Programming in C#

Number: 70-483
Passing Score: 700
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Dump based on:
- Microsoft.ActualTests.70-483.v2013-04-06.by.sophye.63q.vce
- Microsoft.ActualTests.70-483.v2013-04-03.by.qloslawGK.63q.vce

Changes:
- removed two duplicated questions
- removed screenshots and replaced them with text
- added explanations and references to most of the questions
- modified Q5 to reflect the true content of the question
- added three new questions: Q62, Q63, Q64

Exam

QUESTION 1
You have a collection of `Order` objects.The collection must meet the following requirements:

- Use strongly typed members.
- Process `Order` objects in first-in-first-out order.
- Store values for each `Order` object.
- Use zero-based indices.

You need to use a collection type that meets the requirements.Which collection type should you use?

A. `Queue<T>`
B. `SortedList`
C. `LinkedList<T>`
D. `HashTable`
E. `Array<T>`

Correct Answer: A
Section: (none)
Explanation

Explanation/Reference:
Queues are useful for storing messages in the order they were received for sequential processing. Objects stored in a Queue<T> are inserted at one end and removed from the other.

http://msdn.microsoft.com/en-us/library/7977ey2c.aspx

QUESTION 2
You are developing an application. The application calls a method that returns an array of integers named `employeeIds`. You define an integer variable named `employeeIdToRemove` and assign a value to it. You declare an array named `filteredEmployeeIds`. You have the following requirements:

- Remove duplicate integers from the `employeeIds` array.
- Sort the array in order from the highest value to the lowest value.
- Remove the integer value stored in the `employeeIdToRemove` variable from the `employeeIds` array.

You need to create a LINQ query to meet the requirements. Which code segment should you use?

A.
```
int[] filteredEmployeeIds = employeeIds.Where(value => value != employeeIdToRemove).OrderBy(x => x).ToArray
();
```
B.
```
int[] filteredEmployeeIds = employeeIds.Where(value => value != employeeIdToRemove).OrderByDescending(x =>
```

```
   x).ToArray();
```

C.
```
int[] filteredEmployeeIds = employeeIds.Distinct().Where(value => value !=
employeeIdToRemove).OrderByDescending(x => x).ToArray();
```

D.
```
int[] filteredEmployeeIds = employeeIds.Distinct().OrderByDescending(x => x).ToArray();
```

Correct Answer: C
Section: (none)
Explanation

Explanation/Reference:
C is the only one of the answers that includes the "Distinct" clause in order to eliminate duplicate values.

QUESTION 3
You are developing an application that includes the following code segment. (Line numbers are included for reference only.)

```
01 class Animal
02 {
03   public string Color { get; set; }
04   public string Name { get; set; }
05 }
06 private static IEnumerable<Animal> GetAnimals(string sqlConnectionString)
07 {
08   var animals = new List<Animal>();
09   SqlConnection sqlConnection = new SqlConnection(sqlConnectionString);
10   using (sqlConnection)
11   {
12      SqlCommand sqlCommand = new SqlCommand("SELECT Name, ColorName FROM Animals", sqlConnection);
13
14      using (SqlDataReader sqlDataReader = sqlCommand.ExecuteReader())
15      {
16
17         {
18           var animal = new Animal();
19           animal.Name = (string)sqlDataReader["Name"];
20           animal.Color = (string)sqlDataReader["ColorName"];
21           animals.Add(animal);
22         }
23      }
24   }
25   return animals;
26 }
```

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

- Connect to a Microsoft SQL Server database.
- Create `Animal` objects and populate them with data from the database.
- Return a sequence of populated `Animal` 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 16: `while(sqlDataReader.NextResult())`
B. Insert the following code segment at line 13: `sqlConnection.Open();`
C. Insert the following code segment at line 13: `sqlConnection.BeginTransaction();`
D. Insert the following code segment at line 16: `while(sqlDataReader.Read())`
E. Insert the following code segment at line 16: `while(sqlDataReader.GetValues())`

