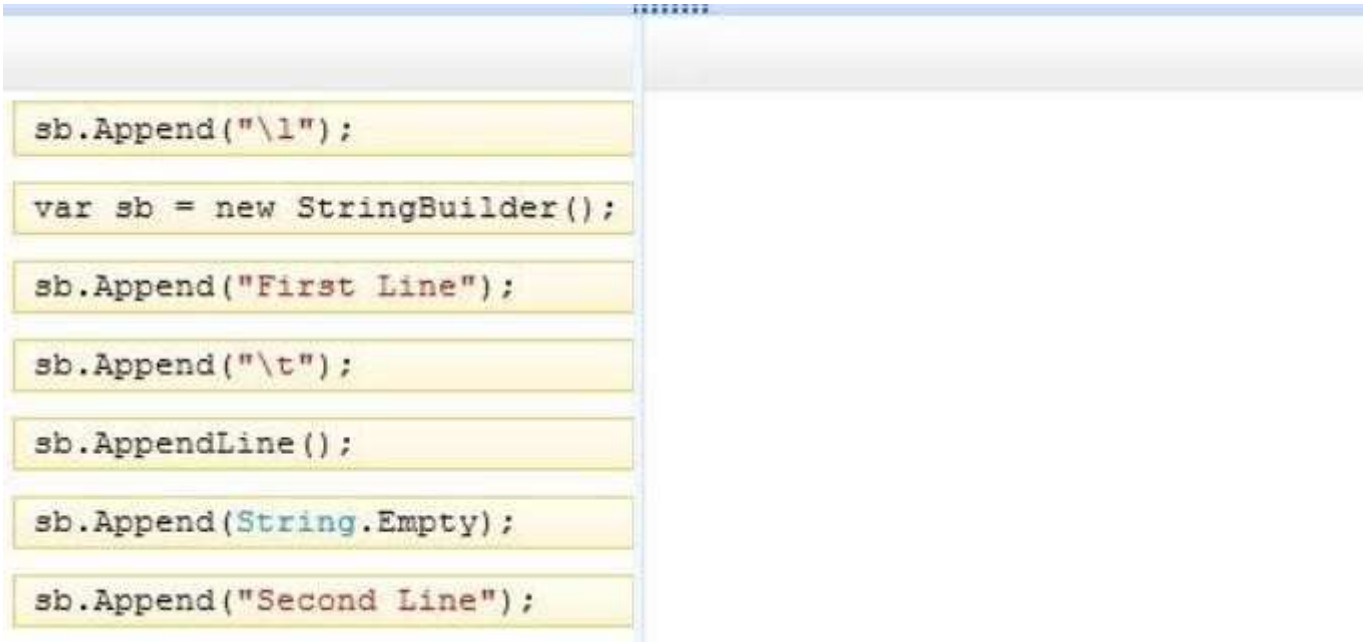
Explanation/Reference:
Explanation:
The GetData() method should be private. It would then only be visible within the Person class.

QUESTION 28
DRAG DROP
You are developing an application by using C#. The application will output the text string "First Line" followed by the text string "Second Line".

You need to ensure that an empty line separates the text strings.

Which four code segments should you use in sequence? (To answer, move the appropriate code segments to the answer area and arrange them in the correct order.)

Select and Place:



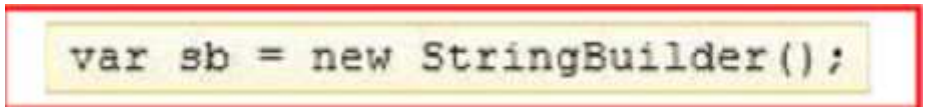
Correct Answer:

```
sb.Append("\l");

sb.Append("\t");

sb.Append(String.Empty);
```

```
var sb = new StringBuilder();

sb.Append("First Line");

sb.AppendLine();

sb.Append("Second Line");
```

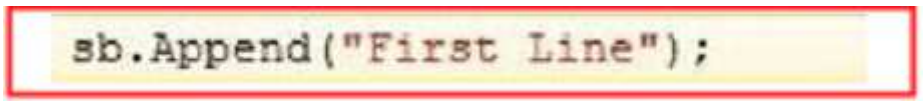
Section: Volume A
Explanation

Explanation/Reference:
Explanation:
Box 1:



First we create the variable.

Box 2:



We create the first text line.

Box 3:

```
sb.AppendLine();
```

We add a blank line.
The StringBuilder.AppendLine method appends the default line terminator to the end of the current StringBuilder object.

Box 4:

```
sb.Append("Second Line");
```

Finally we add the second line.

QUESTION 29
You are developing an application. The application includes classes named Mammal and Animal and an interface named IAnimal.

The Mammal class must meet the following requirements:
- It must either inherit from the Animal class or implement the IAnimal interface.
- It must be inheritable by other classes in the application.

You need to ensure that the Mammal class meets the requirements.

Which two code segments can you use to achieve this goal? (Each correct answer presents a complete solution. Choose two.)

A.
```
abstract class Mammal : IAnimal
{
   ...
}
```

B.
```
sealed class Mammal : IAnimal
{
   ...
}
```

C.
```
abstract class Mammal : Animal
{
   ...
}
```

D.
```
sealed class Mammal : Animal
{
   ...
}
```

A. Option A
B. Option B
C. Option C

D. Option D

Correct Answer: AC
Section: Volume A
Explanation

Explanation/Reference:
Explanation:
When applied to a class, the sealed modifier prevents other classes from inheriting from it.

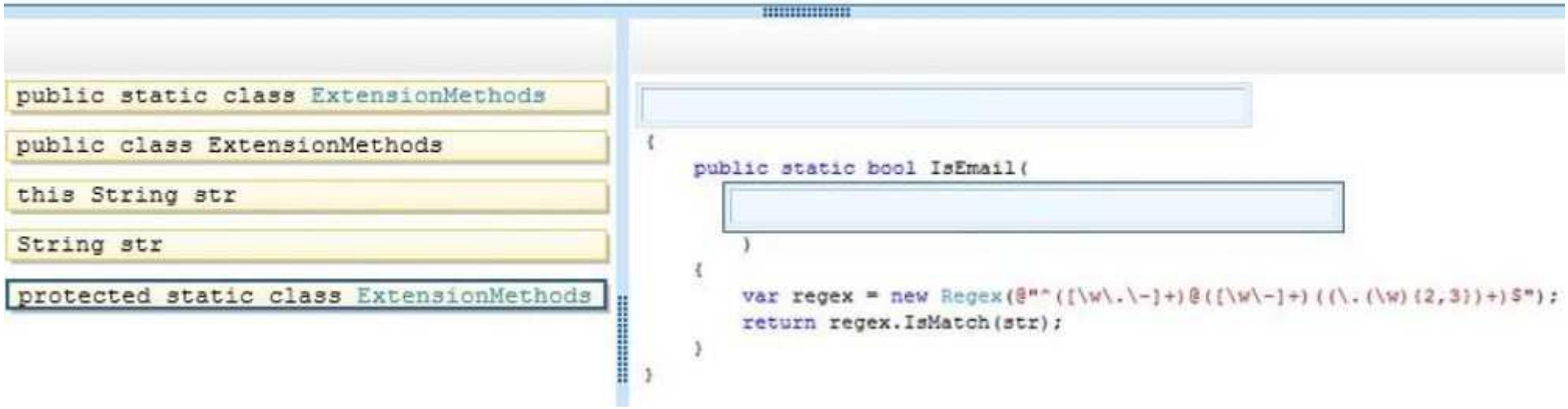
References: http://msdn.microsoft.com/en-us/library/88c54tsw(v=vs.110).aspx

QUESTION 30
DRAG DROP
You are developing a class named ExtensionMethods.

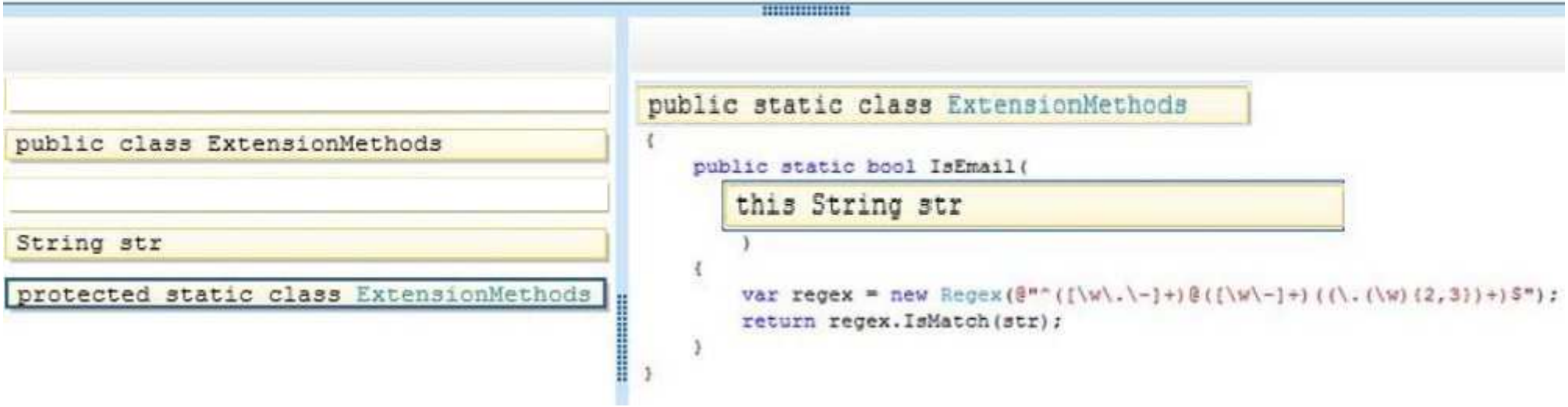
You need to ensure that the ExtensionMethods class implements the IsEmail() extension method on string objects.

How should you complete the relevant code? (To answer, drag the appropriate code segments to the correct locations in the answer area. Each code segment may be used once, more than once, or not at all. You may need to drag the split bar between panes or scroll to view content.)

Select and Place:



Correct Answer:



Section: Volume A
Explanation

Explanation/Reference:

QUESTION 31
An application receives JSON data in the following format:

```
{ "FirstName" : "David",
  "LastName" : "Jones",
  "Values" : [0, 1, 2] }
```

The application includes the following code segment. (Line numbers are included for reference only.)

```
01 public class Name
02 {
03   public int[] Values { get; set; }
04   public string FirstName { get; set; }
05   public string LastName { get; set; }
06 }
07 public static Name ConvertToName(string json)
08 {
09   var ser = new JavaScriptSerializer();
10
11 }
```

You need to ensure that the `ConvertToName()` method returns the JSON input string as a Name object.

Which code segment should you insert at line 10?

A. Return ser.Desenalize (json, typeof(Name));
B. Return ser.ConvertToType<Name>(json);
C. Return ser.Deserialize<Name>(json);
D. Return ser.ConvertToType (json, typeof (Name));

Correct Answer: C
Section: Volume A
Explanation

Explanation/Reference:

QUESTION 32
You are developing an application that includes the following code segment. (Line numbers are included for reference only.)

```
01 class Customer
02 {
03   public string CompanyName { get; set; }
04   public string Id { get; set; }
05 }
06 const string sqlSelectCustomers = "SELECT CustomerID, CompanyName FROM Customers";
07 private static IEnumerable<Customer> GetCustomers(string sqlConnectionString)
08 {
09   List<Customer> customers = new List<Customer>();
10   SqlConnection sqlConnection = new SqlConnection(sqlConnectionString);
11   using (sqlConnection)
12   {
13     SqlCommand sqlCommand = new SqlCommand(sqlSelectCustomers, sqlConnection);
14
15     using (SqlDataReader sqlDataReader = sqlCommand.ExecuteReader())
16     {
17
18       {
19         Customer customer = new Customer();
20         customer.Id = (string)sqlDataReader["CustomerID"];
21         customer.CompanyName = (string)sqlDataReader["CompanyName"];
22         customers.Add(customer);
23       }
24     }
25   }
26   return customers;
27 }
```

The `GetCustomers()` method must meet the following requirements:

- Connect to a Microsoft SQL Server database.
- Populate Customer objects with data from the database.
- Return an IEnumerable<Customer> collection that contains the populated Customer objects.

You need to meet the requirements.
Which two actions should you perform? (Each correct answer presents part of the solution. Choose two.)

A. Insert the following code segment at line 17: `while (sqlDataReader.GetValues())`

B. Insert the following code segment at line 14: `sqlConnection.Open();`
C. Insert the following code segment at line 14: `sqlConnection.BeginTransaction();`
D. Insert the following code segment at line 17: `while (sqlDataReader.Read())`
E. Insert the following code segment at line 17: `while (sqlDataReader.NextResult())`

Correct Answer: BD
Section: Volume A
Explanation

Explanation/Reference:
Explanation:
SqlConnection.Open - Opens a database connection with the property settings specified by the ConnectionString.
SqlDataReader.Read - Advances the SqlDataReader to the next record.

References:
http://msdn.microsoft.com/en-us/library/system.data.sqlclient.sqlconnection.open.aspx
http://msdn.microsoft.com/en-us/library/system.data.sqlclient.sqldatareader.read.aspx

QUESTION 33
DRAG DROP
You are developing an application that includes a class named Customer.

The application will output the Customer class as a structured XML document by using the following code segment:

```
<?xml version="1.0" encoding="utf-8"?>
<Prospect xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
 xmlns:xsd="http://www.w3.org/2001/XMLSchema"
 ProspectId="9c027bb8-65f1-40a9-8afa-ac839f3cdc5d" xmlns="http://prospect">
  <FullName>David Jones</FullName>
  <DateOfBirth>1977-06-11T00:00:00</DateOfBirth>
</Prospect>
```

You need to ensure that the Customer class will serialize to XML.

How should you complete the relevant code? (To answer, drag the appropriate code segments to the correct locations in the answer area. Each code segment may be used once, more than once, or not at all. You may need to drag the split bar between panes or scroll to view content.)

Select and Place:

```
[XmlRoot("Customer", Namespace = "http://customer")]
[XmlRoot("Prospect", Namespace = "http://prospect")]
[XmlAttribute("ProspectId")]
[XmlElement("ProspectId")]
[XmlChoiceIdentifier]
[XmlIgnore]
[XmlArrayItem]
[XmlElement("FullName")]
```

```
public class Customer
{
    public Guid Id { get; set; }
    public string Name { get; set; }
    public DateTime DateOfBirth { get; set; }
    public int Tin { get; set; }
}
```

Correct Answer:

```
[XmlRoot("Customer", Namespace = "http://customer")]

[XmlElement("ProspectId")]
[XmlChoiceIdentifier]

[XmlArrayItem]
```

```
[XmlRoot("Prospect", Namespace = "http://prospect")]
public class Customer
{
    [XmlAttribute("ProspectId")]
    public Guid Id { get; set; }
    [XmlElement("FullName")]
    public string Name { get; set; }
    public DateTime DateOfBirth { get; set; }
    [XmlIgnore]
    public int Tin { get; set; }
}
```

Section: Volume A
Explanation

Explanation/Reference:
Explanation:
References: http://msdn.microsoft.com/en-us/library/3dkta8ya.aspx

QUESTION 34
An application will upload data by using HTML form-based encoding. The application uses a method named `SendMessage`.

The `SendMessage()` method includes the following code. (Line numbers are included for reference only.)

```
01 public Task<byte[]> SendMessage(string url, int intA, int intB)
02 {
03   var client = new WebClient();
04
05 }
```

The receiving URL accepts parameters as form-encoded values.

You need to send the values intA and intB as form-encoded values named a and b, respectively.

Which code segment should you insert at line 04?

A.
```
var data = string.Format("a={0}&b={1}", intA, intB);
return client.UploadStringTaskAsync(new Uri(url), data);
```

B.
```
var data = string.Format("a={0}&b={1}", intA, intB);
return client.UploadFileTaskAsync(new Uri(url), data);
```

C.
```
var data = string.Format("a={0}&b={1}", intA, intB);
return client.UploadDataTaskAsync(new Uri(url), Encoding.UTF8.GetBytes(data));
```

D.
```
var nvc = new NameValueCollection() { { "a", intA.ToString() }, { "b", intB.ToString() } };
return client.UploadValuesTaskAsync(new Uri(url), nvc);
```

A. Option A
B. Option B
C. Option C
D. Option D

Correct Answer: D
Section: Volume A
Explanation

Explanation/Reference:
Explanation:
WebClient.UploadValuesTaskAsync - Uploads the specified name/value collection to the resource identified by the specified URI as an asynchronous operation using a task object. These methods do not block the calling thread.

References: http://msdn.microsoft.com/en-us/library/system.net.webclient.uploadvaluestaskasync.aspx

QUESTION 35
You are developing an application. The application converts a Location object to a string by using a method named `WriteObject`.

The `WriteObject()` method accepts two parameters, a Location object and an XmlObjectSerializer object.

The application includes the following code. (Line numbers are included for reference only.)

```
01 public enum Compass
02 {
03   North,
04   South,
05   East,
06   West
07 }
08 [DataContract]
09 public class Location
10 {
11   [DataMember]
12   public string Label { get; set; }
13   [DataMember]
14   public Compass Direction { get; set; }
15 }
16 void DoWork()
17 {
18   var location = new Location { Label = "Test", Direction = Compass.West };
19   Console.WriteLine(WriteObject(location,
20
21   ));
22 }
```

You need to serialize the Location object as XML.

Which code segment should you insert at line 20?

A. new XmlSerializer(typeof(Location))
B. new NetDataContractSerializer()
C. new DataContractJsonSerializer(typeof (Location))
D. new DataContractSerializer(typeof(Location))

Correct Answer: D
Section: Volume A
Explanation

Explanation/Reference:
Explanation:
The code is using [DataContract] attribute here so need to used DataContractSerializer class.

QUESTION 36
You are developing an application that includes a class named Order. The application will store a collection of Order objects.

The collection must meet the following requirements:
- Internally store a key and a value for each collection item.
- Provide objects to iterators in ascending order based on the key.
- Ensure that item are accessible by zero-based index or by key.

You need to use a collection type that meets the requirements.

Which collection type should you use?

A. LinkedList
B. Queue
C. Array
D. HashTable
E. SortedList

Correct Answer: E
Section: Volume A
Explanation

Explanation/Reference:
Explanation:
SortedList<TKey, TValue> - Represents a collection of key/value pairs that are sorted by key based on the associated IComparer<T> implementation.

References: http://msdn.microsoft.com/en-us/library/ms132319.aspx

QUESTION 37
You are developing an application that includes the following code segment. (Line numbers are included for reference only.)

```
01 using System;
02 class MainClass
03 {
04   public static void Main(string[] args)
05   {
06     bool bValidInteger = false;
07     int value = 0;
08     do
09     {
10       Console.WriteLine("Enter an integer:");
11       bValidInteger = GetValidInteger(ref value);
12     } while (!bValidInteger);
13     Console.WriteLine("You entered a valid integer, " + value);
14   }
15   public static bool GetValidInteger(ref int val)
16   {
17     string sLine = Console.ReadLine();
18     int number;
19
20     {
21       return false;
22     }
23     else
24     {
25       val = number;
26       return true;
27     }
28   }
29 }
```

You need to ensure that the application accepts only integer input and prompts the user each time non-integer input is entered.

Which code segment should you add at line 19?

A. If (!int.TryParse(sLine, out number))
B. If ((number = Int32.Parse(sLine)) == Single.NaN)
C. If ((number = int.Parse(sLine)) > Int32.MaxValue)
D. If (Int32.TryParse(sLine, out number))

Correct Answer: A
Section: Volume A
Explanation

Explanation/Reference:
Explanation:
Int32.TryParse - Converts the string representation of a number to its 32-bit signed integer equivalent. A return value indicates whether the conversion succeeded.

Incorrect Answers:
B, C: These will throwan exception when user enters non-integer value.
D: This is exactly the opposite what we want to achieve.

References: http://msdn.microsoft.com/en-us/library/f02979c7.aspx

QUESTION 38
You are debugging an application that calculates loan interest. The application includes the following code. (Line numbers are included for reference only.)

```
01 private static decimal CalculateInterest(decimal loanAmount, int loanTerm, decimal loanRate)
02 {
03
04   decimal interestAmount = loanAmount * loanRate * loanTerm;
05
06   return interestAmount;
07 }
```

You have the following requirements:
- The debugger must break execution within the `CalculateInterest()` method when the `loanAmount` variable is less than or equal to zero.
- The release version of the code must not be impacted by any changes.

You need to meet the requirements.

What should you do?

A. Insert the following code segment at tine 05: `Debug.Write(loanAmount > 0);`
B. Insert the following code segment at line 05: `Trace.Write(loanAmount > 0);`
C. Insert the following code segment at line 03: `Debug.Assert(loanAmount > 0);`
D. Insert the following code segment at line 03: `Trace.Assert(loanAmount > 0);`

Correct Answer: C
Section: Volume A
Explanation

Explanation/Reference:
Explanation:
By default, the Debug.Assert method works only in debug builds. Use the Trace.Assert method if you want to do assertions in release builds. For more information, see Assertions in Managed Code.

References: http://msdn.microsoft.com/en-us/library/kssw4w7z.aspx

QUESTION 39
You are developing an application that will process orders. The debug and release versions of the application will display different logo images.

You need to ensure that the correct image path is set based on the build configuration.

Which code segment should you use?

A.
```
#if (DEBUG)
  imgPath = "TempFolder/Images/";
#elif (RELEASE)
  imgPath = "DevFolder/Images/";
#endif
```

B.
```
if (DEBUG)
  imgPath = "TempFolder/Images/";
else
  imgPath = "DevFolder/Images/";
endif
```

C.
```
#if (DEBUG)
  imgPath = "TempFolder/Images/";
#else
  imgPath = "DevFolder/Images/";
#endif
```

D.
```
if(Debugger.IsAttached)
{
  imgPath = "TempFolder/Images/";
}
else
{
  imgPath = "DevFolder/Images/";
}
```

A. Option A
B. Option B
C. Option C
D. Option D

Correct Answer: C
Section: Volume A
Explanation

Explanation/Reference:
Explanation:
There is no such constraint (unless you define one explicitly) RELEASE.

References: http://stackoverflow.com/questions/507704/will-if-release-work-like-if-debug-does-in-c

QUESTION 40
You are testing an application. The application includes methods named `CalculateInterest` and `LogLine`.

The `CalculateInterest()` method calculates loan interest. The `LogLine()` method sends diagnostic messages to a console window.

The following code implements the methods. (Line numbers are included for reference only.)

```
01
02  private static decimal CalculateInterest(decimal loanAmount, int loanTerm, decimal loanRate)
03  {
04    decimal interestAmount = loanAmount * loanRate * loanTerm;
05
06    LogLine("Interest Amount : ", interestAmount.ToString("c"));
07
08    return interestAmount;
09  }
10
11  public static void LogLine(string message, string detail)
12  {
13    Console.WriteLine("Log: {0} = {1}", message, detail);
14  }
```

You have the following requirements:
- The `CalculateInterest()` method must run for all build configurations.
- The `LogLine()` method must run only for debug builds.

You need to ensure that the methods run correctly.

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

A. Insert the following code segment at line 01: `#region DEBUG`
   Insert the following code segment at line 10: `#endregion`
B. Insert the following code segment at line 10: `[Conditional(MDEBUG")]`
C. Insert the following code segment at line 05: `#region DEBUG`
   Insert the following code segment at line 07: `#endregion`
D. Insert the following code segment at line 01: `#if DE30G`
   Insert the following code segment at line 10 `:#endif`
E. Insert the following code segment at line 01: `[Conditional(MDEBUG")]`
F. Insert the following code segment at line 05 `:#if DEBUG`
   Insert the following code segment at line 07: `#endif`
G. Insert the following code segment at line 10: `[Conditional("RELEASE")]`

Correct Answer: BF
Section: Volume A
Explanation

Explanation/Reference:
Explanation:
#if DEBUG: The code in here won't even reach the IL on release.
[Conditional("DEBUG")]: This code will reach the IL, however the calls to the method will not execute unless DEBUG is on.

References: http://stackoverflow.com/questions/3788605/if-debug-vs-conditionaldebug

QUESTION 41
You are developing a method named CreateCounters that will create performance counters for an application. The method includes the following code. (Line numbers are included for reference only.)

```
01 void CreateCounters()
02 {
03   if (!PerformanceCounterCategory.Exists("Contoso"))
04   {
05     var counters = new CounterCreationDataCollection();
06     var ccdCounter1 = new CounterCreationData
07     {
08       CounterName = "Counter1",
09       CounterType = PerformanceCounterType.AverageTimer32
11     };
12     counters.Add(ccdCounter1);
13     var ccdCounter2 = new CounterCreationData
14     {
15       CounterName = "Counter2",
16
17     };
18     counters.Add(ccdCounter2);
19     PerformanceCounterCategory.Create("Contoso", "Help string",
20      PerformanceCounterCategoryType.MultiInstance, counters);
21   }
22 }
```

You need to ensure that Counter2 is available for use in Windows Performance Monitor (PerfMon).

Which code segment should you insert at line 16?

A. CounterType = PerformanceCounterType.RawBase
B. CounterType = PerformanceCounterType.AverageBase
C. CounterType = PerformanceCounterType.SampleBase
D. CounterType = PerformanceCounterType.CounterMultiBase

Correct Answer: B
Section: Volume A
Explanation

Explanation/Reference:
Explanation:
PerformanceCounterType.AverageTimer32 - An average counter that measures the time it takes, on average, to complete a process or operation. Counters of this type display a ratio of the total elapsed time of the sample interval to the number of processes or operations completed during that time. This counter type measures time in ticks of the system clock. Formula: ((N 1 -N 0)/F)/(B 1 -B 0), where N 1 and N 0 are performance counter readings, B 1 and B 0 are their corresponding AverageBase values, and F is the number of ticks per second. The value of F is factored into the equation so that the result can be displayed in seconds.

Thus, the numerator represents the numbers of ticks counted during the last sample interval, F represents the frequency of the ticks, and the denominator represents the number of operations completed during the last sample interval. Counters of this type include PhysicalDisk\ Avg. Disk sec/Transfer.

PerformanceCounterType.AverageBase - A base counter that is used in the calculation of time or count averages, such as AverageTimer32 and AverageCount64. Stores the denominator for calculating a counter to present "time per operation" or "count per operation".

References: http://msdn.microsoft.com/en-us/library/system.diagnostics.performancecountertype.aspx

QUESTION 42
You are developing an application that will transmit large amounts of data between a client computer and a server.

You need to ensure the validity of the data by using a cryptographic hashing algorithm.

Which algorithm should you use?

A. ECDsa
B. RNGCryptoServiceProvider
C. Rfc2898DeriveBytes
D. HMACSHA512

Correct Answer: D
Section: Volume A
Explanation

Explanation/Reference:

QUESTION 43
You are developing an application by using C#.

The application includes an object that performs a long running process.

You need to ensure that the garbage collector does not release the object's resources until the process completes.

Which garbage collector method should you use?

A. WaitForFullGCComplete()
B. SuppressFinalize()
C. collect()
D. RemoveMemoryPressure()

Correct Answer: B
Section: Volume A
Explanation

Explanation/Reference:

QUESTION 44
You are implementing a method named `FloorTemperature` that performs conversions between value types and reference types. The following code segment implements the method. (Line numbers are included for reference only.)

```
01 public static void FloorTemperature(float degrees)
02 {
03   object degreesRef = degrees;
04
05   Console.WriteLine(result);
06 }
```

You need to ensure that the application does not throw exceptions on invalid conversions.

Which code segment should you insert at line 04?

A. int result = (int)degreesRef;
B. int result = (int)(double)degreesRef;
C. int result = degreesRef;
D. int result = (int)(float)degreesRef;

Correct Answer: D
Section: Volume A
Explanation

Explanation/Reference:

QUESTION 45
You are developing an application by using C#.

The application includes an object that performs a long running process.

You need to ensure that the garbage collector does not release the object's resources until the process completes.

Which garbage collector method should you use?

A. WaitForFullGCComplete()
B. SuppressFinalize()

C. WaitForFullGCApproach()
D. WaitForPendingFinalizers()

Correct Answer: B
Section: Volume A
Explanation

Explanation/Reference:

QUESTION 46
You are developing an application by using C#. You provide a public key to the development team during development.

You need to specify that the assembly is not fully signed when it is built.

Which two assembly attributes should you include in the source code? (Each correct answer presents part of the solution. Choose two.)

A. AssemblyFlagsAttribute

B. AssemblyKeyFileAttribute
C. AssemblyConfigurationAttribute
D. AssemblyDelaySignAttribute

Correct Answer: BD
Section: Volume A
Explanation

Explanation/Reference:

QUESTION 47
You are developing an application that will transmit large amounts of data between a client computer and a server.

You need to ensure the validity of the data by using a cryptographic hashing algorithm.

Which algorithm should you use?

A. RSA
B. HMACSHA2S6
C. Aes
D. RNGCryptoServiceProvider

Correct Answer: B
Section: Volume A
Explanation

Explanation/Reference:

QUESTION 48
You are developing an application that uses the Microsoft ADO.NET Entity Framework to retrieve order information from a Microsoft SQL Server database. The application includes the following code. (Line numbers are included for reference only.)

```
01 public DateTime? OrderDate;
02 IQueryable<Order> LookupOrdersForYear(int year)
03 {
04   using (var context = new NorthwindEntities())
05   {
06     var orders =
07      from order in context.Orders
08
09       select order;
10     return orders.ToList().AsQueryable();
11   }
12 }
```

The application must meet the following requirements:

- Return only orders that have an OrderDate value other than null.
- Return only orders that were placed in the year specified in the year parameter.

You need to ensure that the application meets the requirements. Which code segment should you insert at line 08?

A.
```
where order.OrderDate.Value.Year == year
```

B.
```
where order.OrderDate.HasValue && order.OrderDate.Value.Year == year
```

C.
```
where order.OrderDate.Value != null && order.OrderDate.Value.Year >= year
```

D.
```
where order.OrderDate.Value == null && order.OrderDate.Value.Year == year
```

A. Option A
B. Option B

C. Option C
D. Option D

Correct Answer: B
Section: Volume A
Explanation

Explanation/Reference:

QUESTION 49
You are developing an application that will transmit large amounts of data between a client computer and a server.

You need to ensure the validity of the data by using a cryptographic hashing algorithm.

Which algorithm should you use?

A. RSA
B. Aes
C. HMACSHA256
D. DES

Correct Answer: C
Section: Volume A
Explanation

Explanation/Reference:

QUESTION 50
You are developing an application. The application calls a method that returns an array of integers named customerIds.

You define an integer variable named customerIdToRemove and assign a value to it. You declare an array named filteredCustomerIds.

You have the following requirements.
- Remove duplicate integers from the customerIds array.
- Sort the array in order from the highest value to the lowest value.
- Remove the integer value stored in the customerIdToRemove variable from the customerIds array.

You need to create a LINQ query to meet the requirements.

Which code segment should you use?

A.
```
int[] filteredCustomerIds = customerIds.Distinct().OrderByDescending(x => x).ToArray();
```

B.
```
int[] filteredCustomerIds = customerIds.Where(value => value !=
  customerIdToRemove).OrderByDescending(x => x).ToArray();
```

C.
```
int[] filteredCustomerIds = customerIds.Distinct().Where(value => value !=
  customerIdToRemove).OrderByDescending(x => x).ToArray();
```

D.
```
int[] filteredCustomerIds = customerIds.Where(value => value !=
  customerIdToRemove).OrderBy(x => x).ToArray();
```

A. Option A
B. Option B
C. Option C
D. Option D

Correct Answer: C
Section: Volume A
Explanation

Explanation/Reference:

QUESTION 51
You are developing an application that will transmit large amounts of data between a client computer and a server.

You need to ensure the validity of the data by using a cryptographic hashing algorithm.

Which algorithm should you use?

A. DES

B. HMACSHA512
C. RNGCryptoServiceProvider
D. ECDsa

Correct Answer: B
Section: Volume A
Explanation

Explanation/Reference:

QUESTION 52
You are developing a C# application that includes a class named Product. The following code segment defines the Product class:

```
public class Product
{
   public int Id { get; set; }
   public int CategoryId { get; set; }
   public string Name { get; set; }
   public bool IsValid { get; set; }
}
```

You implement System.ComponentModel.DataAnnotations.IValidatableObject interface to provide a way to validate the Product object.

The Product object has the following requirements:
- The Id property must have a value greater than zero.
- The Name property must have a value other than empty or null.

You need to validate the Product object. Which code segment should you use?

A.
```
public bool Validate()
{
  IsValid = Id > 0 || !string.IsNullOrEmpty(Name);
  return IsValid;
}
```

B.
```
public IEnumerable<ValidationResult> Validate(ValidationContext validationContext)
{
  if (Id <= 0)
    yield return new ValidationResult("Product Id is required.", new[] { "Id" });
  if (string.IsNullOrEmpty(Name))
    yield return new ValidationResult("Product Name is required.", new[] { "Name" });
}
```

C.
```
public bool Equals(Product productToValidate)
{
  productToValidate.IsValid = productToValidate.Id > 0 || !string.IsNullOrEmpty(productToValidate.Name);
  return productToValidate.IsValid;
}
```

D.
```
public ValidationResult Validate()
{
  ValidationResult validationResult = null;
  if (Id <= 0)
  {
    validationResult = new ValidationResult("Product Id is required.");
  }
  if (string.IsNullOrEmpty(Name))
  {
    validationResult = new ValidationResult("Product Name is required.");
  }
  return validationResult;
}
```

A. Option A
B. Option B
C. Option C
D. Option D

Correct Answer: B
Section: Volume A
Explanation

Explanation/Reference:

QUESTION 53
You are creating a class named Game.

The Game class must meet the following requirements:
- Include a member that represents the score for a Game instance.
- Allow external code to assign a value to the score member.
- Restrict the range of values that can be assigned to the score member.

You need to implement the score member to meet the requirements.

In which form should you implement the score member?

A. protected field
B. public static field
C. public static property
D. public property

Correct Answer: D
Section: Volume A
Explanation

Explanation/Reference:

QUESTION 54
You have a List object that is generated by executing the following code:

```
List<string> departments = new List<string>()
{
  "Accounting", "Marketing", "Sales", "Manufacturing", "Information Systems", "Training"
};
```

You have a method that contains the following code (line numbers are included for reference only):

```
01  private bool GetMatches(List<string> departments, string searchTerm)
02  {
03    var findDepartment = departments.Exists((delegate(string deptName)
04    {
05      return deptName.Equals(searchTerm);
06    }
07    ));
08    return findDepartment;
09  }
```

You need to alter the method to use a lambda statement.

How should you rewrite lines 03 through 06 of the method?

A.
```
var findDepartment = departments.First(x => x == searchTerm);
```

B.
```
var findDepartment = departments.Where(x => x == searchTerm);
```

C.
```
var findDepartment = departments.Exists(x => x.Equals(searchTerm));
```

D.
```
var findDepartment = departments.Where(x => x.Equals(searchTerm));
```

A. Option A

B. Option B
C. Option C
D. Option D

Correct Answer: C
Section: Volume A
Explanation

Explanation/Reference:

QUESTION 55
You are developing code for a class named Account. The Account class includes the following method:

```
public void Deposit(int dollars, int cents)
{
  int totalCents = cents + this.cents;
  int extraDollars = totalCents / 100;
  this.cents = totalCents - 100 * extraCents;
  this.dollars += dollars + extraDollars;
}
```

You need to ensure that overflow exceptions are thrown when there is an error.

Which type of block should you use?

A. checked
B. try
C. using
D. unchecked

Correct Answer: A
Section: Volume A
Explanation

Explanation/Reference:

QUESTION 56
You are developing an application that uses a .config file.

The relevant portion of the .config file is shown as follows:

```
<system.diagnostics>
  <trace autoflush="false" indentsize="0">
    <listeners>
      <add name="appListener"
        type="System.Diagnostics.EventLogTraceListener"
        initializeData="TraceListenerLog" />
    </listeners>
  </trace>
</system.diagnostics>
```

You need to ensure that diagnostic data for the application writes to the event tog by using the configuration specified in the .config file.

What should you include in the application code?

A.
```
EventLog log = new EventLog();
log.WriteEntry("Trace data...");
```

B.
```
Debug.WriteLine("Trace data...");
```

C.
```
Console.SetOut(new StreamWriter("System.Diagnostics.EventLogTraceListener"));
Console.WriteLine("Trace data...");
```

D.
```
Trace.WriteLine("Trace data...");
```

A. Option A
B. Option B
C. Option C
D. Option D

Correct Answer: D
Section: Volume A
Explanation

Explanation/Reference:
Explanation:
Public static void Main(string[] args) {
Create a trace listener for the event log.
EventLogTraceListener myTraceListener = new EventLogTraceListener("myEventLogSource");
Add the event log trace listener to the collection.
Trace.Listeners.Add(myTraceListener);
// Write output to the event log.
Trace.WriteLine("Test output");
}

References: http://msdn.microsoft.com/en-us/library/vstudio/system.diagnostics.eventlogtracelistener

QUESTION 57

You have the following code (line numbers are included for reference only):

```
01class Bar
02{
03  pub lic string barColor { get; set; }
04  public string barName { get; set; }
05  private static IEnumerable<Bar> GetBars(string sqlConnectionString)
06  {
07    var bars = new List<Bar>();
08    SqlConnection fooSqlConn = new SqlConnection();
09    using (fooSqlConn)
10    {
11      SqlCommand fooSqlCmd = new SqlCommand
        ("Select sqlName,sqlColor from Animals", fooSqlConn);
12      fooSqlConn.Open();
13      using (SqlDataReader fooSqlReader = fooSqlCmd.ExecuteReader())
14      {
15
16        {
17          var bar = new Bar();
18          bar.barName = (String)fooSqlReader["sqlName"];
19          bar.barColor = (String)fooSqlReader["sqlColor"];
20          bars.Add(bar);
21        }
22      }
23    }
24    return bars;
25  }
26}
```

You need to identify the missing line of code at line 15. Which line of code should you identify?

A. using (fooSqlConn.BeginTransaction())
B. while (fooSqlReader.Read())
C. while (fooSqlReader.NextResult())
D. while (fooSqlReader.GetBoolean(0))

Correct Answer: B
Section: Volume A
Explanation

Explanation/Reference:

QUESTION 58
You are creating a console application named App1.

App1 retrieves data from the Internet by using JavaScript Object Notation (JSON).

You are developing the following code segment (line numbers are included for reference only):

```
01 public bool ValidateJson(string json, Dictionary<string, object> result)
02 {
03
04   try
05   {
06     result = serializer.Deserialize<Dictionary<string, object>>(json);
07     return true;
08   }
09   catch
10   {
11     return false;
12   }
13 }
```

You need to ensure that the code validates the JSON string.

Which code should you insert at line 03?

A. DataContractSerializer serializer = new DataContractSerializer();
B. var serializer = new DataContractSerializer();

C. XmlSerlalizer serializer = new XmlSerlalizer();
D. var serializer = new JavaScriptSerializer();

Correct Answer: D
Section: Volume A
Explanation

Explanation/Reference:
Explanation:
The JavaScriptSerializer Class Provides serialization and deserialization functionality for AJAX-enabled applications.

The JavaScriptSerializer class is used internally by the asynchronous communication layer to serialize and deserialize the data that is passed between the browser and the Web server. You cannot access that instance of the serializer. However, this class exposes a public API. Therefore, you can use the class when you want to work with JavaScript Object Notation (JSON) in managed code.