Correct Answer: BD
Section: (none)
Explanation

Explanation/Reference:
`SqlConnection.Open` - Opens a database connection with the property settings specified by the ConnectionString. http://msdn.microsoft.com/en-us/library/system.data.sqlclient.sqlconnection.open.aspx

`SqlDataReader.Read` - Advances the SqlDataReader to the next record. http://msdn.microsoft.com/en-us/library/system.data.sqlclient.sqldatareader.read.aspx

QUESTION 4
You are developing a custom collection named `LoanCollection` for a class named `Loan` class. You need to ensure that you can process each `Loan` object in the `LoanCollection` collection by using a `foreach` loop. (You may need to drag the split bar between panes or scroll to view content.)
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.)

Select and Place:

```
: IComparable
: IEnumerable
: IDisposable
public IEnumerator GetEnumerator()
public int CompareTo(object obj)
public void Dispose()
_loanCollection[0].Amount++;
return obj == null ? 1 : _loanCollection.Length;
return _loanCollection.GetEnumerator();
```

```
public class LoanCollection
{
    private readonly Loan[] _loanCollection;
    public LoanCollection(Loan[] loanArray)
    {
        _loanCollection = new Loan[loanArray.Length];

        for (int i = 0; i < loanArray.Length; i++)
        {
            _loanCollection[i] = loanArray[i];
        }
    }

    {

    }
}
```

Correct Answer:

```
: IComparable

: IDisposable

public int CompareTo(object obj)
public void Dispose()
_loanCollection[0].Amount++;
return obj == null ? 1 : _loanCollection.Length;
```

```
public class LoanCollection : IEnumerable
{
    private readonly Loan[] _loanCollection;
    public LoanCollection(Loan[] loanArray)
    {
        _loanCollection = new Loan[loanArray.Length];

        for (int i = 0; i < loanArray.Length; i++)
        {
            _loanCollection[i] = loanArray[i];
        }
    }

    public IEnumerator GetEnumerator()
    {
        return _loanCollection.GetEnumerator();
    }
}
```

Section: (none)
Explanation

Explanation/Reference:

QUESTION 5
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 by the method `year` parameter
- not raise an exception

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

A. `where order.OrderDate.Value != null && order.OrderDate.Value.Year >= year`
B. `where order.OrderDate.Value == null && order.OrderDate.Value.Year == year`
C. `where order.OrderDate.HasValue && order.OrderDate.Value.Year >= year`
D. `where order.OrderDate.Value.Year == year`

Correct Answer: C
Section: (none)
Explanation

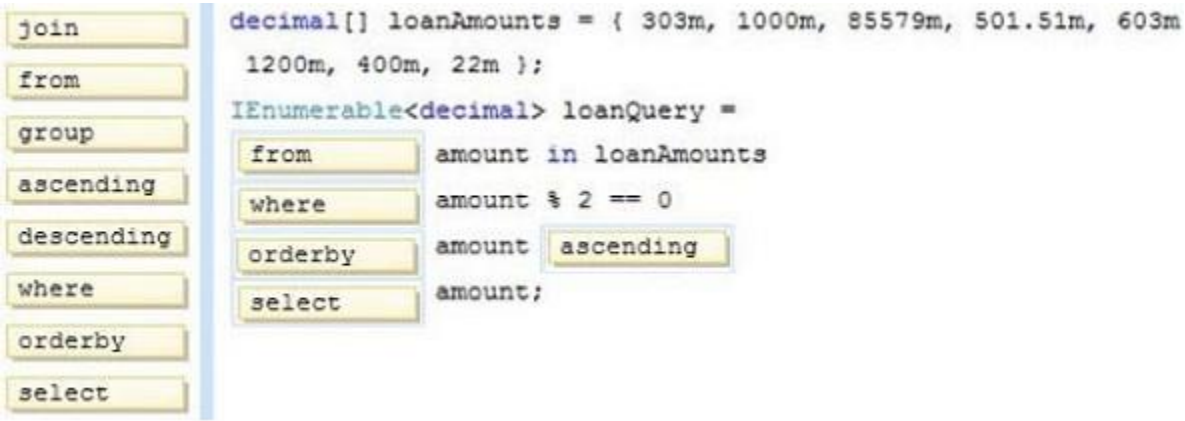
Explanation/Reference:

QUESTION 6
You are developing an application by using C#. The application includes an array of decimal values named `loanAmounts`. You are developing a LINQ

query to return the values from the array. The query must return decimal values that are evenly divisible by two. The values must be sorted from the lowest value to the highest value.
You need to ensure that the query correctly returns the decimal values. 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.)

Select and Place:

Correct Answer:



Section: (none)
Explanation

Explanation/Reference:

QUESTION 7
You are developing an application. The application includes a method named `ReadFile` that reads data from a file. The `ReadFile()` method must meet the following requirements:

- It must not make changes to the data file.
- It must allow other processes to access the data file.
- It must not throw an exception if the application attempts to open a data file that does not exist.

You need to implement the `ReadFile` method. Which code segment should you use?

A. `var fs = File.Open(Filename, FileMode.OpenOrCreate, FileAccess.Read, FileShare.ReadWrite);`
B. `var fs = File.Open(Filename, FileMode.Open, FileAccess.Read, FileShare.ReadWrite);`
C. `var fs = File.Open(Filename, FileMode.OpenOrCreate, FileAccess.Read, FileShare.Write);`
D. `var fs = File.ReadAllLines(Filename);`
E. `var fs = File.ReadAllBytes(Filename);`

Correct Answer: A
Section: (none)
Explanation

Explanation/Reference:
`FileMode.OpenOrCreate` - Specifies that the operating system should open a file if it exists; otherwise, a new file should be created. If the file is opened with FileAccess.Read, FileIOPermissionAccess.Read permission is required. If the file access is FileAccess.Write, FileIOPermissionAccess.Write permission is required. If the file is opened with FileAccess.ReadWrite, both FileIOPermissionAccess.Read and FileIOPermissionAccess.Write permissions are required. http://msdn.microsoft.com/en-us/library/system.io.filemode.aspx

`FileShare.ReadWrite` - Allows subsequent opening of the file for reading or writing.If this flag is not specified, any request to open the file for reading or writing (by this process or another process) will fail until the file is closed.However, even if this flag is specified, additional permissions might still be needed to access the file. http://msdn.microsoft.com/pl-pl/library/system.io.fileshare.aspx

QUESTION 8
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.ConvertToType<Name>(json);`
B. `return ser.DeserializeObject(json);`
C. `return ser.Deserialize<Name>(json) ;`
D. `return (Name)ser.Serialize(json);`

Correct Answer: C
Section: (none)
Explanation

Explanation/Reference:
`JavaScriptSerializer.Deserialize<T>` - Converts the specified JSON string to an object of type T. http://msdn.microsoft.com/en-us/library/bb355316.aspx

QUESTION 9
An application serializes and deserializes XML from streams. The XML streams are in the following format:

```
<Name xmlns="http://www.contoso.com/2012/06">
  <LastName>Jones</LastName>
  <FirstName>David</FirstName>
</Name>
```

The application reads the XML streams by using a `DataContractSerializer` object that is declared by the following code segment:

```
var ser = new DataContractSerializer(typeof(Name));
```

You need to ensure that the application preserves the element ordering as provided in the XML stream.
How should you complete the relevant code? (To answer, drag the appropriate attributes to the correct locations in the answer area. Each attribute 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:

```
[DataContract(Namespace="http://www.contoso.com/2012/06")]
[DataMember(Order=10)]
[DataMember]
[DataContract(Name="http://www.contoso.com/2012/06")]
[DataMember(Name="http://www.contoso.com/2012/06", Order=10)]
[DataContract]
[DataMember(Name="http://www.contoso.com/2012/06")]
```

```
class Name
{
  public string FirstName { get; set; }

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

Correct Answer:

```
[DataContract(Namespace="http://www.contoso.com/2012/06")]
[DataMember(Order=10)]
[DataMember]
[DataContract(Name="http://www.contoso.com/2012/06")]
[DataMember(Name="http://www.contoso.com/2012/06", Order=10)]
[DataContract]
[DataMember(Name="http://www.contoso.com/2012/06")]
```

```
[DataContract(Namespace="http://www.contoso.com/2012/06")]
class Name
{
  [DataMember(Order=10)]
  public string FirstName { get; set; }

  [DataMember]
  public string LastName { get; set; }
}
```

Section: (none)
Explanation

Explanation/Reference:
`DataContractAttribute` - Specifies that the type defines or implements a data contract and is serializable by a serializer, such as the DataContractSerializer. To make their type serializable, type authors must define a data contract for their type. http://msdn.microsoft.com/en-us/library/system.runtime.serialization.datacontractattribute.aspx

`DataMemberAttribute` - When applied to the member of a type, specifies that the member is part of a data contract and is serializable by the DataContractSerializer. http://msdn.microsoft.com/en-us/library/ms574795.aspx

QUESTION 10
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 a JSON object. Which code segment should you insert at line 20?

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

Correct Answer: D
Section: (none)
Explanation

Explanation/Reference:
`DataContractJsonSerializer` - Serializes objects to the JavaScript Object Notation (JSON) and deserializes JSON data to objects. This class cannot be inherited. http://msdn.microsoft.com/en-us/library/system.runtime.serialization.json.datacontractjsonserializer.aspx

QUESTION 11
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 or a class derived from the `Person` class. Which access modifier should you use for the `GetData()` method?

A. `internal`
B. `protected`
C. `protected internal`
D. `private`
E. `public`

Correct Answer: B
Section: (none)
Explanation

Explanation/Reference:
`protected` - The type or member can be accessed only by code in the same class or struct, or in a class that is derived from that class. http://msdn.microsoft.com/en-us/library/ms173121.aspx

QUESTION 12
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: (none)
Explanation

Explanation/Reference:
`as` - The as operator is like a cast operation. However, if the conversion isn't possible, as returns null instead of raising an exception. http://msdn.microsoft.com/en-us/library/cscsdfbt(v=vs.110).aspx

QUESTION 13
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)
{
   ...
}
```

Correct Answer: C
Section: (none)
Explanation

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

QUESTION 14
You are developing a class named `ExtensionMethods`. You need to ensure that the `ExtensionMethods` class implements the `IsUrl()` 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:

```
public static class ExtensionMethods

public class ExtensionMethods

this String str

String str

protected static class ExtensionMethods
```

```
{
    public static bool IsUrl(

    )
    {
        var regex = new Regex(
            "(https?://)?([A-Za-z9-0-]*\\.)?([A-Za-z0-9-]*)" +
            "\\.[A-Za-z0-9]*/?.*");
        return regex.IsMatch(str);
    }
}
```

Correct Answer:

```
public static class ExtensionMethods
```

```
public class ExtensionMethods
```

```
this String str
```

```
String str
```

```
protected static class ExtensionMethods
```

```
public static class ExtensionMethods
{
    public static bool IsUrl(
        this String str
    )
    {
        var regex = new Regex(
            "(https?://)?([A-Za-z9-0-]*\\.)?([A-Za-z0-9-]*)" +
            "\\.[A-Za-z0-9]*/?.*");
        return regex.IsMatch(str);
    }
}
```

Section: (none)
Explanation

Explanation/Reference:
http://msdn.microsoft.com/en-us/library/vstudio/bb311042.aspx

QUESTION 15
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
{
   ...
}
```

Correct Answer: BD
Section: (none)
Explanation

Explanation/Reference:
`sealed` - When applied to a class, the sealed modifier prevents other classes from inheriting from it. http://msdn.microsoft.com/en-us/library/88c54tsw(v=vs.110).aspx

QUESTION 16
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:

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;
```

Correct Answer: B
Section: (none)
Explanation

Explanation/Reference:
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.