QUESTION 59
You are developing an application that uses several objects. The application includes the following code segment. (Line numbers are included for reference only.)

```
01 private bool IsNull(object obj)
02 {
03
04   return false;
05 }
```

You need to evaluate whether an object is null.

Which code segment should you insert at line 03?

A.
```
if (obj = null)
{
  return true;
}
```

B.
```
if (null)
{
  return true;
}
```

C.
```
if (obj == 0)
{
  return true;
}
```

D.
```
if (obj == null)
{
  return true;
}
```

A. Option A
B. Option B
C. Option C
D. Option D

Correct Answer: D
Section: Volume A
Explanation

Explanation/Reference:
Explanation:
Use the == operator to compare values and in this case also use the null literal.

QUESTION 60
You are developing an application.

The application contains the following code segment (line numbers are included for reference only):

```
01  ArrayList array1 = new ArrayList();
02  int var1 = 10;
03  int var2;
04  array1.Add(var1);
05  var2 = array1[0];
```

When you run the code, you receive the following error message: "Cannot implicitly convert type 'object'' to 'int'. An explicit conversion exists (are you missing a cast?)."

You need to ensure that the code can be compiled.

Which code should you use to replace line 05?

A. var2 = arrayl[0] as int;
B. var2 = ((List<int>)arrayl) [0];
C. var2 = arrayl[0].Equals(typeof(int));
D. var2 = (int) arrayl [0];

Correct Answer: D
Section: Volume B
Explanation

Explanation/Reference:

QUESTION 61
You need to write a method that retrieves data from a Microsoft Access 2013 database.

The method must meet the following requirements:
- Be read-only.
- Be able to use the data before the entire data set is retrieved.
- Minimize the amount of system overhead and the amount of memory usage.

Which type of object should you use in the method?

A. SqlDataAdapter
B. DataContext
C. DbDataAdapter
D. OleDbDataReader

Correct Answer: D
Section: Volume B
Explanation

Explanation/Reference:
Explanation:
OleDbDataReader Class
Provides a way of reading a forward-only stream of data rows from a data source.

Example:
```
OleDbConnection cn = new OleDbConnection();
OleDbCommand cmd = new OleDbCommand();
DataTable schemaTable;
OleDbDataReader myReader;

//Open a connection to the SQL Server Northwind database.
cn.ConnectionString = "Provider=SQLOLEDB;Data Source=server;User ID=login;
Password=password;Initial Catalog=Northwind";
```

QUESTION 62
You have the following code:

```
List<Int32> items = new List<int>() {
  100,
  95,
  80,
  75,
  95
};
```

You need to retrieve all of the numbers from the items variable that are greater than 80.

Which code should you use?

A.
```
var result = from i in items
  where i > 80
  select i;
```

B.
```
var result = items.Take(80);
```

C.
```
var result = items.First(i => i > 80);
```

D.
```
var result = items.Any(i => i > 80);
```

A. Option A
B. Option B
C. Option C

D. Option D

Correct Answer: A
Section: Volume B
Explanation

Explanation/Reference:

QUESTION 63
HOTSPOT
You are developing the following classes named:

- Class1
- Class2
- Class3

All of the classes will be part of a single assembly named Assembly.dll. Assembly.dll will be used by multiple applications.

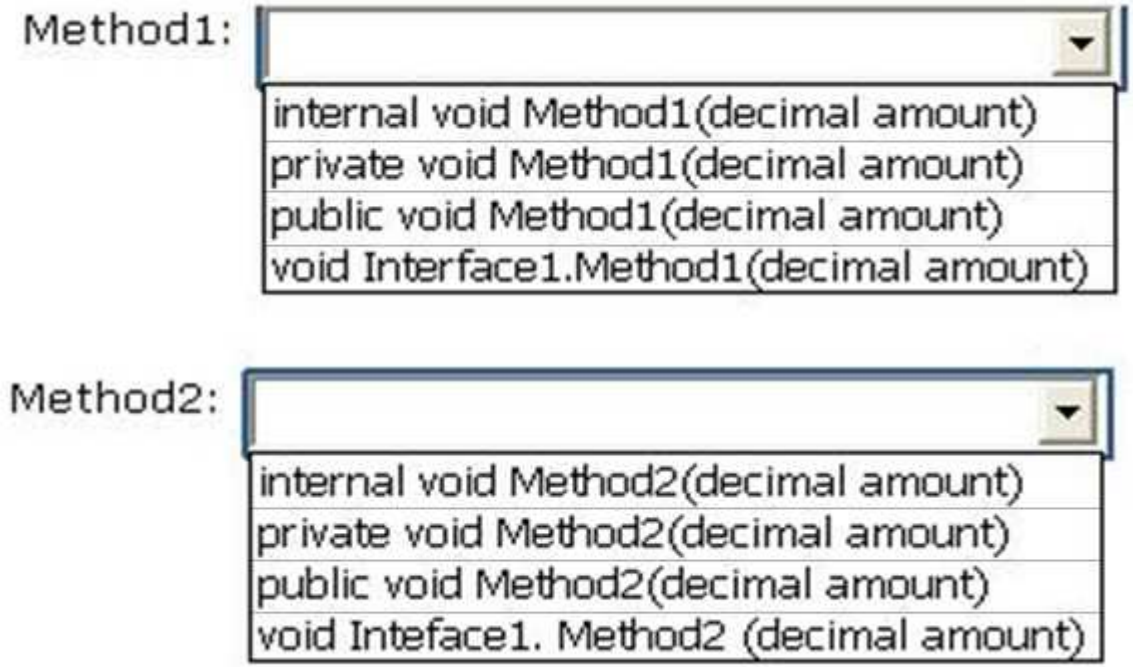
All of the classes will implement the following interface, which is also part ofAssembly.dll:

```
public interface Interface1
{
  void Method1(decimal amount);
  void Method2(decimal amount);
}
```

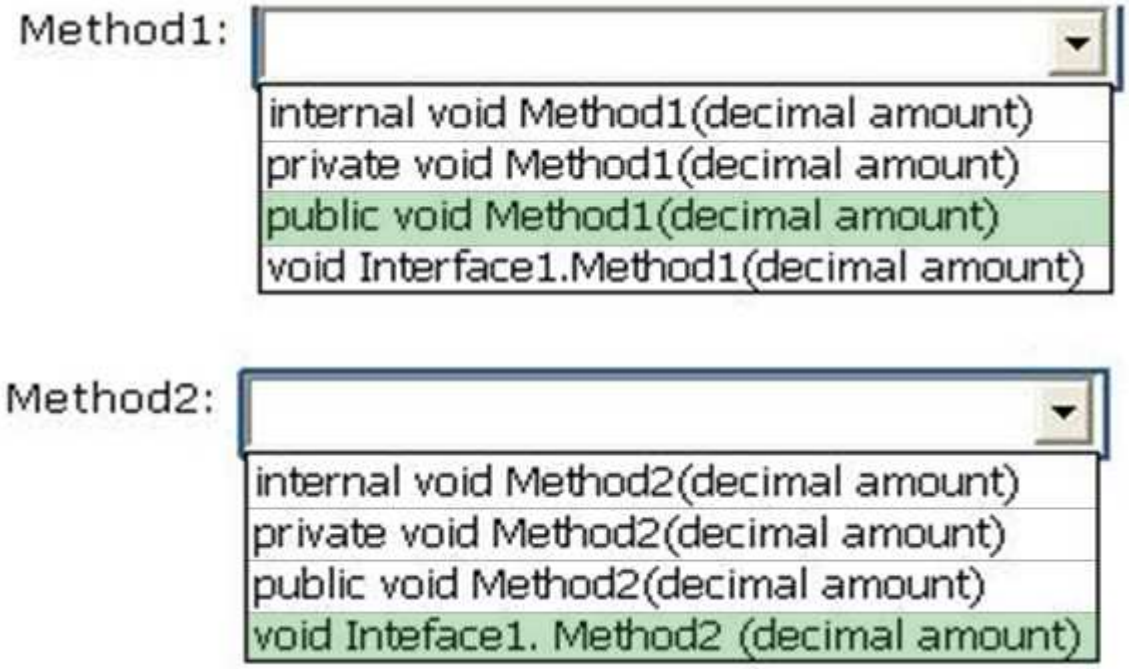
You need to ensure that the Method2 method for the Class3 class can be executed only when instances of the class are accessed through the Interface1 interface. The solution must ensure that calls to the Method1 method can be made either through the interface or through an instance of the class.

Which signature should you use for each method? (To answer, select the appropriate signature for each method in the answer area.)

Hot Area:



Correct Answer:



Section: Volume B
Explanation

Explanation/Reference:

QUESTION 64
You are implementing a method named `ProcessReports` that performs a long-running task. The `ProcessReports()` method has the following method signature:

```
public void ProcessReports(List<decimal> values,CancellationTokenSource cts, CancellationToken ct)
```

If the calling code requests cancellation, the method must perform the following actions:
- Cancel the long-running task.
- Set the task status to `TaskStatus.Canceled`.

You need to ensure that the `ProcessReports()` method performs the required actions.

Which code segment should you use in the method body?

A. if (ct.IsCancellationRequested)return;
B. ct.ThrowIfCancellationRequested() ;
C. cts.Cancel();
D. throw new AggregateException();

Correct Answer: B
Section: Volume B
Explanation

Explanation/Reference:

QUESTION 65
You are developing an application that will be deployed to multiple computers. You set the assembly name.

You need to create a unique identity for the application assembly.

Which two assembly identity attributes should you include in the source code? (Each correct answer presents part of the solution. Choose two.)

A. AssemblyTitleAttribute
B. AssemblyCultureAttribute
C. AssemblyVersionAttribute
D. AssemblyKeyNameAttribute
E. AssemblyFileVersion

Correct Answer: BC
Section: Volume B
Explanation

Explanation/Reference:
Explanation:
The AssemblyName object contains information about an assembly, which you can use to bind to that assembly. An assembly's identity consists of the following:
- Simple name
- Version number
- Cryptographic key pair

- Supported culture

B: AssemblyCultureAttribute
Specifies which culture the assembly supports.
The attribute is used by compilers to distinguish between a main assembly and a satellite assembly. A main assembly contains code and the neutral culture's resources. A satellite assembly contains only resources for a particular culture, as in [assembly:AssemblyCultureAttribute("de")]

C: AssemblyVersionAttribute
Specifies the version of the assembly being attributed.
The assembly version number is part of an assembly's identity and plays a key part in binding to the assembly and in version policy.

QUESTION 66
You are developing an application.

You need to declare a delegate for a method that accepts an integer as a parameter, and then returns an integer.

Which type of delegate should you use?

A. `Action<int>`
B. `Action<int, int>`
C. `Func<int, int>`
D. `Func<int>`

Correct Answer: C
Section: Volume B
Explanation

Explanation/Reference:

QUESTION 67
You are writing the following method (line numbers are included for reference only):

```
01 public T CreateObject<T>()
02
03 {
04   T obj = new T();
05   return obj;
06 }
```

You need to ensure that CreateObject compiles successfully.

What should you do?

A. Insert the following code at line 02: `where T : new()`
B. Replace line 01 with the following code: `public void CreateObject<T>()`
C. Replace line 01 with the following code: `public Object CreateObject<T>()`
D. Insert the following code at line 02: `where T : Object`

Correct Answer: A
Section: Volume B
Explanation

Explanation/Reference:

QUESTION 68
You are developing an application that includes the following code segment. (Line numbers are included for reference only.)

```
01 public class ItemBase
02 {
03 }
04 public class Widget : ItemBase
05 {
06 }
07 class Worker
08 {
09   void DoWork(object obj)
10   {
11     Console.WriteLine("In DoWork(object)");
12   }
13   void DoWork(Widget widget)
14   {
15     Console.WriteLine("In DoWork(Widget)");
16   }
17   void DoWork(ItemBase itembase)
18   {
19     Console.WriteLine("In DoWork(ItemBase)");
20   }
21   private void Run()
22   {
23     object o = new Widget();
24     DoWork(o);
25   }
26 }
```

You need to ensure that the DoWork(Widget widget) method runs.

With which code segment should you replace line 24?

A. `DoWork((Widget)o);`

B. `DoWork(new Widget(o));`
C. `DoWork(o is Widget);`
D. `DoWork((ItemBase)o);`

Correct Answer: A
Section: Volume B
Explanation

Explanation/Reference:

QUESTION 69
An application uses X509 certificates for data encryption and decryption. The application stores certificates in the Personal certificates collection of the Current User store. On each computer, each certificate subject is unique.

The application includes a method named `LoadCertificate`. The `LoadCertificate()` method includes the following code. (Line numbers are included for reference only.)


```
01 X509Certificate2 LoadCertificate(string searchValue)
02 {
03   var store = new X509Store(StoreName.My, StoreLocation.CurrentUser);
04   store.Open(OpenFlags.ReadOnly | OpenFlags.OpenExistingOnly);
05   var certs = store.Certificates.Find(
06
07    searchValue, false);
08     ...
09 }
```

The `LoadCertificate()` method must load only certificates for which the subject exactly matches the searchValue parameter value.

You need to ensure that the `LoadCertificate()` method loads the correct certificates.

Which code segment should you insert at line 06?

A. `X509FindType.FindBySubjectName,`

B. `X509FindType.FindBySubjectKeyIdentifier,`

C. `X509FindType.FindByIssuerName,`

D. `X509FindType.FindBySubjectDistinguishedName,`

A. Option A
B. Option B
C. Option C
D. Option D

Correct Answer: D
Section: Volume B
Explanation

Explanation/Reference:

QUESTION 70
You are developing a class named Scorecard. The following code implements the Scorecard class. (Line numbers are included for reference only.)

```
01 public class Scorecard
02 {
03   private Dictionary<string, int> players = new Dictionary<string, int>();
04   public void Add(string name, int score)
05   {
06     players.Add(name, score);
07   }
08
09 }
```

You create the following unit test method to test the Scorecard class implementation:

```
[TestMethod]
public void UnitTest1()
{
  Scorecard scorecard = new Scorecard();
  scorecard.Add("Player1", 10);
  scorecard.Add("Player2", 15);
  int expectedScore = 15;
  int actualScore = scorecard["Player2"];
  Assert.AreEqual(expectedScore, actualScore);
}
```

You need to ensure that the unit test will pass.

What should you do?

A. Insert the following code segment at line 08:

```
public int this[string name]
{
  get
  {
    return players[name];
  }
}
```

B. Insert the following code segment at line 08:

```
public Dictionary<string, int> Players
{
  get
  {
    return players;
  }
}
```

C. Replace line 03 with the following code segment:

```
public Dictionary<string, int> Players = new Dictionary<string, int>();
```

D. Insert the following code segment at line 08:

```
public int score(string name)
{
  return players[name];
}
```

A. Option A
B. Option B
C. Option C
D. Option D

Correct Answer: A
Section: Volume B
Explanation

Explanation/Reference:

QUESTION 71
You are developing an application that will parse a large amount of text.

You need to parse the text into separate lines and minimize memory use while processing data.

Which object type should you use?

A. DataContractSerializer
B. StringBuilder
C. StringReader
D. JsonSerializer

Correct Answer: C
Section: Volume B
Explanation

Explanation/Reference:

QUESTION 72
You are developing code for an application that retrieves information about Microsoft .NET Framework assemblies.

The following code segment is part of the application (line numbers are included for reference only):

```
01 public void ViewMetadata(string filePath)
02 {
03    var bytes = File.ReadAllBytes(filePath);
04
05    ...
06 }
```

You need to insert code at line 04. The code must load the assembly. Once the assembly is loaded, the code must be able to read the assembly metadata, but the code must be denied access from executing code from the assembly.

Which code segment should you insert at line 04?

A. `Assembly.ReflectionOnlyLoadFrom(bytes);`
B. `Assembly.ReflectionOniyLoad(bytes);`
C. `Assembly.Load(bytes);`
D. `Assembly.LoadFrom(bytes);`

Correct Answer: C
Section: Volume B
Explanation

Explanation/Reference:

QUESTION 73
You are developing a method named GenerateHash that will create the hash value for a file. The method includes the following code. (Line numbers are included for reference only.)

```
01 public byte[] GenerateHash(string filename, string hashAlgorithm)
02 {
03    var signatureAlgo = HashAlgorithm.Create(hashAlgorithm);
04    var fileBuffer = System.IO.File.ReadAllBytes(filename);
05
06 }
```

You need to return the cryptographic hash of the bytes contained in the fileBuffer variable.

Which code segment should you insert at line 05?

A.
```
var outputBuffer = new byte[fileBuffer.Length];
signatureAlgo.TransformBlock(fileBuffer, 0, fileBuffer.Length, outputBuffer, 0);
signatureAlgo.TransformFinalBlock(fileBuffer, fileBuffer.Length - 1, fileBuffer.Length);
return outputBuffer;
```

B.
```
signatureAlgo.ComputeHash(fileBuffer);
return signatureAlgo.GetHashCode();
```

C.
```
var outputBuffer = new byte[fileBuffer.Length];
signatureAlgo.TransformBlock(fileBuffer, 0, fileBuffer.Length, outputBuffer, 0);
return outputBuffer;
```

D.
```
return signatureAlgo.ComputeHash(fileBuffer);
```

A. Option A
B. Option B
C. Option C
D. Option D

Correct Answer: D
Section: Volume B
Explanation

Explanation/Reference:

QUESTION 74
You are modifying an existing application that manages employee payroll. The application includes a class named PayrollProcessor. The PayrollProcessor class connects to a payroll database and processes batches of paychecks once a week.

You need to ensure that the PayrollProcessor class supports iteration and releases database connections after the batch processing completes.

Which two interfaces should you implement? (Each correct answer presents part of the complete solution. Choose two.)

A. IEquatable
B. IEnumerable
C. IDisposable
D. IComparable

Correct Answer: BC
Section: Volume B
Explanation

Explanation/Reference:
Explanation:
IEnumerable
IDisposable Interface
Exposes an enumerator, which supports a simple iteration over a non-generic collection.

Defines a method to release allocated resources.
The primary use of this interface is to release unmanaged resources.

QUESTION 75
You are developing an application that will read data from a text file and display the file contents.

You need to read data from the file, display it, and correctly release the file resources.

Which code segment should you use?

A.
```
string inputLine;
using (StreamReader reader = new StreamReader("data.txt"))
{
  while ((inputLine = reader.ReadLine()) != null)
  {
    Console.WriteLine(inputLine);
  }
}
```

B.
```
string inputLine;
StreamReader reader = null;
using (reader = new StreamReader("data.txt")) ;
while ((inputLine = reader.ReadLine()) != null)
{
  Console.WriteLine(inputLine);
}
```

C.
```
string inputLine;
StreamReader reader = new StreamReader("data.txt");
while ((inputLine = reader.ReadLine()) != null)
{
  Console.WriteLine(inputLine);
}
```

D.
```
string inputLine;
StreamReader reader = null;
try
{
  reader = new StreamReader("data.txt");
  while ((inputLine = reader.ReadLine()) != null)
  {
    Console.WriteLine(inputLine);
```

A. Option A
B. Option B
C. Option C
D. Option D

Correct Answer: A
Section: Volume B
Explanation

Explanation/Reference:

QUESTION 76
HOTSPOT
You have the following code:

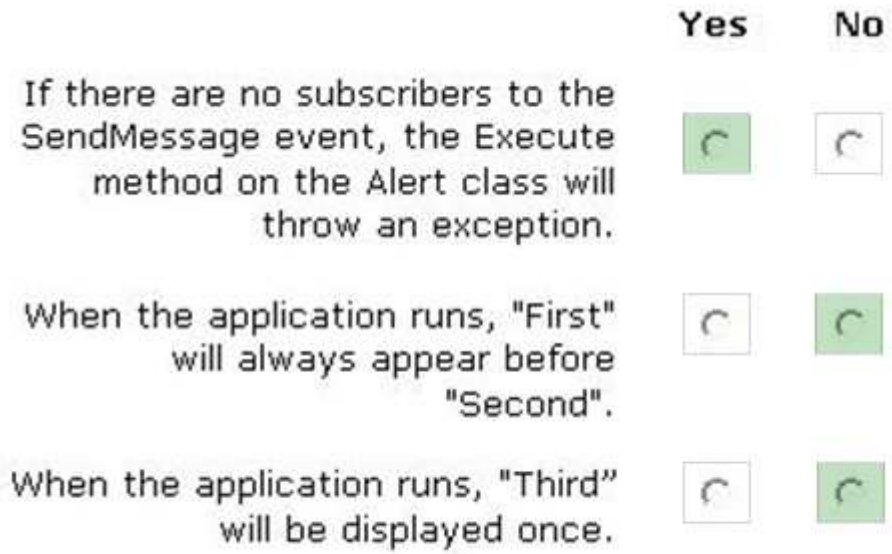
```
public class Alert
{
  public event EventHandler<EventArgs> SendMessage;

  public void Execute()
  {
    SendMessage(this, new EventArgs());
  }
}

public class Subscriber
{
  Alert alert = new Alert();

  public void Subscribe()
  {
    alert.SendMessage += (sender, e) => { Console.WriteLine("First"); };
    alert.SendMessage += (sender, e) => { Console.WriteLine("Second"); };
    alert.SendMessage += (sender, e) => { Console.WriteLine("Third"); };
    alert.SendMessage += (sender, e) => { Console.WriteLine("Third"); };
  }

  public void Execute()
  {
    alert.Execute();
  }

  public static void Main()
  {
    Subscriber subscriber = new Subscriber();
    subscriber.Subscribe();
    subscriber.Execute();
  }
}
```

For each of the following statements, select Yes if the statement is true. Otherwise, select No.