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

QUESTION 17

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: (none)
Explanation

Explanation/Reference:
`GC.SuppressFinalize` - Requests that the system not call the finalizer for the specified object. http://msdn.microsoft.com/en-us/library/system.gc.suppressfinalize.aspx

QUESTION 18
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 only by code within the `Employee` class or within a class derived from the `Employee` class. The `EmployeeType` property value must be modified only by code within 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: (none)
Explanation

Explanation/Reference:
AB and AF would not compile because of error: Cannot specify accessibility modifiers for both accessors of the property or indexer.

QUESTION 19
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: (none)
Explanation

Explanation/Reference:
Only A has a valid cast, C would not even compile.

QUESTION 20
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: (none)
Explanation

Explanation/Reference:
`Assembly.GetExecutingAssembly` - Gets the assembly that contains the code that is currently executing. http://msdn.microsoft.com/en-us/library/system.reflection.assembly.getexecutingassembly(v=vs.110).aspx

`Assembly.GetAssembly` - Gets the currently loaded assembly in which the specified class is defined. http://msdn.microsoft.com/en-us/library/system.reflection.assembly.getassembly.aspx

QUESTION 21
You are implementing a library method that accepts a character parameter and returns a string. If the lookup succeeds, the method must return the corresponding string value. If the lookup fails, the method must return the value "invalid choice." You need to implement the lookup algorithm. How should you complete the relevant code? (To answer, select the correct keyword in each drop-down list in the answer area.)

Hot Area:

```
public string GetResponse(char letter)
{
  string response;
  [ ] (letter)
  {
    [ ] 'a':
      response = "animal";
      break;
    [ ] 'm':
      response = "mineral";
      break;
    [ ] :
      response = "invalid choice";
      break;
  }
  return response;
}
```

case
if
switch

case
default
else
if

case
default
else
if

case
default
else
if

Correct Answer:

```
public string GetResponse(char letter)
{
  string response;
  [ ▾ ](letter)
    case
    if
    switch
  {
    [ ▾ ] 'a':
      case
      default
      else
      if
      response = "animal";
      break;
    [ ▾ ] 'm':
      case
      default
      else
      if
      response = "mineral";
      break;
    [ ▾ ] :
      case
      default
      else
      if
      response = "invalid choice";
      break;
  }
  return response;
}
```

Section: (none)
Explanation

Explanation/Reference:
http://msdn.microsoft.com/en-us/library/06tc147t(v=vs.110).aspx

QUESTION 22
You use the `Task.Run()` method to launch a long-running data processing operation. The data processing operation often fails in times of heavy network congestion. If the data processing operation fails, a second operation must clean up any results of the first operation. You need to ensure that the second operation is invoked only if the data processing operation throws an unhandled exception. What should you do?

A. Create a `TaskCompletionSource<T>` object and call the `TrySetException()` method of the object.
B. Create a task by calling the `Task.ContinueWith()` method
C. Examine the `Task.Status` property immediately after the call to the `Task.Run()` method.
D. Create a task inside the existing `Task.Run()` method by using the `AttachedToParent` option.

Correct Answer: B
Section: (none)
Explanation

Explanation/Reference:
`Task.ContinueWith` - Creates a continuation that executes asynchronously when the target Task completes.The returned Task will not be scheduled for execution until the current task has completed, whether it completes due to running to completion successfully, faulting due to an unhandled exception, or exiting out early due to being canceled. http://msdn.microsoft.com/en-us/library/dd270696.aspx

QUESTION 23
You are modifying an application that processes leases. The following code defines the `Lease` class. (Line numbers are included for reference only.)

```
01 public class Lease
02 {
03
04    private int _term;
05    private const int MaximumTerm = 5;
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);
```