Hot Area:

	Yes	No
If there are no subscribers to the SendMessage event, the Execute method on the Alert class will throw an exception.	○	○
When the application runs, "First" will always appear before "Second".	○	○
When the application runs, "Third" will be displayed once.	○	○

Correct Answer:



Section: Volume B
Explanation

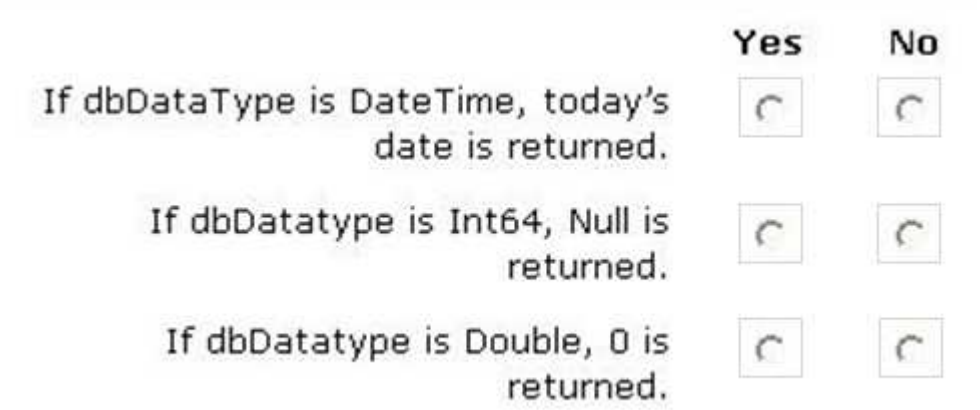
Explanation/Reference:

QUESTION 77
HOTSPOT
You are building a data access layer in an application that contains the following code:

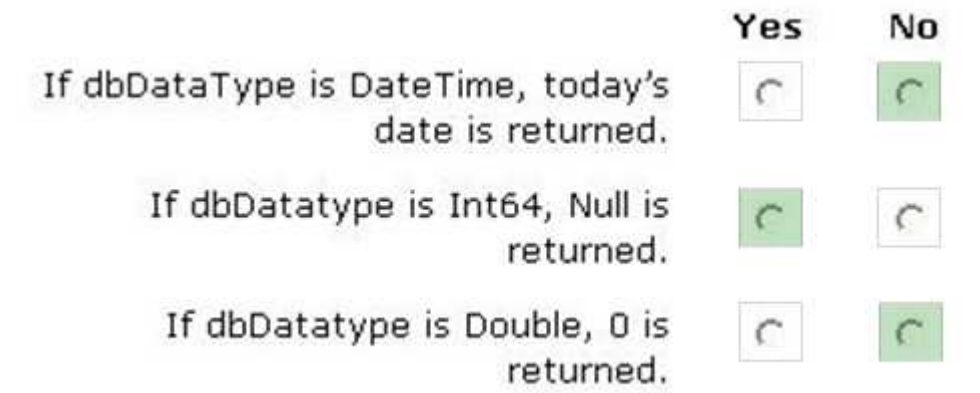
```
public static Object GetTypeDefault(DbType dbDataType)
{
  switch (dbDataType)
  {
    case DbType.Boolean:
      return false;
    case DbType.DateTime:
      return DateTime.MinValue;
    case DbType.Decimal:
      return 0m;
    case DbType.Int32:
      return 0;
    case DbType.String:
      return String.Empty;
    default:
      return null;
  }
}
```

For each of the following statements, select Yes if the statement is true. Otherwise, select No.

Hot Area:



Correct Answer:



Section: Volume B
Explanation

Explanation/Reference:

QUESTION 78
HOTSPOT

You have the following code:

```
public class Customer
{

    private int CustomerId     { get; set; }
    public string CompanyName { get; set; }
    protected string State       { get; set; }
    public string City        { get; set; }

    public Customer(int customerId, string companyName, string state, string city)
    {
        CustomerId = customerId;
        CompanyName = companyName;
        State = state;
        City = city;
    }
    public  Customer() {}
}
public interface ICustomer
{
    string GetCustomerById(int customerId);
    string GetCustomerByDate(DateTime dateFrom, DateTime dateTo);
}

public class MyCustomerClass : Customer, ICustomer
{
    public string Zip { get; set; }
    public string Phone { get; set; }
    public string GetCustomerById(int customerId)
    {
      ...
    }
    public string GetCustomerByDate(DateTime dateFrom, DateTime dateTo)
    {
      ...
    }
}
```

For each of the following statements, select Yes if the statement is true. Otherwise, select No.

Hot Area:

Correct Answer:

Section: Volume B
Explanation

Explanation/Reference:

Explanation:
Note:
CustomerID is declared private.
CompanyName is declted protected.
State is declared protected.
The protected keyword is a member access modifier. A protected member is accessible from within the class in which it is declared, and from within any class derived from the class that declared this member.

QUESTION 79
You need to create a method that can be called by using a varying number of parameters.

What should you use?

A. Method overloading
B. Derived classes
C. Named parameters
D. Enumeration

Correct Answer: A
Section: Volume B
Explanation

Explanation/Reference:
Explanation:
Member overloading means creating two or more members on the same type that differ only in the number or type of parameters but have the same name. Overloading is one of the most important techniques for improving usability, productivity, and readability of reusable libraries. Overloading on the number of parameters makes it possible to provide simpler versions of constructors and methods. Overloading on the parameter type makes it possible to use the same member name for members performing identical operations on a selected set of different types.

QUESTION 80
You are developing an application.

The application contains the following code segment (line numbers are included for reference only):

```
01  ArrayList array1 = new ArrayList();
02  int var1 = 10;
03  int var2;
04  array1.Add(var1);
05  var2 = array1[0];
```

When you run the code, you receive the following error message: "Cannot implicitly convert type 'object' to 'int'. An explicit conversion exists (are you missing a cast?)."

You need to ensure that the code can be compiled.

Which code should you use to replace line 05?

A. `var2 = ((List<int>) array1) [0];`
B. `var2 = array1[0].Equals(typeof(int));`
C. `var2 = Convert.ToInt32(array1[0]);`
D. `var2 = ((int[])array1)[0];`

Correct Answer: C
Section: Volume B
Explanation

Explanation/Reference:

QUESTION 81
You have the following code (line numbers are included for reference only):

```
01 public class Program
02 {
03   private static System.Diagnostics.Stopwatch _execTimer =
04    new System.Diagnostics.Stopwatch();
05   public static void Delay(int delay)
06   {
07     Thread.Sleep(delay);
08   }
09   public static void LogLongExec(string msg)
10   {
11     if (_execTimer.Elapsed.Seconds >= 5)
12     throw new Exception(
13      string.Format("Execution is too long > {0} > {1}",
14      msg, _execTimer.Elapsed.TotalMilliseconds));
15   }
16   public static void Main()
17   {
18     _execTimer.Start();
19     try
20     {
21       Delay(10);
22       LogLongExec("Delay(10)");
23       Delay(5000);
24       LogLongExec("Delay(5000)");
25     }
26     catch (Exception ex)
27     {
28
29     }
30   }
31 }
```

You need to ensure that if an exception occurs, the exception will be logged.

Which code should you insert at line 28?

A.
```
System.Diagnostics.TraceSource trace = new TraceSource("./Trace.log");
trace.TraceEvent(TraceEventType.Error, ex.HResult, ex.Message);
```

B.
```
using (System.Diagnostics.XmlWriterTraceListener log1 =
 new XmlWriterTraceListener("./Error.log"))
{
  log1.TraceEvent(
   new TraceEventCache(), ex.Message, TraceEventType.Error, ex.HResult);
  log1.Flush();
}
```

C.
```
System.Diagnostics.EventInstance errorEvent =
 new System.Diagnostics.EventInstance(ex.HResult, 1, EventLogEntryType.Error);
System.Diagnostics.EventLog.WriteEvent("MyAppErrors", errorEvent, ex.Message);
```

D.
```
EventLog logEntry = new EventLog();
logEntry.Source = "Application";
logEntry.WriteEntry(ex.Message, EventLogEntryType.Error);
```

A. Option A
B. Option B
C. Option C

D. Option D

Correct Answer: B
Section: Volume B
Explanation

Explanation/Reference:
Explanation:
- XmlWriterTraceListener
  Directs tracing or debugging output as XML-encoded data to a TextWriter or to a Stream, such as a FileStream.
- TraceListener.TraceEvent Method (TraceEventCache, String, TraceEventType, Int32)
  Writes trace and event information to the listener specific output.

Syntax:
```
[ComVisibleAttribute(false)]
public virtual void TraceEvent(
TraceEventCache eventCache,
string source,
TraceEventType eventType,
int id
)
```

QUESTION 82
You write the following method (line numbers are included for reference only):

```
01 public static List<string> TestIfWebSite(string url)
02 {
03   const string pattern = @"http://(www\.)?([^\.]+)\.com";
04   List<string> result = new List<string>();
05
06   MatchCollection myMatches = Regex.Matches(url, pattern);
07 ...
08   return result;
09 }
```

You need to ensure that the method extracts a list of URLs that match the following pattern:

```
@http://(www\.)?([^\.]+)\.com;
```

Which code should you insert at line 07?

A
```
result = (List<string>) myMatches.SyncRoot;
```

B.
```
result = (from System.Text.RegularExpressions.Match m in myMatches
  where m.Value.Contains(pattern)
  select m.Value).ToList<string>();
```

C.
```
foreach (Match currentMatch in myMatches)
  result.Add(currentMatch.Groups.ToString());
```

D.
```
foreach (Match currentMatch in myMatches)
  result.Add(currentMatch.Value);
```

A. Option A
B. Option B
C. Option C
D. Option D

Correct Answer: D
Section: Volume B
Explanation

Explanation/Reference:
Explanation:
- MatchCollection
  Represents the set of successful matches found by iteratively applying a regular expression pattern to the input string.
  The collection is immutable (read-only) and has no public constructor. The Regex.Matches method returns a MatchCollection object.
- List<T>.Add Method

Adds an object to the end of the List<T>.

QUESTION 83
You are creating a class library that will be used in a web application.

You need to ensure that the class library assembly is strongly named.

What should you do?

A. Use the gacutil.exe command-line tool.
B. Use the xsd.exe command-line tool.
C. Use the aspnet_regiis.exe command-line tool.
D. Use assembly attributes.

Correct Answer: D
Section: Volume B
Explanation

Explanation/Reference:
Explanation:
The Windows Software Development Kit (SDK) provides several ways to sign an assembly with a strong name:
- Using the Assembly Linker (Al.exe) provided by the Windows SDK.
- Using assembly attributes to insert the strong name information in your code. You can use either the AssemblyKeyFileAttribute or the AssemblyKeyNameAttribute, depending on where the key file to be used is located.
- Using compiler options such /keyfile or /delaysign in C# and Visual Basic, or the /KEYFILE or /DELAYSIGN linker option in C++. (For information on delay signing, see Delay Signing an Assembly.)

Note:
A strong name consists of the assembly's identity—its simple text name, version number, and culture information (if provided)—plus a public key and a digital signature. It is generated from an assembly file (the file that contains the assembly manifest, which in turn contains the names and hashes of all the files that make up the assembly), using the corresponding private key. Microsoft® Visual Studio® .NET and other development tools provided in the .NET Framework SDK can assign strong names to an assembly. Assemblies with the same strong name are expected to be identical.

QUESTION 84
You need to store the values in a collection.

The solution must meet the following requirements:
- The values must be stored in the order that they were added to the collection.
- The values must be accessed in a first-in, first-out order.

Which type of collection should you use?

A. SortedList
B. Queue
C. ArrayList
D. Hashtable

Correct Answer: B
Section: Volume B
Explanation

Explanation/Reference:

QUESTION 85
An application is throwing unhandled NullReferenceException and FormatException errors. The stack trace shows that the exceptions occur in the `GetWebResult()` method.

The application includes the following code to parse XML data retrieved from a web service. (Line numbers are included for reference only.)

```
01 int GetWebResult(XElement result)
02 {
03   return int.Parse(result.Element("response").Value);
04 }
```

You need to handle the exceptions without interfering with the existing error-handling infrastructure.

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

A. Replace line 03 with the following code segment:

```
int returnValue;
int.TryParse(result.Element("response").Value, out returnValue);
return returnValue;
```

B. Replace line 03 with the following code segment:

```
return int.ParseOptions.Safe(result.Element("response").Value);
```

C. Register an event handler with AppDomain.CurrentDomain.UnhandledException.

D. Use a **try...catch** statement to handle the exceptions in the **GetWebResult()** method.

A. Option A
B. Option B
C. Option C
D. Option D

Correct Answer: AC
Section: Volume B
Explanation

Explanation/Reference:
Explanation:
A: The TryParse method is like the Parse method, except the TryParse method does not throw an exception if the conversion fails. It eliminates the need to use exception handling to test for a FormatException in the event that s is invalid and cannot be successfully parsed.

C: UnhandledException event handler
If the UnhandledException event is handled in the default application domain, it is raised there for any unhandled exception in any thread, no matter what application domain the thread started in. If the thread started in an application domain that has an event handler for UnhandledException, the event is raised in that application domain.

QUESTION 86
You are developing an application that retrieves patient data from a web service. The application stores the JSON messages returned from the web service in a string variable named PatientAsJson.

The variable is encoded as UTF-8. The application includes a class named Patient that is defined by the following code:

```
public class Patient
{
  public bool IsActive { get; set; }
  public string Name { get; set; }
  public int Id { get; set; }
}
```

You need to populate the Patient class with the data returned from the web service.

Which code segment should you use?

A.
```
DataContractJsonSerializer jsSerializer = new DataContractJsonSerializer(typeof(Patient));
using (MemoryStream stream = new MemoryStream(Encoding.UTF8.GetBytes(PatientAsJson)))
{
  Patient patientFromJson = (Patient)jsSerializer.ReadObject(stream);
}
```

B.
```
XmlSerializer xmlSerializer = new XmlSerializer(typeof(Patient));
using (MemoryStream stream = new MemoryStream(Encoding.UTF8.GetBytes(PatientAsJson)))
{
  Patient patientFromJson = (Patient)xmlSerializer.Deserialize(stream);
}
```

C.
```
DataContractJsonSerializer jsSerializer = new DataContractJsonSerializer(typeof(Patient));
using (MemoryStream stream = new MemoryStream(Encoding.UTF8.GetBytes(PatientAsJson)))
{
  Patient patientFromJson = new Patient();
  jsSerializer.WriteObject(stream, patientFromJson);
}
```

D.
```
IFormatter formatter = new BinaryFormatter();
Stream stream = new FileStream(PatientAsJson, FileMode.Open, FileAccess.Read, FileShare.Read);
Patient patientFromJson = (Patient)formatter.Deserialize(stream);
stream.Close();
```

A. Option A
B. Option B
C. Option C
D. Option D

Correct Answer: A
Section: Volume B
Explanation

Explanation/Reference:

QUESTION 87
You are developing a game that allows players to collect from 0 through 1000 coins. You are creating a method that will be used in the game. The method includes the following code. (Line numbers are included for reference only.)

```
01 public string FormatCoins(string name, int coins)
02 {
03
04 }
```

The method must meet the following requirements:
- Return a string that includes the player name and the number of coins.
- Display the number of coins without leading zeros if the number is 1 or greater.
- Display the number of coins as a single 0 if the number is 0.

You need to ensure that the method meets the requirements.

Which code segment should you insert at line 03?

A.
```
return String.Format("Player {0}, collected {1} coins", name, coins.ToString("###0"));
```

B.
```
return String.Format("Player {0} collected {1:000#} coins.", name, coins);
```

C.
```
return String.Format("Player {name} collected {coins.ToString('000')} coins");
```

D.
```
return String.Format("Player {1} collected {2:D3} coins.", name, coins);
```

A. Option A
B. Option B
C. Option C
D. Option D

Correct Answer: D

Section: Volume B
Explanation

Explanation/Reference:

QUESTION 88
You have an application that will send confidential information to a Web server.

You need to ensure that the data is encrypted when it is sent across the network.

Which class should you use?

A. CryptoStream
B. AuthenticatedStream
C. PipeStream
D. NegotiateStream

Correct Answer: A
Section: Volume B
Explanation

Explanation/Reference:

QUESTION 89
You are developing a class named EmployeeRoster. The following code implements the EmployeeRoster class. (Line numbers are included for reference only.)

```
01 public class EmployeeRoster
02 {
03   private Dictionary<string, int> employees = new Dictionary<string, int>();
04   public void Add(string name, int salary)
05   {
06     employees.Add(name, salary);
07   }
08
09 }
```

You create the following unit test method to test the EmployeeRoster class implementation:

```
public void UnitTest1()
{
   EmployeeRoster employeeRoster = new EmployeeRoster();
   employeeRoster.Add("David Jones", 50000);
   employeeRoster.Add("Phyllis Harris", 75000);
   int expectedSalary = 75000;
   int actualSalary = employeeRoster["Phyllis Harris"];
   Assert.AreEqual(expectedSalary, actualSalary);
}
```

You need to ensure that the unit test will pass.

What should you do?

A. Insert the following code segment at line 08:

```
public Dictionary<string, int> Employees
{
  get
  {
    return employees;
  }
}
```

B. Insert the following code segment at line 08:

```
public int this[string name]
{
  get
  {
    return employees[name];
  }
}
```

C. Replace line 03 with the following code segment:

```
public Dictionary<string, int> Employees = new Dictionary<string, int>();
```

D. Insert the following code segment at line 08:

```
public int salary(string name)
{
  return employees[name];
}
```

A. Option A
B. Option B
C. Option C
D. Option D

Correct Answer: B
Section: Volume B
Explanation

Explanation/Reference:

QUESTION 90
You are developing an application that produces an executable named MyApp.exe and an assembly named MyApp.dll.

The application will be sold to several customers.

You need to ensure that enough debugging information is available for MyApp.exe, so that if the application throws an error in a customer's environment, you can debug the error in your own development environment.

What should you do?

A. Digitally sign MyApp.dll.
B. Produce program database (PDB) information when you compile the code.
C. Compile MyApp.exe by using the /unsafe compiler option.
D. Initializes a new instance of the AssemblyDelaySignAttribute class in the MyApp.dll constructor.

Correct Answer: B
Section: Volume B
Explanation

Explanation/Reference:

QUESTION 91
You are modifying an existing banking application.

The application includes an Account class and a Customer class. The following code segment defines the classes.

```
class Account
{
  public Account(decimal balance, int term, decimal rate)
  {
    Term = term;
    Balance = balance;
    Rate = rate;
  }
  public decimal Balance { get; set; }
  public decimal Rate { get; set; }
  public int Term { get; set; }
}

class Customer
{
  public Customer(string firstName, string lastName, Collection<Account> accounts)
  {
    FirstName = firstName;
    LastName = lastName;
    AccountCollection = accounts;
  }
  public string FirstName { get; set; }
  public string LastName { get; set; }
  public Collection<Account> AccountCollection { get; set; }
}
```

You populate a collection named customerCollection with Customer and Account objects by using the following code segment:

```
Collection<Customer> customerCollection = new Collection<Customer>();
Collection<Account> customerAccounts = new Collection<Account>();
customerAccounts.Add(new Account(1000m, 2, 0.025m));
customerAccounts.Add(new Account(3000m, 4, 0.045m));
customerAccounts.Add(new Account(5000m, 6, 0.045m));
customerCollection.Add(new Customer("David", "Jones", customerAccounts));
```

You create a largeCustomerAccounts collection to store the Account objects by using the following code segment:

```
Collection<Account> largeCustomerAccounts = new Collection<Account> ();
```

All accounts with a Balance value greater than or equal to 1,000,000 must be tracked.

You need to populate the largeCustomerAccounts collection with Account objects.

Which code segment should you use?

A.
```
foreach (Customer customer in customerCollection)
{
  foreach (Account account in customer.AccountCollection)
  {
    if (account.Balance >= 1000000m)
    {
      customer.AccountCollection.Add(account);
    }
  }
}
```

B.
```
foreach (Account customer in customerCollection)
{
  foreach (Account account in largeCustomerAccounts)
  {
    if (account.Balance >= 1000000m)
    {
      largeCustomerAccounts.Add(account);
    }
  }
}
```

C.
```
foreach (Customer customer in customerCollection)
{
  foreach (Account account in customer.AccountCollection)
  {
    if (account.Balance >= 1000000m)
    {
      largeCustomerAccounts.Add(account);
    }
  }
}
```

A. Option A
B. Option B
C. Option C
D. Option D

Correct Answer: C
Section: Volume B
Explanation

Explanation/Reference:

QUESTION 92
You are implementing a method named `GetValidEmailAddresses`. The `GetValidEmailAddresses()` method processes a list of string values that represent email addresses.

The `GetValidEmailAddresses()` method must return only email addresses that are in a valid format.

You need to implement the `GetValidEmailAddresses()` method.

Which two code segments can you use to achieve this goal? (Each correct answer presents a complete solution. Choose two.)

A.
```
private static List<String> GetValidEmailAddresses(string input, string pattern)
{
  var regex = new Regex(pattern);
  var matches = regex.Matches(input);
  var validEmailAddresses = new List<String>();
  foreach(Match match in matches)
  {
    if(!match.Success)
    {
      validEmailAddresses.Add(match.Value);
    }
  }
  return validEmailAddresses;
}
```

B.
```
private static List<String> GetValidEmailAddresses(string input, string pattern)
{
  var regex = new Regex(pattern);
  var matches = regex.Matches(input);
  return (from Match match in matches where match.Success select match.Value).ToList();
}
```

C.
```
private static List<String> GetValidEmailAddresses(string input, string pattern)
{
  var regex = new Regex(pattern);
  var matches = regex.Matches(input);
  return (from Match match in matches where match.Success select match.Success.ToString()).ToList();
}
```

D.
```
private static List<String> GetValidEmailAddresses(string input, string pattern)
{
  var regex = new Regex(pattern);
  var matches = regex.Matches(input);
  var validEmailAddresses = new List<String>();
  foreach(Match match in matches)
  {
    if(match.Success)
    {
      validEmailAddresses.Add(match.Value);
    }
  }
  return validEmailAddresses;
}
```

A. Option A
B. Option B
C. Option C
D. Option D

Correct Answer: BD
Section: Volume B
Explanation

Explanation/Reference:
Explanation:
Note:
List<T>.Add Method
Adds an object to the end of the List<T>.

QUESTION 93
You are creating an application that reads from a database.

You need to use different databases during the development phase and the testing phase by using conditional compilation techniques.

What should you do?

A. Configure the assembly metadata to use the pre-existing public key for the assembly identity by using the AssemblySignatureKeyAttribute attribute.
B. Disable the strong-name bypass feature of Microsoft .NET Framework in the registry.
C. Configure the Define DEBUG constant setting in Microsoft Visual Studio.
D. Decorate the code by using the [assembly:AssemblyDelaySignAttribute(true)] attribute.

Correct Answer: C
Section: Volume B
Explanation

Explanation/Reference:
Explanation:
Use one debug version to connect to the development database, and a standard version to connect to the live database.

QUESTION 94
You are troubleshooting an application that uses a class named FullName. The class is decorated with the DataContractAttribute attribute. The application includes the following code. (Line numbers are included for reference only.)

```
01 class Program
02 {
03   MemoryStream WriteName(Name name)
04   {
05     var ms = new MemoryStream();
06     var binary = XmlDictionaryWriter.CreateBinaryWriter(ms);
07     var ser = new DataContractSerializer(typeof(FullName));
08     ser.WriteObject(binary, name);
09
10     return ms;
11   }
12 }
```

You need to ensure that the entire FullName object is serialized to the memory stream object.

Which code segment should you insert at line 09?

A. `binary.WriteEndDocument();`
B. `binary.WriteEndDocumentAsync();`
C. `binary.WriteEndElementAsync();`
D. `binary.Flush();`

Correct Answer: A
Section: Volume B
Explanation

Explanation/Reference:
Explanation:
- DataContractSerializer.WriteEndObject Method (XmlDictionaryWriter)
  Writes the closing XML element using an XmlDictionaryWriter.
- Note on line 07: DataContractSerializer.WriteObject Method
  Writes all the object data (starting XML element, content, and closing element) to an XML document or stream.

QUESTION 95
You need to write a method that retrieves data from a Microsoft Access 2013 database. The method must meet the following requirements:
- Be read-only.

- Be able to use the data before the entire data set is retrieved.
- Minimize the amount of system overhead and the amount of memory usage.

Which type of object should you use in the method?

A. DbDataReader
B. DataContext
C. unTyped DataSet
D. DbDataAdapter

Correct Answer: A
Section: Volume B
Explanation

Explanation/Reference:
Explanation:
DbDataReader Class
Reads a forward-only stream of rows from a data source.

QUESTION 96
You are creating a console application named App1.

App1 will validate user input for order entries.

You are developing the following code segment (line numbers are included for reference only):

```
01 Console.Write("Enter unit price: ");
02 string price = Console.ReadLine();
03
04   Console.WriteLine("Valid price");
05 else
06   Console.WriteLine("Invalid price")
```

You need to complete the code segment.

The solution must ensure that prices are positive and have two decimal places.

Which code should you insert at line 03?

A.
```
if (!Regex.IsMatch(price, @"^(-)?\d+(\.\d\d)?$"))
```

B.
```
if (Regex.IsMatch(price, @"^(-)?\d+(\.\d\d)?$"))
```

C.
```
Regex reg = new Regex(@"^\d+(\.\d\d)?$");
if (reg.IsMatch(price))
```

D.
```
Regex reg = new Regex(@"^(-)?\d+(\.\d\d)?$");
if (reg.IsMatch(price))
```

A. Option A
B. Option B
C. Option C
D. Option D

Correct Answer: C
Section: Volume B
Explanation

Explanation/Reference:
Explanation:
Regex.IsMatch Method (String, String)
Indicates whether the specified regular expression finds a match in the specified input string.

Syntax:
`public static bool IsMatch(`

```
string input,
string pattern
)
```

QUESTION 97
You have the following code:

```
List<Int32> items = new List<int>() {
  100,
  95,
  80,
  75,
  95
};
```

You need to retrieve all of the numbers from the items variable that are greater than 80.

Which code should you use?

A.
```
var result = from i in items
  where i > 80
  select i;
```

B.
```
var result = from i in items
  groupby i into grouped
  where grouped.Key > 80
  select i;
```

C.
```
var result = items.Take(80);
```

D.
```
var result = items.Skip(80);
```

A. Option A
B. Option B
C. Option C
D. Option D

Correct Answer: A
Section: Volume B
Explanation

Explanation/Reference:

QUESTION 98
You are creating a console application named Appl.

App1 retrieves data from the Internet by using JavaScript Object Notation (JSON).

You are developing the following code segment (line numbers are included for reference only):

```
01 public bool ValidateJson(string json, Dictionary<string, object> result)
02 {
03
04   try
05   {
06     result = serializer.Deserialize<Dictionary<string, object>>(json);
07     return true;
08   }
09   catch
10   {
11     return false;
12   }
13 }
```

You need to ensure that the code validates the JSON string.

Which code should you insert at line 03?

A.
```
DataContractSerializer serializer = new DataContractSerializer();
```

B.
```
var serializer = new NetDataContractSerializer();
```

C.
```
NetDataContractSerializer serializer = new NetDataContractSerializer();
```

D.
```
JavaScriptSerializer serializer = new JavaScriptSerializer();
```

A. Option A
B. Option B
C. Option C
D. Option D

Correct Answer: D
Section: Volume B
Explanation

Explanation/Reference:
Explanation:
The JavaScriptSerializer Class Provides serialization and deserialization functionality for AJAX-enabled applications.

The JavaScriptSerializer class is used internally by the asynchronous communication layer to serialize and deserialize the data that is passed between the browser and the Web server. You cannot access that instance of the serializer. However, this class exposes a public API. Therefore, you can use the class when you want to work with JavaScript Object Notation (JSON) in managed code.

QUESTION 99
You are evaluating a method that calculates loan interest. The application includes the following code segment. (Line numbers are included for reference only.)

```
01 private static decimal CalculateInterest(decimal loanAmount, int loanTerm)
02 {
03   decimal interestAmount;
04   decimal loanRate;
05   if (loanTerm > 0 && loanTerm < 5 && loanAmount < 5000m)
06   {
07     loanRate = 0.045m;
08   }
09   else if (loanTerm > 5 && loanAmount > 5000m)
10   {
11     loanRate = 0.085m;
12   }
13   else
14   {
15     loanRate = 0.055m;
16   }
17   interestAmount = loanAmount * loanRate * loanTerm;
18   return interestAmount;
19 }
```

When the loanTerm value is 3 and the loanAmount value is 9750, the loanRate must be set to 8.25 percent.

You need to adjust the loanRate value to meet the requirements.

What should you do?

A. Replace line 04 with the following code segment: `decimal loanRate = 0.0325m;`
B. Replace line 17 with the following code segment: `interestAmount = loanAmount * 0.0825m * loanTerm;`
C. Replace line 15 with the following code segment: `loanRate = 0.0825m;`
D. Replace line 07 with the following code segment: `loanRate = 0.0825m;`

Correct Answer: C
Section: Volume B
Explanation

Explanation/Reference:

QUESTION 100
You are implementing a new method named `ProcessData`. The `ProcessData()` method calls a third-party component that performs a long-running operation to retrieve stock information from a web service.

The third-party component uses the IAsyncResult pattern to signal completion of the long-running operation.

You need to ensure that the calling code handles the long-running operation as a System.Threading.Tasks.Task object.

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

A. Call the component by using the `TaskFactory.FromAsync()` method.
B. Create a `TaskCompletionSource<T>` object.
C. Apply the async modifier to the method signature.
D. Apply the following attribute to the method signature: `[MethodImpl(MethodImplOptions.Synchronized)]`

Correct Answer: AB
Section: Volume B
Explanation

Explanation/Reference:
Explanation:
A: TaskFactory.FromAsync Method
Creates a Task that represents a pair of begin and end methods that conform to the Asynchronous Programming Model pattern. Overloaded.
Example:
TaskFactory.FromAsync Method (IAsyncResult, Action<IAsyncResult>)
Creates a Task that executes an end method action when a specified IAsyncResult completes.

B: In many scenarios, it is useful to enable a Task<TResult> to represent an external asynchronous operation. TaskCompletionSource<TResult> is provided for this purpose. It enables the creation of a task that can be handed out to consumers, and those consumers can use the members of the task as they would any other. However, unlike most tasks, the state of a task created by a TaskCompletionSource is controlled explicitly by the methods on TaskCompletionSource. This enables the completion of the external asynchronous operation to be propagated to the underlying Task. The separation also ensures that consumers are not able to transition the state without access to the corresponding TaskCompletionSource.

Note:
System.Threading.Tasks.Task
Represents an asynchronous operation.

QUESTION 101
You are developing an application for a bank. The application includes a method named `ProcessLoan` that processes loan applications. The `ProcessLoan()`

method uses a method named `CalculateInterest`. The application includes the following code:

```
static decimal CalculateInterest(decimal amount, decimal rate, int term)
{
  return amount * rate * term;
}
static decimal ProcessLoan()
{
  CalculateLoanInterest loanInterestProcessor = CalculateInterest;
  return loanInterestProcessor(4500m, 0.065m, 4);
}
```

You need to declare a delegate to support the `ProcessLoan()` method.

Which code segment should you use?

A.
```
public delegate decimal LoanProcessor(decimal loanAmount, decimal loanRate, int term);
```

B.
```
public delegate int LoanProcessor(decimal loanAmount, decimal loanRate, int term);
```

C.
```
public delegate decimal CalculateLoanInterest(decimal loanAmount, decimal loanRate, int term);
```

D.
```
public delegate decimal ProcessLoan();
```

A. Option A
B. Option B

C. Option C
D. Option D

Correct Answer: C
Section: Volume B
Explanation

Explanation/Reference:

QUESTION 102
You are modifying an application that processes loans. The following code defines the Loan class. (Line numbers are included for reference only.)

```
01 public class Loan
02 {
03
04   private int _term;
05   private const int MaximumTerm = 10;
06   private const decimal Rate = 0.034m;
07   public int Term
08   {
09     get
10     {
11       return _term;
12     }
13     set
14     {
15       if (value <= MaximumTerm)
16       {
17         _term = value;
18       }
19       else
20       {
21
22       }
23     }
24   }
25 }
26 public delegate void MaximumTermReachedHandler(object source, EventArgs e);
```

Loans are restricted to a maximum term of 10 years. The application must send a notification message if a loan request exceeds 10 years.

You need to implement the notification mechanism.

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

A. Insert the following code segment at line 03:

```
public string MaximumTermReachedEvent { get; set; }
```

B. Insert the following code segment at line 21:

```
if (OnMaximumTermReached != null)
{
  OnMaximumTermReached(this, new EventArgs());
}
```

C. Insert the following code segment at line 03:

```
private string MaximumTermReachedEvent;
```

D. Insert the following code segment at line 03:

```
public event MaximumTermReachedHandler OnMaximumTermReached;
```

E. Insert the following code segment at line 21:

```
value = MaximumTerm;
```

F. Insert the following code segment at line 21:

A. Option A
B. Option B
C. Option C
D. Option D

Correct Answer: BD
Section: Volume B
Explanation

Explanation/Reference:

QUESTION 103
An application contains code that measures reaction times. The code runs the timer on a thread separate from the user interface. The application includes the following code. (Line numbers are included for reference only.)

```
01 static int RunTimer(CancellationToken cancellationToken)
02 {
03   var time = 0;
04   while (!cancellationToken.IsCancellationRequested)
05     time++;
06   return time;
07 }
08 static void Main(string[] args)
09 {
10   var tokenSource = new CancellationTokenSource();
11   var task = Task.Factory.StartNew<int>(() => RunTimer(tokenSource.Token));
12   Console.WriteLine("Press [Enter] to stop the timer.");
13   Console.ReadLine();
14
15   Console.WriteLine("Timer stopped at {0}", task.GetAwaiter().GetResult());
16   Console.ReadLine();
17 }
```

You need to ensure that the application cancels the timer when the user presses the Enter key.

Which code segment should you insert at line 14?

A. `tokenSource.Token.Register( () => tokenSource.Cancel() );`
B. `tokenSource.Cancel();`
C. `tokenSource.IsCancellationRequested = true;`
D. `tokenSource.Dispose();`

Correct Answer: B
Section: Volume B
Explanation

Explanation/Reference:

QUESTION 104
You are troubleshooting an application that uses a class named FullName. The class is decorated with the DataContractAttribute attribute. The application includes the following code. (Line numbers are included for reference only.)

```
01 class Program
02 {
03   MemoryStream WriteName(Name name)
04   {
05     var ms = new MemoryStream();
06     var binary = XmlDictionaryWriter.CreateBinaryWriter(ms);
07     var ser = new DataContractSerializer(typeof(FullName));
08     ser.WriteObject(binary, name);
09
10     return ms;
11   }
12 }
```

You need to ensure that the entire FullName object is serialized to the memory stream object.

Which code segment should you insert at line 09?

A. `binary.WriteEndElement();`

B. `binary.NriteEndDocument();`
C. `ms.Close();`
D. `binary.Flush();`

Correct Answer: B
Section: Volume B
Explanation

Explanation/Reference:
Explanation:
- DataContractSerializer.WriteEndObject Method (XmlDictionaryWriter)
  Writes the closing XML element using an XmlDictionaryWriter.
- Note on line 07: DataContractSerializer.WriteObject Method
  Writes all the object data (starting XML element, content, and closing element) to an XML document or stream.

XmlDictionaryWriter

QUESTION 105
You write the following method (line numbers are included for reference only):

```
01 public static List<string> TestIfWebSite(string url)
02 {
03   const string pattern = @"http://(www\.)?([^\.]+)\.com";
04   List<string> result = new List<string>();
05
06   MatchCollection myMatches = Regex.Matches(url, pattern);
07 ...
08   return result;
09 }
```

You need to ensure that the method extracts a list of URLs that match the following pattern:

`@http://(www\.)?([^\.]+)\.com;`

Which code should you insert at line 07?

A.
```
foreach (Match currentMatch in myMatches)
  result.Add(currentMatch.Groups.ToString());
```

B.
```
result = (List<string>) myMatches.GetEnumerator();
```

C.
```
foreach (Match currentMatch in myMatches)
  result.Add(currentMatch.Value);
```

D
```
result = (List<string>) myMatches.SyncRoot;
```

A. Option A
B. Option B
C. Option C
D. Option D

Correct Answer: C
Section: Volume B
Explanation

Explanation/Reference:
Explanation:
- MatchCollection

Represents the set of successful matches found by iteratively applying a regular expression pattern to the input string.
The collection is immutable (read-only) and has no public constructor. The Regex.Matches method returns a MatchCollection object.
- List<T>.Add Method

Adds an object to the end of the List<T>.

Incorrect Answers:

B: The MatchCollection.GetEnumerator method returns an enumerator that iterates through a collection. However, To iterate through the members of the collection, you should use the collection iteration (foreach) instead of retrieving the enumerator that is returned by the GetEnumerator method.

References: https://msdn.microsoft.com/en-us/library/system.text.regularexpressions.matchcollection(v=vs.110).aspx

QUESTION 106
You have the following code:

```
List<Int32> items = new List<int>() {
  100,
  95,
  80,
  75,
  95
};
```

You need to retrieve all of the numbers from the items variable that are greater than 80.

Which code should you use?

A.
```
var result = items.First(i => i > 80);
```

B.
```
var result = items.Where(i => i > 80);
```

C.
```
var result = from i in items
  groupby i into grouped
  where grouped.Key > 80
  select i;
```

D.
```
var result = items.Any(i => i > 80);
```

A. Option A
B. Option B
C. Option C
D. Option D

Correct Answer: B
Section: Volume B
Explanation

Explanation/Reference:
Explanation:
Enumerable.Where<TSource> Method (IEnumerable<TSource>, Func<TSource, Boolean>)
Filters a sequence of values based on a predicate.

Example:
```
List<string> fruits =
new List<string> { "apple", "passionfruit", "banana", "mango",
"orange", "blueberry", "grape", "strawberry" };
```

```
IEnumerable<string> query = fruits.Where(fruit => fruit.Length < 6);

foreach (string fruit in query)
{
Console.WriteLine(fruit);
}
/*
This code produces the following output:

apple
mango
grape
*/
```

QUESTION 107
You need to write a console application that meets the following requirements:
- If the application is compiled in Debug mode, the console output must display Entering debug mode.
- If the application is compiled in Release mode, the console output must display Entering release mode.

Which code should you use?

A.
```
#if (TRACE)
  Console.WriteLine("Entering debug mode");
#else
  Console.WriteLine("Entering release mode");
#endif
```

B.
```
#if (DEBUG)
  Console.WriteLine("Entering debug mode");
#else
  Console.WriteLine("Entering release mode");
#endif
```

C.
```
if(System.Diagnostics.Debugger.IsAttached)
  Console.WriteLine("Entering debug mode");
else
  Console.WriteLine("Entering release mode");
```

D.
```
#region DEBUG
  Console.WriteLine("Entering debug mode");
#endregion
#region RELEASE
  Console.WriteLine("Entering release mode");
#endregion
```

A. Option A

B. Option B
C. Option C
D. Option D

Correct Answer: B
Section: Volume B
Explanation

Explanation/Reference:
Explanation:
When the C# compiler encounters an #if directive, followed eventually by an #endif directive, it will compile the code between the directives only if the specified symbol is defined. Unlike C and C++, you cannot assign a numeric value to a symbol; the #if statement in C# is Boolean and only tests whether the symbol has been defined or not. For example,

```
#define DEBUG
// ...
#if DEBUG
Console.WriteLine("Debug version");
#endif
```

QUESTION 108
You have the following class (line numbers are included for reference only):

```
01 public class Class1
02 {
03   private String value = String.Empty;
04   private ServiceProxy proxy = new ServiceProxy();
05
06   public String Value
07   {
08     get {return value;}
09   }
10   public void Modify(Object newValue)
11   {
12
13     value += proxy.Update(newValue.ToString());
14   }
15 }
16 public class Test
17 {
18   public void Execute()
19   {
20     Class1 class1 = new Class1();
21     (new ParameterizedThreadStart(class1.Modify)).Invoke(1);
22     (new ParameterizedThreadStart(class1.Modify)).Invoke(2);
23     (new ParameterizedThreadStart(class1.Modify)).Invoke(3);
24     Console.WriteLine(class1.Value);
25   }
26 }
```

ServiceProxy is a proxy for a web service. Calls to the Update method can take up to five seconds. The Test class is the only class the uses Class1.

You run the Execute method three times, and you receive the following results:

```
213
312
231
```

You need to ensure that each value is appended to the Value property in the order that the Modify methods are invoked.

What should you do?

A. Insert the following at line 5:

```
Object obj1 = new Object();
```

Insert the following at line 12:

```
Monitor.Enter(obj1);
```

B. Insert the following at line 5:

```
Object obj1 = new Object();
```

Insert the following at line 12:

```
lock (obj1)
```

C. Insert the following at line 12:

```
Monitor.Enter(this);
```

D. Insert the following at line 12:

```
lock (value)
```

A. Option A
B. Option B
C. Option C
D. Option D

Correct Answer: B
Section: Volume B

Explanation

Explanation/Reference:

QUESTION 109
You are developing a method named GetHash that will return a hash value for a file. The method includes the following code. (Line numbers are included for reference only.)

```
01 public byte[] GetHash(string filename, string algorithmType)
02 {
03    var hasher = HashAlgorithm.Create(algorithmType);
04    var fileBytes = System.IO.File.ReadAllBytes(filename);
05
06 }
```

You need to return the cryptographic hash of the bytes contained in the fileBytes variable.

Which code segment should you insert at line 05?

A.
```
var outputBuffer = new byte[fileBytes.Length];
hasher.TransformBlock(fileBytes, 0, fileBytes.Length, outputBuffer, 0);
hasher.TransformFinalBlock(fileBytes, fileBytes.Length - 1, fileBytes.Length);
return outputBuffer;
```

B.
```
hasher.ComputeHash(fileBytes);
return hasher.GetHashCode();
```

C.
```
var outputBuffer = new byte[fileBytes.Length];
hasher.TransformBlock(fileBytes, 0, fileBytes.Length, outputBuffer, 0);
return outputBuffer;
```

D.
```
hasher.ComputeHash(fileBytes);
return hasher.Hash;
```

A. Option A
B. Option B
C. Option C
D. Option D

Correct Answer: A
Section: Volume B
Explanation

Explanation/Reference:

QUESTION 110

You are developing an application that includes the following code segment:

```
interface IFile
{
  void Open();
}
interface IDbConnection
{
  void Open();
}
```

You need to implement the Open() method of each interface in a derived class named UseResources and call the Open() method of each interface.

Which two code segments should you use? (Each correct answer presents part of the solution. Choose two.)

A.
```
class UseResources : IFile, IDbConnection
{
  void IFile.Open()
  {
    ...
  }
  void IDbConnection.Open()
  {
    ...
  }
}
```

B.
```
var manager = new UseResources ();
manager.Open();
```

C.
```
var manager = new UseResources ();
((IFile)manager).Open();
((IDbConnection)manager).Open();
```

D.
```
class UseResources : IFile, IDbConnection
{
  public void IFile.Open()
  {
    ...
  }
  public void IDbConnection.Open()
  {
    ...
  }
}
```

A. Option A
B. Option B
C. Option C
D. Option D

Correct Answer: AC
Section: Volume B
Explanation

Explanation/Reference:
Explanation:
An interface contains only the signatures of methods, properties, events or indexers. A class or struct that implements the interface must implement the members of the interface that are specified in the interface definition.

Example:

```
interface ISampleInterface
{
  void SampleMethod();
}

class ImplementationClass : ISampleInterface
{
  // Explicit interface member implementation:
  void ISampleInterface.SampleMethod()
  {
    // Method implementation.
  }

  static void Main()
  {
    // Declare an interface instance.
    ISampleInterface obj = new ImplementationClass();

    // Call the member.
    obj.SampleMethod();
  }
}
```

QUESTION 111
You are implementing a method named ProcessData that performs a long-running task. The ProcessData() method has the following method signature:

```
public void ProcessData(List<decimal> values, CancellationTokenSource source, CancellationToken token)
```

If the calling code requests cancellation, the method must perform the following actions:
- Cancel the long-running task.
- Set the task status to TaskStatus.Canceled.

You need to ensure that the ProcessData() method performs the required actions.

Which code segment should you use in the method body?

A. if (token.IsCancellationRequested)return;
B. throw new AggregateException();
C. token.ThrowIfCancellationRequested();
D. source.Cancel();

Correct Answer: C
Section: Volume B
Explanation

Explanation/Reference:

QUESTION 112
You are developing an application in C#.

The application uses exception handling on a method that is used to execute mathematical calculations by using integer numbers.

You write the following catch blocks for the method (line numbers are included for reference only):

```
01
02 catch(ArithmeticException e) {Console.WriteLine("Arithmetic error");}
03
04 catch(ArgumentException e) {Console.WriteLine("Bad Argument");}
05
06 catch(Exception e) {Console.WriteLine("General error");}
07
```

You need to add the following code to the method:

```
catch(DivideByZeroException e) {Console.WriteLine("Divide by zero");}
```

At which line should you insert the code?

A. 01
B. 03
C. 05
D. 07

Correct Answer: A
Section: Volume B
Explanation

Explanation/Reference:

QUESTION 113
You are developing an application that uses multiple asynchronous tasks to optimize performance. The application will be deployed in a distributed environment.

You need to retrieve the result of an asynchronous task that retrieves data from a web service.

The data will later be parsed by a separate task.

Which code segment should you use?

A.
```
protected async void StartTask()
{
  string result = await GetData();
  ...
}
public Task<string> GetData()
{
  ...
}
```

B.
```
protected async void StartTask()
{
  string result = await GetData();
  ...
}
public async Task<string> GetData()
{
  ...
}
```

C.
```
protected async void StartTask()
{
  string result = GetData();
  ...
}
public Task<string> GetData()
{
  ...
}
```

D.
```
protected async void StartTask()
{
  string result = async GetData();
```

A. Option A
B. Option B
C. Option C
D. Option D

Correct Answer: B
Section: Volume B
Explanation

Explanation/Reference:

QUESTION 114
You are implementing a method named `GetValidPhoneNumbers`. The `GetValidPhoneNumbers()` method processes a list of string values that represent phone numbers.

The `GetValidPhoneNumbers()` method must return only phone numbers that are in a valid format.

You need to implement the `GetValidPhoneNumbers()` method.

Which two code segments can you use to achieve this goal? (Each correct answer presents a complete solution. Choose two.)

A.
```
private static List<String> GetValidPhoneNumbers(string input, string pattern)
{
  var regex = new Regex(pattern);
  var matches = regex.Matches(input);
  var validPhoneNumbers = new List<String>();
  foreach(Match match in matches)
  {
    if(match.Success)
    {
      validPhoneNumbers.Add(match.Value);
    }
  }
  return validPhoneNumbers;
}
```

B.
```
private static List<String> GetValidPhoneNumbers(string input, string pattern)
{
  var regex = new Regex(pattern);
  var matches = regex.Matches(input);
  return (from Match match in matches where match.Success select match.Value).ToList();
}
```

C.
```
private static List<String> GetValidPhoneNumbers(string input, string pattern)
{
  var regex = new Regex(pattern);
  var matches = regex.Matches(input);
  return (from Match match in matches where match.Success select match.Success.ToString()).ToList();
}
```

D.
```
private static List<String> GetValidPhoneNumbers(string input, string pattern)
{
  var regex = new Regex(pattern);
  var matches = regex.Matches(input);
  var validPhoneNumbers = new List<String>();
  foreach(Match match in matches)
  {
    if(!match.Success)
    {
      validPhoneNumbers.Add(match.Value);
    }
  }
  return validPhoneNumbers;
}
```

A. Option A
B. Option B
C. Option C
D. Option D

Correct Answer: AB
Section: Volume B
Explanation

Explanation/Reference:
Explanation:
- Regex.Matches
  Searches an input string for all occurrences of a regular expression and returns all the matches.
- MatchCollection
  Represents the set of successful matches found by iteratively applying a regular expression pattern to the input string.
  The collection is immutable (read-only) and has no public constructor. The Regex.Matches method returns a MatchCollection object.
- List<T>.Add Method
  Adds an object to the end of the List<T>.

QUESTION 115
You need to create a method that can be called by using a varying number of parameters.

What should you use?

A. derived classes
B. interface
C. enumeration
D. method overloading

Correct Answer: D
Section: Volume B
Explanation

Explanation/Reference:
Explanation:
Member overloading means creating two or more members on the same type that differ only in the number or type of parameters but have the same name. Overloading is one of the most important techniques for improving usability, productivity, and readability of reusable libraries. Overloading on the number of parameters makes it possible to provide simpler versions of constructors and methods. Overloading on the parameter type makes it possible to use the same

member name for members performing identical operations on a selected set of different types.

QUESTION 116
You are creating an application that reads from a database.

You need to use different databases during the development phase and the testing phase by using conditional compilation techniques.

What should you do?

A. Configure the Define TRACE constant setting in Microsoft Visual Studio.
B. Decorate the code by using the [DebuggerDisplay("Mydebug")] attribute.
C. Configure the Define DEBUG constant setting in Microsoft Visual Studio.
D. Disable the strong-name bypass feature of Microsoft .NET Framework in the registry.

Correct Answer: C
Section: Volume B
Explanation

Explanation/Reference:
Explanation:
Use one debug version to connect to the development database, and a standard version to connect to the live database.

QUESTION 117
You are creating a class named Loan.

The Loan class must meet the following requirements:
- Include a member that represents the rate for a Loan instance.
- Allow external code to assign a value to the rate member.
- Restrict the range of values that can be assigned to the rate member.

You need to implement the rate member to meet the requirements.

In which form should you implement the rate member?

A. public static property
B. public property
C. public static field
D. protected field

Correct Answer: B

Section: Volume B
Explanation

Explanation/Reference:

QUESTION 118
You are creating a class library that will be used in a web application.

You need to ensure that the class library assembly is strongly named.

What should you do?

A. Use the csc.exe /target:Library option when building the application.
B. Use the AL.exe command-line tool.
C. Use the aspnet_regiis.exe command-line tool.
D. Use the EdmGen.exe command-line tool.

Correct Answer: B
Section: Volume B
Explanation

Explanation/Reference:
Explanation:
The Windows Software Development Kit (SDK) provides several ways to sign an assembly with a strong name:
- Using the Assembly Linker (Al.exe) provided by the Windows SDK.
- Using assembly attributes to insert the strong name information in your code. You can use either the AssemblyKeyFileAttribute or the AssemblyKeyNameAttribute, depending on where the key file to be used is located.
- Using compiler options such /keyfile or /delaysign in C# and Visual Basic, or the /KEYFILE or /DELAYSIGN linker option in C++. (For information on delay signing, see Delay Signing an Assembly.)

Note:
A strong name consists of the assembly's identity—it's simple text name, version number, and culture information (if provided)—plus a public key and a digital signature. It is generated from an assembly file (the file that contains the assembly manifest, which in turn contains the names and hashes of all the files that make up the assembly), using the corresponding private key. Microsoft® Visual Studio® .NET and other development tools provided in the .NET Framework SDK can assign strong names to an assembly. Assemblies with the same strong name are expected to be identical.

QUESTION 119
You are creating a console application named App1.

App1 retrieves data from the Internet by using JavaScript Object Notation (JSON).

You are developing the following code segment (line numbers are included for reference only):

```
01 public bool ValidateJson(string json, Dictionary<string, object> result)
02 {
03
04   try
05   {
06     result = serializer.Deserialize<Dictionary<string, object>>(json);
07     return true;
08   }
09   catch
10   {
11     return false;
12   }
13 }
```

You need to ensure that the code validates the JSON string.

Which code should you insert at line 03?

A.
```
var serializer = new DataContractSerializer();
```

B.
```
DataContractSerializer serializer = new DataContractSerializer();
```

C.
```
var serializer = new XmlSerializer();
```

D.
```
var serializer = new JavaScriptSerializer();
```

A. Option A

B. Option B
C. Option C
D. Option D

Correct Answer: D
Section: Volume B
Explanation

Explanation/Reference:
Explanation:
The JavaScriptSerializer Class Provides serialization and deserialization functionality for AJAX-enabled applications.

The JavaScriptSerializer class is used internally by the asynchronous communication layer to serialize and deserialize the data that is passed between the browser and the Web server. You cannot access that instance of the serializer. However, this class exposes a public API. Therefore, you can use the class when you want to work with JavaScript Object Notation (JSON) in managed code.

QUESTION 120
You are developing an application that includes methods named EvaluateLoan, ProcessLoan, and FundLoan. The application defines build configurations named TRIAL, BASIC, and ADVANCED.

You have the following requirements:
- The TRIAL build configuration must run only the `EvaluateLoan()` method.
- The BASIC build configuration must run all three methods.
- The ADVANCED build configuration must run only the EvaluateLoan() and `ProcessLoan()` methods.

You need to meet the requirements.

Which code segment should you use?

A.
```
#if TRIAL
#warning EvaluateLoan();
#error ProcessLoan();
#error FundLoan();
#elif ADVANCED
#warning EvaluateLoan();
#warning ProcessLoan();
#warning FundLoan();
#else
#warning EvaluateLoan();
#warning ProcessLoan();
#error FundLoan();
#endif
```

B.
```
#if TRIAL
  EvaluateLoan();
#elif ADVANCED
  EvaluateLoan();
  ProcessLoan();
  FundLoan();
#else
  EvaluateLoan();
  ProcessLoan();
#endif
```

C.
```
#if TRIAL
  EvaluateLoan();
#elif BASIC
  EvaluateLoan();
  ProcessLoan();
  FundLoan();
#else
```

A. Option A
B. Option B
C. Option C
D. Option D

Correct Answer: C
Section: Volume B
Explanation

Explanation/Reference:

QUESTION 121
You are creating an application that processes a list of numbers.

The application must define a method that queries the list and displays a subset of the numbers to the user. The method must not update the list.

You need to create an extendable query by using LINQ.

What should you do?

A. Create an in-memory array of numbers. Process the numbers in the array by using the following code segment:

```
int[] numbersList = new int[8] { 1, 3, 5, 7, 11, 13, 17, 19 };
var numbers = from p in numbersList where p > 10;
foreach (int p in numbers)
{
  ...
}
```

B. Create an in-memory array of numbers. Process the numbers in the array by using the following code segment:

```
int[] numbersList = new int[8] { 1, 3, 5, 7, 11, 13, 17, 19 };
var numbers = new Query<int>(from p in numbersList where p > 10 select p);
foreach (int p in numbers)
{
  ...
}
```

C. Create an in-memory array of numbers. Process the numbers in the array by using the following code segment:

```
int[] numbersList = new int[8] { 1, 3, 5, 7, 11, 13, 17, 19 };
var numbers = from p in numbersList where p > 10 select p;
foreach (int p in numbers)
{
  ...
}
```

D. Create a query to return data from a SQL database table named **Numbers**. Process the returned data by using the following code segment:

```
var numbers = "select p from Numbers where p > 10";
foreach (int p in numbers)
{
  ...
}
```

A. Option A
B. Option B
C. Option C
D. Option D

Correct Answer: C
Section: Volume B
Explanation

Explanation/Reference:

QUESTION 122
You are developing an application that will be deployed to multiple computers. You set the assembly name.

You need to create a unique identity for the application assembly.

Which two assembly identity attributes should you include in the source code? (Each correct answer presents part of the solution. Choose two.)

A. AssemblyDelaySignAttribute
B. AssemblyCompanyAttribute
C. AssemblyProductAttribute
D. AssemblyCultureAttribute

E. AssemblyVersionAttribute

Correct Answer: DE
Section: Volume B
Explanation

Explanation/Reference:
Explanation:

The AssemblyName object contains information about an assembly, which you can use to bind to that assembly. An assembly's identity consists of the following:
- Simple name.
- Version number.
- Cryptographic key pair.
- Supported culture.

D: AssemblyCultureAttribute
Specifies which culture the assembly supports.
The attribute is used by compilers to distinguish between a main assembly and a satellite assembly. A main assembly contains code and the neutral culture's resources. A satellite assembly contains only resources for a particular culture, as in [assembly:AssemblyCultureAttribute("de")]

E: AssemblyVersionAttribute
Specifies the version of the assembly being attributed.
The assembly version number is part of an assembly's identity and plays a key part in binding to the assembly and in version policy.

QUESTION 123
You are developing an application that contains a class named TheaterCustomer and a method named `ProcessTheaterCustomer`. The `ProcessTheaterCustomer()` method accepts a TheaterCustomer object as the input parameter.

You have the following requirements:
- Store the TheaterCustomer objects in a collection.
- Ensure that the `ProcessTheaterCustomer()` method processes the TheaterCustomer objects in the order in which they are placed into the collection.

You need to meet the requirements.

What should you do?

A. Create a System.Collections.Stack collection. Use the `Push()` method to add TheaterCustomer objects to the collection. Use the `Peek()` method to pass the objects to the `ProcessTheaterCustomer()` method.
B. Create a System.Collections.Queue collection. Use the `Enqueue()` method to add TheaterCustomer objects to the collection. Use the `Dequeue()` method to pass the objects to the `ProcessTheaterCustomer()` method.
C. Create a System.Collections.SortedList collection. Use the `Add()` method to add TheaterCustomer objects to the collection. Use the `Remove()` method to pass the objects to the `ProcessTheaterCustomer()` method.
D. Create a System.Collections.ArrayList collection. Use the `Insert()` method to add TheaterCustomer objects to the collection. Use the `Remove()` method to pass the objects to the `ProcessTheaterCustomer()` method.

Correct Answer: B
Section: Volume B
Explanation

Explanation/Reference:

QUESTION 124
You are debugging a 64-bit C# application.

Users report System.OutOfMemoryException exceptions. The system is attempting to use arrays larger than 2 GB in size.

You need to ensure that the application can use arrays larger than 2 GB.

What should you do?

A. Add the /3GB switch to the boot.ini file for the operating system.
B. Set the IMAGE_FILE_LARGE_ADDRESS_AWARE flag in the image header for the application executable file.
C. Set the value of the gcAllowVeryLargeObjects property to true in the application configuration file.
D. Set the value of the user-mode virtual address space setting for the operating system to MAX.

Correct Answer: C
Section: Volume B
Explanation

Explanation/Reference:

QUESTION 125
You develop an application by using C#. The application counts the number of times a specific word appears within a set of text files. The application includes the following code. (Line numbers are included for reference only.)

```
01 class Counter
02 {
03   System.Collections.Concurrent.ConcurrentDictionary<string, int> _wordCounts =
04     new System.Collections.Concurrent.ConcurrentDictionary<string, int>();
05   public Action<DirectoryInfo> ProcessDirectory()
06   {
07     return (dirInfo =>
08     {
09       var files = dirInfo.GetFiles("*.cs").AsParallel<FileInfo>();
10       files.ForAll<FileInfo>(
11        fileInfo =>
12        {
13          var fileContent = File.ReadAllText(fileInfo.FullName);
14          var sb = new StringBuilder();
15          foreach (var val in fileContent)
16          {
17            sb.Append(char.IsLetter(val) ? val.ToString().ToLowerInvariant() : " ");
18          }
19          string[] wordsInFile = sb.ToString().Split(new []{' '},
20           StringSplitOptions.RemoveEmptyEntries);
21          foreach (var word in wordsInFile)
22          {
23
24          }
25        });
26       var directories = dirInfo.GetDirectories().AsParallel<DirectoryInfo>();
27       directories.ForAll<DirectoryInfo>(ProcessDirectory());
28     });
29   }
30 }
```

You have the following requirements:

- Populate the _wordCounts object with a list of words and the number of occurrences of each word.
- Ensure that updates to the ConcurrentDictionary object can happen in parallel.

You need to complete the relevant code.

Which code segment should you insert at line 23?

A.
```
_wordCounts.AddOrUpdate(word, 1, (s, n) => n + 1);
```

B.
```
int value;
if (_wordCounts.TryGetValue(word, out value))
{
  _wordCounts[word] = value++;
}
else
{
  _wordCounts[word] = 1;
}
```

C.
```
var value = _wordCounts.GetOrAdd(word, 0);
_wordCounts[word] = value++;
```

D.
```
var value = _wordCounts.GetOrAdd(word, 0);
_wordCounts.TryUpdate(word, value + 1, value);
```

A. Option A
B. Option B
C. Option C
D. Option D

Correct Answer: A
Section: Volume B
Explanation

Explanation/Reference:

QUESTION 126
You are evaluating a method that calculates loan interest. The application includes the following code segment. (Line numbers are included for reference only.)

```
01 private static decimal CalculateInterest(decimal loanAmount, int loanTerm)
02 {
03   decimal interestAmount;
04   decimal loanRate;
05   if (loanTerm > 0 && loanTerm < 5 && loanAmount < 5000m)
06   {
07     loanRate = 0.045m;
08   }
09   else if (loanTerm > 5 && loanAmount > 5000m)
10   {
11     loanRate = 0.085m;
12   }
13   else
14   {
15     loanRate = 0.055m;
16   }
17   interestAmount = loanAmount * loanRate * loanTerm;
18   return interestAmount;
19 }
```

When the loanTerm value is 5 and the loanAmount value is 4500, the loanRate must be set to 6.5 percent.

You need to adjust the loanRate value to meet the requirements.

What should you do?

A. Replace line 15 with the following code segment: `loanRate = 0.065m;`
B. Replace line 07 with the following code segment: `loanRate = 0.065m;`
C. Replace line 17 with the following code segment: `interestAmount = loanAmount * 0.065m * loanTerm;`
D. Replace line 04 with the following code segment: `decimal loanRate = 0.065m;`

Correct Answer: A
Section: Volume B
Explanation

Explanation/Reference:

QUESTION 127
You are developing an application that will manage customer records. The application includes a method named **FindCustomer**.

Users must be able to locate customer records by using the customer identifier, customer name, or a combination of the two values.

You need to implement the **FindCustomer()** method to meet the requirement.

Which two sets of method signatures can you use to achieve this goal? Each correct answer presents a complete solution.

NOTE: Each correct selection is worth one point.

A
```
public static Customer FindCustomer(int id)
public static Customer FindCustomer(string name)
public static Customer FindCustomer(int id, String name)
```

B
```
public static Customer FindCustomer(int id)
public static Customer FindCustomer(string name)
public static void FindCustomer(int id)
```

C.
```
public static Customer FindCustomer(int id)
public static Customer FindCustomer(string name)
public static Customer FindCustomer(Int32 id)
```

D.
```
public static Customer FindCustomer(int id)
public static Customer FindCustomer(string name)
public static Customer FindCustomer(int? id)
```

A. Option A

B. Option B
C. Option C
D. Option D

Correct Answer: AB
Section: Volume B
Explanation

Explanation/Reference:
References: https://docs.microsoft.com/en-us/dotnet/csharp/programming-guide/classes-and-structs/static-classes-and-static-class-members

QUESTION 128
You are developing an application that will use multiple asynchronous tasks to optimize performance.

You create three tasks by using the following code segment. (Line numbers are included for reference only.)

```
01 protected void ProcessTasks()
02 {
03   Task[] tasks = new Task[3]
04   {
05     Task.Factory.StartNew(() => MethodA()),
06     Task.Factory.StartNew(() => MethodB()),
07     Task.Factory.StartNew(() => MethodC())
08   };
09
10   ...
11 }
```

You need to ensure that the `ProcessTasks()` method waits until all three tasks complete before continuing.

Which code segment should you insert at line 09?

A. `Task.WaitFor(3);`
B. `tasks.Yield();`
C. `tasks.WaitForCompletion();`

D. `Task.WaitAll(tasks);`

Correct Answer: D
Section: Volume B
Explanation

Explanation/Reference:

QUESTION 129
You are developing a C# application. The application includes the following code segment. (Line numbers are included for reference only.)

```
01 class Beam
02 {
03   public string Description { get; set; }
04   public int Weight { get; set; }
05   public int Id { get; set; }
06   public decimal Length { get; set; }
07 }
08 Dictionary<int, Beam> beams = new Dictionary<int, Beam>
09 {
10   { 111, new Beam { Description = "Iron", Weight = 4297, Id = 211, Length = 22.23m } },
11   { 112, new Beam { Description = "Copper", Weight = 6822, Id = 317, Length = 11.13m } },
12   { 113, new Beam { Description = "Steel", Weight = 88021, Id = 198, Length = 7.91m } },
13   { 114, new Beam { Description = "Titanium", Weight = 14014, Id = 192, Length = 17.13m } },
14   { 115, new Beam { Description = "Aluminum", Weight = 3263, Id = 196, Length = 8.45m } }
15 };
16
17 beams.Add(115, new Beam { Description = "Brass", Weight = 24331, Id = 214, Length = 28.15m });
18
```

The application fails at line 17 with the following error message: "An item with the same key has already been added."

You need to resolve the error.

Which code segment should you insert at line 16?

A.
```
if (!beams.ContainsKey(115))
```

B.
```
foreach (Beam beam in beams.Values.Where(t => t.Id != 115))
```

C.
```
foreach (KeyValuePair<int, Beam> key in beams.Where(t => t.Key != 115))
```

D.
```
foreach (int key in beams.Keys.Where(k => k != 115))
```

A. Option A
B. Option B
C. Option C
D. Option D

Correct Answer: A
Section: Volume B
Explanation

Explanation/Reference:

QUESTION 130
You are developing an application by using C#. The application includes a method named `SendMessage`. The `SendMessage()` method requires a string input.

You need to replace "Hello" with "Goodbye" in the parameter that is passed to the `SendMessage()` method.

Which two code segments can you use to achieve this goal? (Each correct answer presents a complete solution. Choose two.)

A.
```
var message = "Hello World";
SendMessage(message.Replace("Goodbye", "Hello"));
```

B.
```
var message = "Hello World";
SendMessage(message.Replace("Hello", "Goodbye"));
```

C.
```
var message = "Hello World";
message = message.Replace("Hello", "Goodbye");
SendMessage(message);
```

D.
```
var message = "Hello World";
message.Replace("Goodbye", "Hello");
SendMessage(message);
```

A. Option A
B. Option B
C. Option C
D. Option D

Correct Answer: BC
Section: Volume B
Explanation

Explanation/Reference:
Explanation:
- The first parameter should be Hello.

- String.Replace Method (String, String)
  Returns a new string in which all occurrences of a specified string in the current instance are replaced with another specified string.
  This method does not modify the value of the current instance. Instead, it returns a new string in which all occurrences of oldValue are replaced by newValue.

QUESTION 131
You are developing an application that includes the following code segment:

```
interface IHome
{
  void Start();
}
interface IOffice
{
  void Start();
}
```

You need to implement both `Start()` methods in a derived class named UseStart that uses the `Start()` method of each interface.

Which two code segments should you use? (Each correct answer presents part of the solution. Choose two.)

A.
```
var starter = new UseStart();
((IHome, IOffice)starter).Start();
```

B.
```
class UseStart : IHome, IOffice
{
  public void IHome.Start()
  {
    ...
  }
  public void IOffice.Start()
  {
    ...
  }
}
```

C.
```
class UseStart : IHome, IOffice
{
  void IHome.Start()
  {
    ...
  }
  void IOffice.Start()
  {
    ...
  }
}
```


D.
```
var starter = new UseStart();
```

A. Option A
B. Option B
C. Option C
D. Option D
E. Option E
F. Option F

Correct Answer: CD
Section: Volume B
Explanation

Explanation/Reference:
Explanation:
C:
Implementing Multiple Interfaces
A class can implement multiple interfaces using the following syntax:
C#
public class CDAndDVDComboPlayer : ICDPlayer, IDVDPlayer

If a class implements more than one interface where there is ambiguity in the names of members, it is resolved using the full qualifier for the property or method name. In other words, the derived class can resolve the conflict by using the fully qualified name for the method to indicate to which interface it belongs

In C#, both inheritance and interface implementation are defined by the : operator, equivalent to extends and implements in Java. The base class should always be leftmost in the class declaration.

QUESTION 132
You are developing an application by using C#. The application will write events to an event log. You plan to deploy the application to a server.

You create an event source named AppSource and a custom log named AppLog on the server.

You need to write events to the custom log.

Which code segment should you use?

A.
```
public void WriteToEventLog(string message, EventLogEntryType eventLogEntryType)
{
  EventLog eventLog = new EventLog() { Source = "AppSource", EnableRaisingEvents = true };
  eventLog.WriteEntry(message, eventLogEntryType);
}
```

B.
```
public void WriteToEventLog(string message)
{
  EventLog eventLog = new EventLog() { Source = "AppLog", EnableRaisingEvents = true };
  EventInstance eventInstance = new EventInstance(0, 1);
  eventLog.WriteEvent(eventInstance, message);
}
```

C.
```
public void WriteToEventLog(string message)
{
  EventLog eventLog = new EventLog() { Source = "Application" };
  eventLog.WriteEntry(message);
}
```

D.
```
public void WriteToEventLog(string message, EventLogEntryType eventLogEntryType)
{
  EventLog eventLog = new EventLog() { Source = "AppLog" };
  eventLog.WriteEntry(message, eventLogEntryType);
}
```

A. Option A
B. Option B
C. Option C
D. Option D

Correct Answer: A
Section: Volume B
Explanation

Explanation/Reference:
Explanation:
Source should be AppSource:

New-EventLog
Creates a new event log and a new event source on a local or remote computer.
Parameters include:
-Source<String[]>
Specifies the names of the event log sources, such as application programs that write to the event log. This parameter is required.

QUESTION 133
You have the following class definition.

```
public class ProcessManagement
{
    public int DegreeOfParallelism;
    private int NumberOfTasks = 0;
    public void SpawnTasks()
    {
        if (DegreeOfParallelism>20) { DegreeOfParallelism = 20};
        while (NumberOfTasks != DegreeOfParallelism)
        {
            CreateNewTask();
            NumberOfTasks++;
        }
    }
}
```

You discover that when you execute the following code, the `SpawnTasks` method enters an infinite loop.

```
ProcessManagement pm = new ProcessManagement();
pm.DegreeOfParallelism = -1;
pm.SpawnTasks();
```

You need to prevent the `SpawnTasks` method from entering an infinite loop.

Which two changes should you make to the code? Each correct answer presents part of the solution.

NOTE: Each correct selection is worth one point.

A. Add a property to the `ProcessManagement` class. Modify the property to allow only positive values to be stored in the `DegreeOfParallelism` member variable.
B. Add a property to the `ProcessManagement` class. Modify the property to allow only positive values to be stored in the `NumberOfTasks` member variable.
C. Change the accessor of the `ProcessManagement` class to `internal`.
D. Change the accessor of the `DegreeOfParallelism` member variable to `private`.
E. Change the accessor of the `SpawnTasks` method to `private`.

Correct Answer: AB
Section: Volume B
Explanation

Explanation/Reference:

QUESTION 134
You are implementing a method named `ProcessFile` that retrieves data files from web servers and FTP servers. The `ProcessFile()` method has the following method signature:

```
Public void ProcessFile(Guid dataFileId, string dataFileUri)
```

Each time the `ProcessFile()` method is called, it must retrieve a unique data file and then save the data file to disk.

You need to complete the implementation of the `ProcessFile()` method. Which code segment should you use?

A.

```
WebResponse response;
StreamReader reader;
WebRequest request = WebRequest.Create(dataFileUri);
using (response = request.GetResponse())
{
  reader = new StreamReader(response.GetResponseStream());
  response.Close();
}
using (StreamWriter writer = new StreamWriter(dataFileId + ".dat"))
{
  writer.Write(reader.ReadToEnd());
}
```

B.

```
FileWebRequest request = FileWebRequest.Create(dataFileUri) as FileWebRequest;
using (FileWebResponse response = request.GetResponse() as FileWebResponse)
using (StreamReader reader = new StreamReader(response.GetResponseStream()))
using (StreamWriter writer = new StreamWriter(dataFileId + ".dat"))
{
  writer.Write(reader.ReadToEnd());
}
```

C.

```
WebRequest request = WebRequest.Create(dataFileUri);
using (WebResponse response = request.GetResponse())
using (Stream responseStream = response.GetResponseStream())
{
  StreamWriter writer = new StreamWriter(responseStream);
  writer.Write(dataFileId + ".dat");
}
```

D.

```
WebRequest request = WebRequest.Create(dataFileUri);
using (WebResponse response = request.GetResponse())
using (StreamReader reader = new StreamReader(response.GetResponseStream()))
using (StreamWriter writer = new StreamWriter(dataFileId + ".dat"))
{
  writer.Write(reader.ReadToEnd());
}
```

A. Option A
B. Option B
C. Option C
D. Option D

Correct Answer: D
Section: Volume B
Explanation

Explanation/Reference:
Explanation:
WebRequest.Create Method (Uri)
Initializes a new WebRequest instance for the specified URI scheme.

Example:
1. To request data from a host server
Create a WebRequest instance by calling Create with the URI of the resource.
C#
```
WebRequest request = WebRequest.Create("http://www.contoso.com/");
```

2. Set any property values that you need in the WebRequest. For example, to enable authentication, set the Credentials property to an instance of the NetworkCredential class.
C#
```
request.Credentials = CredentialCache.DefaultCredentials;
```

3. To send the request to the server, call GetResponse. The actual type of the returned WebResponse object is determined by the scheme of the requested URI.
C#
```
WebResponse response = request.GetResponse();
```

4. To get the stream containing response data sent by the server, use the GetResponseStream method of the WebResponse.
C#
```
Stream dataStream = response.GetResponseStream ();
```

QUESTION 135
You are creating a class library that will be used in a web application.

You need to ensure that the class library assembly is strongly named.

What should you do?

A. Use assembly attributes.
B. Use the csc.exe /target:Library option when building the application.
C. Use the xsd.exe command-line tool.
D. Use the EdmGen.exe command-line tool.

Correct Answer: A
Section: Volume B
Explanation

Explanation/Reference:
Explanation:
The Windows Software Development Kit (SDK) provides several ways to sign an assembly with a strong name:
- (A) Using assembly attributes to insert the strong name information in your code. You can use either the AssemblyKeyFileAttribute or the AssemblyKeyNameAttribute, depending on where the key file to be used is located.
- Using the Assembly Linker (Al.exe) provided by the Windows SDK.
- Using compiler options such /keyfile or /delaysign in C# and Visual Basic, or the /KEYFILE or /DELAYSIGN linker option in C++. (For information on delay signing, see Delay Signing an Assembly.)

QUESTION 136
You are developing an application that will manage customer records. The application includes a method named `FindCustomer`.

Users must be able to locate customer records by using the customer identifier or customer name.
You need to implement the `FindCustomer()` method to meet the requirement.

Which two sets of method signatures can you use to achieve this goal? (Each correct answer presents a complete solution. Choose two.)

A.
```
public static Customer FindCustomer(int id)
public static Customer FindCustomer(string id)
public static void FindCustomer(int id)
```

B.
```
public static Customer FindCustomer(int id)
public static Customer FindCustomer(string id)
public static Customer FindCustomer(int id, string name)
```

C.
```
public static Customer FindCustomer(int id)
public static Customer FindCustomer(string id)
public static Customer FindCustomer(Int32 id)
```

D.
```
public static Customer FindCustomer(int id)
public static Customer FindCustomer(string id)
public static Customer FindCustomer(int? id)
```

A. Option A
B. Option B
C. Option C
D. Option D

Correct Answer: BD
Section: Volume B
Explanation

Explanation/Reference:

QUESTION 137
You need to write a method that combines an unknown number of strings. The solution must minimize the amount of memory used by the method when the method executes.

What should you include in the code?

A. The `String.Concat` method
B. The `StringBuilder.Append` method

C. The + operator
D. The += operator

Correct Answer: B
Section: Volume B
Explanation

Explanation/Reference:
Explanation:
The StringBuilder.Append method appends the string representation of a specified object to this instance.

Incorrect Answers:
A: 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, all strings to concatenate must be given as parameters. In this scenario we have an unknown number of string and therefore cannot pass them as paramaters.

References: https://coders-corner.net/2014/08/20/concatenate-strings-in-c-operator-vs-string-concat-vs-stringbuilder/

QUESTION 138
You are modifying an existing application.

The application includes a Loan class and a Customer class. The following code segment defines the classes.

```
class Loan
{
  public Loan(decimal amount, int term, decimal rate)
  {
    Term = term;
    Amount = amount;
    Rate = rate;
  }
  public decimal Amount { get; set; }
  public decimal Rate { get; set; }
  public int Term { get; set; }
}

class Customer
{
  public Customer(string firstName, string lastName, Collection<Loan> loans)
  {
    FirstName = firstName;
    LastName = lastName;
    LoanCollection = loans;
  }
  public string FirstName { get; set; }
  public string LastName { get; set; }
  public Collection<Loan> LoanCollection { get; set; }
}
```

You populate a collection named customer-Collection with Customer and Loan objects by using the following code segment:

```
Collection<Customer> customerCollection = new Collection<Customer>();
Collection<Loan> customerLoans = new Collection<Loan>();
customerLoans.Add(new Loan(1000m, 2, 0.025m));
customerLoans.Add(new Loan(3000m, 4, 0.045m));
customerLoans.Add(new Loan(5000m, 6, 0.045m));
customerCollection.Add(new Customer("Steve", "Jones", customerLoans));
```

You create a largeCustomerLoans collection to store the Loan objects by using the following code segment:

```
Collection<Loan> largeCustomerLoans = new Collection<Loan>();
```

All loans with an Amount value greater than or equal to 4000 must be tracked.

You need to populate the largeCustomerLoans collection with Loan objects.

Which code segment should you use?

A.

```
foreach (Customer customer in customerCollection)
{
  foreach (Loan loan in customer.LoanCollection)
  {
    if (loan.Amount >= 4000m)
    {
      customer.LoanCollection.Add(loan);
    }
  }
}
```

B.

```
foreach (Loan customer in customerCollection)
{
  foreach (Loan loan in largeCustomerLoans)
  {
    if (loan.Amount >= 4000m)
    {
      largeCustomerLoans.Add(loan);
    }
  }
}
```

C.

```
foreach (Loan loan in largeCustomerLoans)
{
  foreach (Customer customer in customerCollection)
  {
    if (loan.Amount >= 4000m)
    {
      customer.LoanCollection.Add(loan);
    }
  }
}
```

A. Option A
B. Option B
C. Option C
D. Option D

Correct Answer: D
Section: Volume B
Explanation

Explanation/Reference:
Explanation:
Must add to the largeCustomerLoans collection, not the customerLoanCollection.

We iterate through each customer in customerCollection and check each loan belonging to this customer.

QUESTION 139
You have the following code. (Line numbers are included for reference only.)

```
01 List<Product> products = new List<Product>()
02 {
03   new Product() { Name = "Strawberry", CategoryID = 1 },
04   new Product() { Name = "Banana", CategoryID = 1 },
05 };
06 List<Product> B_Products = (List<Product>)
07 (
08 from product in products
09   where (product.Name.StartsWith("B"))
10   select new { Name = product.Name }
11 );
```

When you execute the code, you get an exception.

You need to ensure that B_Products contain all of the products that start with the letter “B”.

What should you do?

A. Replace line 06 with the following code.

```
Product[] B_Products = (Product[])
```

B. Replace line 10 with the following code.

```
select product.Name
```

C. Replace line 06 with the following code.

```
Array<Product> B_Products = (Array <Product>)
```

D. Replace line 10 with the following code.

```
select product
```

A. Option A
B. Option B
C. Option C
D. Option D

Correct Answer: D
Section: Volume B
Explanation

Explanation/Reference:
Explanation:
Simply select the product items.

QUESTION 140
You have the following code:

```
List<Int32> items = new List<int>() {
  100,
  95,
  80,
  75,
  95
};
```

You need to retrieve all of the numbers from the items variable that are greater than 80.

Which code should you use?

A.
```
var result = items.Skip(80);
```

B.
```
var result = items.Where(i => i > 80);
```

C.
```
var result = from i in items
  groupby i into grouped
  where grouped.Key > 80
  select i;
```

D.
```
var result = items.Take(80);
```

A. Option A
B. Option B
C. Option C
D. Option D

Correct Answer: B
Section: Volume B
Explanation

Explanation/Reference:
Explanation:
Example: All number larger than 15 from a list using the var query = from num in numbers... contstruct:

var largeNumbersQuery = numbers2.Where(c => c > 15);

Reference: How to: Write LINQ Queries in C#
https://msdn.microsoft.com/en-us/library/bb397678.aspx

QUESTION 141
You have the following code. (Line numbers are included for reference only).

```
01 public async void ProcessWrite()
02 {
03   string filePath = @"temp2.txt";
04   string text = "Hello World\r\n";
05   await WriteTextAsync(filePath, text);
06 }
07 private async Task WriteTextAsync(string filePath, string text)
08 {
09   byte[] encodedText = Encoding.Unicode.GetBytes(text);
10   using (FileStream sourceStream = new FileStream(
·   filePath, FileMode.Append, FileAccess.Write,
·   FileShare.None, bufferSize: 4096, useAsync: true))
11   {
12
13   }
14 }
```

You need to complete the WriteTextAsync method. The solution must ensure that the code is not blocked while the file is being written.

Which code should you insert at line 12?

A.
```
async sourceStream.Write(encodedText, 0, encodedText.Length);
```

B.
```
async sourceStream.WriteAsync(encodedText, 0, encodedText.Length);
```

C.
```
await sourceStream.Write(encodedText, 0, encodedText.Length);
```

D.
```
await sourceStream.WriteAsync(encodedText, 0, encodedText.Length);
```

A. Option A
B. Option B
C. Option C
D. Option D

Correct Answer: D
Section: Volume B
Explanation

Explanation/Reference:
Explanation:
await sourceStream.WriteAsync(encodedText, 0, encodedText.Length);

The following example has the statement await sourceStream.WriteAsync(encodedText, 0, encodedText.Length);, which is a contraction of the following two statements:

```
Task theTask = sourceStream.WriteAsync(encodedText, 0, encodedText.Length);
await theTask;
```

Example: The following example writes text to a file. At each await statement, the method immediately exits. When the file I/O is complete, the method resumes at the statement that follows the await statement. Note that the async modifier is in the definition of methods that use the await statement.

```
public async void ProcessWrite()
{
  string filePath = @"temp2.txt";
  string text = "Hello World\r\n";

  await WriteTextAsync(filePath, text);
}

private async Task WriteTextAsync(string filePath, string text)
{
  byte[] encodedText = Encoding.Unicode.GetBytes(text);

  using (FileStream sourceStream = new FileStream(filePath,
  FileMode.Append, FileAccess.Write, FileShare.None,
  bufferSize: 4096, useAsync: true))
  {
    await sourceStream.WriteAsync(encodedText, 0,
    encodedText.Length);
  };
}
```

Reference: Using Async for File Access (C# and Visual Basic)
https://msdn.microsoft.com/en-us/library/jj155757.aspx

QUESTION 142
You need to write a method that retrieves data from a Microsoft Access 2013 database. The method must meet the following requirements:
- Be read-only.
- Be able to use the data before the entire data set is retrieved.
- Minimize the amount of system overhead and the amount of memory usage.

Which type of object should you use in the method?

A. DbDataAdapter
B. unTyped DataSet
C. OleDbDataAdapter
D. DbDataReader

Correct Answer: D
Section: Volume B
Explanation

Explanation/Reference:
Explanation:
The DbDataReader class reads a forward-only stream of rows from a data source.

Reference: DbDataReader Class
https://msdn.microsoft.com/en-us/library/system.data.common.dbdatareader(v=vs.110).aspx

QUESTION 143
You write the following method (line numbers are included for reference only):

```
01 public static List<string> TestIfWebSite(string url)
02 {
03   const string pattern = @"http://(www\.)?([^\.]+)\.com";
04   List<string> result = new List<string>();
05
06   MatchCollection myMatches = Regex.Matches(url, pattern);
07 ...
08   return result;
09 }
```

You need to ensure that the method extracts a list of URLs that match the following pattern:
`@http://(www\.)?([^\.]+)\.com;`

Which code should you insert at line 07?

A.
```
result = (List<string>) myMatches.GetEnumerator();
```

B.
```
result = (List<string>) myMatches.SyncRoot;
```

C.
```
result = (from System.Text.RegularExpressions.Match m in myMatches
  select m.Value).ToList<string>();
```

D.
```
result = (from System.Text.RegularExpressions.Match m in myMatches
  where !m.Success
  select m.Value).ToList<string>();
```

A. Option A
B. Option B
C. Option C
D. Option D

Correct Answer: A
Section: Volume B
Explanation

Explanation/Reference:
Explanation:
The MatchCollection.GetEnumerator method returns an enumerator that iterates through a collection.

Note:
The MatchCollection Class represents the set of successful matches found by iteratively applying a regular expression pattern to the input string.

Reference: MatchCollection.GetEnumerator Method
https://msdn.microsoft.com/en-us/library/system.text.regularexpressions.matchcollection.getenumerator(v=vs.110).aspx

QUESTION 144
You are creating an application that reads from a database.

You need to use different databases during the development phase and the testing phase by using conditional compilation techniques.

What should you do?

A. Configure the Define TRACE constant setting in Microsoft Visual Studio.
B. Specify the /define compiler option.
C. Run the Assembly Linker tool from the Windows Software Development Kit (Windows SDK).
D. Decorate the code by using the [assembly:AssemblyDelaySignAttribute(true)] attribute.

Correct Answer: B
Section: Volume B
Explanation

Explanation/Reference:
Explanation:
You can specify the compiler settings for your application in several ways:
- The property pages
- The command line
- #CONST (for Visual Basic) and #define (for C#)

Note: You can have either the Trace or Debug conditional attribute turned on for a build, or both, or neither. Thus, there are four types of build: Debug, Trace, both, or neither. Some release builds for production deployment might contain neither; most debugging builds contain both.

Reference: How to: Compile Conditionally with Trace and Debug
https://msdn.microsoft.com/en-us/library/64yxa344(v=vs.110).aspx

QUESTION 145
You are creating a console application named Appl.

App1 retrieves data from the Internet by using JavaScript Object Notation (JSON).

You are developing the following code segment (line numbers are included for reference only):

```
01 public bool ValidateJson(string json, Dictionary<string, object> result)
02 {
03
04   try
05   {
06     result = serializer.Deserialize<Dictionary<string, object>>(json);
07     return true;
08   }
09   catch
10   {
11     return false;
12   }
13 }
```

You need to ensure that the code validates the JSON string.

Which code should you insert at line 03?

A.
```
XmlSerializer serializer = new XmlSerializer();
```

B.
```
var serializer = new JavaScriptSerializer();
```

C.
```
DataContractSerializer serializer = new DataContractSerializer();
```

D.
```
NetDataContractSerializer serializer = new NetDataContractSerializer();
```

A. Option A
B. Option B
C. Option C
D. Option D

Correct Answer: B
Section: Volume B
Explanation

Explanation/Reference:
Explanation:
JavaScriptSerializer().Deserialize
Converts the specified JSON string to an object of type T.

Example:
string json = File.ReadAllText(Environment.CurrentDirectory + @"\JSON.txt");

Company company = new System.Web.Script.Serialization.JavaScriptSerializer().Deserialize<Company>(

Reference: C# - serialize object to JSON format using JavaScriptSerializer
http://matijabozicevic.com/blog/csharp-net-development/csharp-serialize-object-to-json-format-using-javascriptserialization

QUESTION 146
You are testing an application. The application includes methods named `CalculateInterest` and `LogLine`. The `CalculateInterest()` method calculates loan interest. The `LogLine()` method sends diagnostic messages to a console window.

The following code implements the methods. (Line numbers are included for reference only.)

```
01
02  private static decimal CalculateInterest(decimal loanAmount, int loanTerm, decimal loanRate)
03  {
04    decimal interestAmount = loanAmount * loanRate * loanTerm;
05
06    LogLine("Interest Amount : ", interestAmount.ToString("c"));
07
08    return interestAmount;
09  }
10
11  public static void LogLine(string message, string detail)
12  {
13    Console.WriteLine("Log: {0} = {1}", message, detail);
14  }
```

You have the following requirements:
- The `CalculateInterest()` method must run for all build configurations.

- The `LogLine()` method must run only for debug builds.

You need to ensure that the methods run correctly.

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

A. Insert the following code segment at line 01: `#region DEBUG`
   Insert the following code segment at line 10 :`#endregion`
B. Insert the following code segment at line 01: `[Conditional("DEBUG")]`
C. Insert the following code segment at line 05 :`#region DEBUG`
   Insert the following code segment at line 07: `#endregion`
D. Insert the following code segment at line 10: `[Conditional("DEBUG")]`
E. Insert the following code segment at line 01: `#if DEBUG`
   Insert the following code segment at line 10: `#endif`
F. Insert the following code segment at line 10: `[Conditional("RELEASE")]`
G. Insert the following code segment at line 05: `#if DEBUG`
   Insert the following code segment at line 07: `#endif`

Correct Answer: DG
Section: Volume B
Explanation

Explanation/Reference:
Explanation:
D: Also, it's worth pointing out that you can use [Conditional("DEBUG")] attribute on methods that return void to have them only executed if a certain symbol is defined. The compiler would remove all calls to those methods if the symbol is not defined:

```
[Conditional("DEBUG")]
void PrintLog() {
  Console.WriteLine("Debug info");
}

void Test() {
  PrintLog();
}
```

G: When the C# compiler encounters an #if directive, followed eventually by an #endif directive, it will compile the code between the directives only if the specified symbol is defined. Unlike C and C++, you cannot assign a numeric value to a symbol; the #if statement in C# is Boolean and only tests whether the symbol has been defined or not. For example,

```
#define DEBUG
```

```
#if DEBUG
  Console.WriteLine("Debug version");
#endif
```

Reference: http://stackoverflow.com/questions/2104099/c-sharp-if-then-directives-for-debug-vs-release

QUESTION 147
You have a class named Customer and a variable named customers.

You need to test whether the customers' variable is a generic list of Customer objects.
Which line of code should you use?

A. Option A
B. Option B
C. Option C
D. Option D

Correct Answer: D
Section: Volume B
Explanation

Explanation/Reference:
Explanation:
If you want to check if it's an instance of a generic type:

```
return list.GetType().IsGenericType;
If you want to check if it's a generic List<T>:

return list.GetType().GetGenericTypeDefinition() == typeof(List<>);
```

Reference: Testing if object is of generic type in C#
http://stackoverflow.com/questions/982487/testing-if-object-is-of-generic-type-in-c-sharp

QUESTION 148
You have a C# application.

The application requires 500 MB of available memory.

You need to identify whether there is enough available memory when the application starts.

Which class should you use?

A. OutOfmemoryException
B. MemoryStream
C. PerformanceCounter
D. DiagnosticsConfigurationHandler

Correct Answer: C
Section: Volume B
Explanation

Explanation/Reference:

QUESTION 149
You plan to create a list of customers named customers. Each customer will have a name and a key. The name and key will be strings.

You will use the following code to retrieve customers from the list.

```
customers[aKey].toString();
```

You need to identify which class must be used to declare the customers list. The solution must ensure that each key is unique.

Which class should you identify?

A. ArrayList
B. Dictionary
C. List
D. Array

Correct Answer: B
Section: Volume B
Explanation

Explanation/Reference:

QUESTION 150
You are developing a C# application. The application references and calls a RESTful web service named EmployeeService. The EmployeeService web service includes a method named GetEmployee, which accepts an employee ID as a parameter. The web service returns the following JSON data from the method.

```
{"Id":1,"Name":"David Jones"}
```

The following code segment invokes the service and stores the result:

```
WebClient client = new WebClient();
byte[] employeeData = client.DownloadData("http://localhost:2588/EmployeeService.svc/GetEmployee/1");
```

You need to convert the returned JSON data to an Employee object for use in the application.

Which code segment should you use?

A.

```
using (Stream stream = new MemoryStream(employeeData))
{
   DataContractJsonSerializer dataContractJsonSerializer = new DataContract-
JsonSerializer(typeof(Employee));
   Employee retrievedEmployee = dataContractJsonSerializer.ReadOb-
ject(stream) as Employee;
   …
   }
```

B.

```
using (Stream stream = new MemoryStream(employeeData))
{
   var formatter = new System.Runtime.Serialization.Formatters.Binary.BinaryFor-
matter();
   var jsonMethod = new MethodCall(new[] { new Header("json", "GetEmployee") });
   Employee employee = (Employee)formatter.DeserializeMethodResponse(stream,
null, jsonMethod);
   …
}
```

C.

```
using (Stream stream = new MemoryStream(employeeData))
{
   DataContractSerializer dataContractSerializer = new DataContractSerializ-
er(typeof(Employee));
   var employee = (Employee)dataContractSerializer.ReadObject(XmlReader.Cre-
ate(stream));
   …
 }
```

D.

```
using (Stream stream = new MemoryStream(employeeData))
{
   DataContractSerializer dataContractSerializer = new DataContractSerializ-
er(typeof(Employee));
   dataContractSerializer.WriteObject(stream, new Employee());
   …
}
```

Correct Answer: A

Section: Volume B
Explanation

Explanation/Reference:
References: https://msdn.microsoft.com/en-us/library/bb412179(v=vs.110).aspx

QUESTION 151
You are developing a Windows Forms (WinForms) application. The application displays a TreeView that has 1,000 nodes.

You need to ensure that if a user expands a node, and then collapses the TreeView, the node object is kept in memory unless the Garbage Collector requires additional memory.

Which object should you use to store the node?

A. GC
B. Handle
C. Cache
D. WeakReference

Correct Answer: D
Section: Volume B
Explanation

Explanation/Reference:
References: https://msdn.microsoft.com/en-us/library/ms404247.aspx

QUESTION 152
You have the following line of code.

```
Type type1 = typeof(Myclass);
```

You need to create an object named obj that has a type of type1.

Which line of code should you use?

A.
```
object obj = Activator.CreateInstance("type1".GetType());
```

B.
```
type obj = Activator.CreateInstance(type1);
```

C.
```
type1 obj = Activator.CreateInstance("type1".GetType());
```

D.
```
object obj = Activator.CreateInstance(type1);
```

Correct Answer: B
Section: Volume B
Explanation

Explanation/Reference:

QUESTION 153
You need to write a console application that meets the following requirements:
If the application is compiled in Debug mode, the console output must display Entering debug mode.
If the application is compiled in Release mode, the console output must display Entering release mode.

Which code should you use?

A.
```
#define DEBUG
      Console.WriteLine("Entering debug mode");
#define RELEASE
      Console.WriteLine("Entering release mode")
```

B.
```
#if (DEBUG)
      Console.WriteLine("Entering debug mode");
#else
      Console.WriteLine("Entering release mode");
#endif
```

C.

```
#region DEBUG
      Console.WriteLine("Entering debug mode");
#endregion
#region RELEASE
      Console.WriteLine("Entering release mode")
#endregion
```

D.

```
if(System.Reflection.Assembly.GetExecutingAssembly().IsDefined
      (typeof(System.Diagnostics.Debugger), false))
       Console.WriteLine("Entering debug mode");
else
       Console.WriteLine("Entering release mode")
```

Correct Answer: B
Section: Volume B
Explanation

Explanation/Reference:

QUESTION 154
You plan to debug an application remotely by using Microsoft Visual Studio 2013.

You set a breakpoint in the code.

When you compile the application, you get the following error message: "The breakpoint will not currently be hit. No symbols have been loaded for this document."

You need to ensure that you can debug the application remotely.

What should you do?

A. Modify the AssemblyInfo.cs file.
B. Copy .exe files to the Symbols folder on the local computer.
C. Copy .cs files to the remote server.
D. Use .NET Remote Symbol Loading.

Correct Answer: A
Section: Volume B
Explanation

Explanation/Reference:
References: https://msdn.microsoft.com/en-us/library/y7f5zaaa.aspx

QUESTION 155
You are troubleshooting an application that uses a class named `FullName`. The class is decorated with the `DataContractAttribute` attribute. The application includes the following code. Line numbers are included for reference only.

```
01 class Program
02 {
03   MemoryStream WriteName(Name name)
04   {
05     var ms = new MemoryStream();
06     var binary = XmlDictionaryWriter.CreateBinaryWriter(ms);
07     var ser = new DataContractSerializer(typeof(FullName));
08     ser.WriteObject(binary, name);
09
10     return ms;
11   }
12 }
```

You need to ensure that the entire FullName object is serialized to the memory stream object.

Which code segment should you insert at line 09?

A. `binary.WriteEndElement();`
B. `binary.WriteEndDocument();`
C. `binary.WriteEndElementAsync();`
D. `binary.Flush();`

Correct Answer: B
Section: Volume B
Explanation

Explanation/Reference:
Explanation:

- DataContractSerializer.WriteEndObject Method (XmlDictionaryWriter)

Writes the closing XML element using an XmlDictionaryWriter.

- Note on line 07: DataContractSerializer.WriteObject Method

Writes all the object data (starting XML element, content, and closing element) to an XML document or stream.

XmlDictionaryWriter