Leases are restricted to a maximum term of 5 years. The application must send a notification message if a lease request exceeds 5 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 event MaximumTermReachedHandler OnMaximumTermReached;
```
B. Insert the following code segment at line 21:
```
if (OnMaximumTermReached != null)
{
    OnMaximumTermReached(this, new EventArgs());
}
```
C. Insert the following code segment at line 21:
```
value = MaximumTerm;
```
D. Insert the following code segment at line 03:
```
public string maximumTermReachedEvent { get; set; }
```
E. Insert the following code segment at line 03:
```
private string MaximumTermReachedEvent;
```
F. Insert the following code segment at line 21:
```
value = 4;
```

Correct Answer: AB
Section: (none)
Explanation

Explanation/Reference:

QUESTION 24
You are developing an application that uses structured exception handling. The application includes a class named `ExceptionLogger`. The `ExceptionLogger` class implements a method named `LogException` by using the following code segment:

```
public static void LogException(Exception ex)
```

You have the following requirements:

- log all exceptions by using the `LogException()` method of the `ExceptionLogger` class.
- rethrow the original exception, including the entire exception stack.

You need to meet the requirements. Which code segment should you use?

A.
```
catch (Exception ex)
{
   ExceptionLogger.LogException(ex);
   throw;
}
```
B.
```
catch (Exception ex)
{
   ExceptionLogger.LogException(ex);
   throw ex;
}
```
C.
```
catch
{
   ExceptionLogger.LogException(new Exception());
   throw;
}
```
D.
```
catch
{
   var ex = new Exception();
   throw ex;
}
```

Correct Answer: A
Section: (none)
Explanation

Explanation/Reference:
Once an exception is thrown, part of the information it carries is the stack trace. The stack trace is a list of the method call hierarchy that starts with the method that throws the exception and ends with the method that catches the exception. If an exception is re-thrown by specifying the exception in the throw statement, the stack trace is restarted at the current method and the list of method calls between the original method that threw the exception and the current method is lost. To keep the original stack trace information with the exception, use the throw statement without specifying the exception.
http://msdn.microsoft.com/en-us/library/ms182363(v=vs.110).aspx

QUESTION 25
You are developing an application that includes a class named `UserTracker`. The application includes the following code segment. (Line numbers are included for reference only.)

```
01 public delegate void AddUserCallback(int i);
02 public class UserTracker
03 {
```

```
04    List<User> users = new List<User>();
05    public void AddUser(string name, AddUserCallback callback)
06    {
07        users.Add(new User(name));
08        callback(users.Count);
09    }
10 }
11
12 public class Runner
13 {
14
15    UserTracker tracker = new UserTracker();
16    public void Add(string name)
17    {
18
19    }
20 }
```

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

A. Insert the following code segment at line 14:

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

Insert the following code segment at line 18:

```
AddUserCallback callback = PrintUserCount;
```

B. Insert the following code segment at line 11:

```
delegate void AdduserDelegate(userTracker userTracker);
```

Insert the following code segment at line 18:

```
AddUserDelegate addDelegate = (userTracker) =>
   {
      ...
   };
addDelegate(tracker);
```

C. Insert the following code segment at line 11:

```
delegate void AddUserDelegate(string name, AddUserCallback callback);
```

Insert the following code segment at line 18:

```
AddUserDelegate adder = (i, callback) =>
   {
      ...
   };
```

D. Insert the following code segment at line 18:

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

Correct Answer: D
Section: (none)
Explanation

Explanation/Reference:

QUESTION 26
You develop an application that displays information from log files. When a user opens a log file by using the application, the application throws an exception and closes. The application must preserve the original stack trace information when an exception occurs. You need to implement the method that reads the log files. 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:

```
using (StringReader sr = new StringReader("log.txt"))
using (StreamReader sr = new StreamReader("log.txt"))
throw new FileNotFoundException();
throw;
```

```
{
    try
    {
        string line;
        while ((line = sr.ReadLine()) != null)
        {
            Console.WriteLine(line);
        }
    }
    catch (FileNotFoundException e)
    {
        Console.Write(e.ToString());
    }
}
```

Correct Answer:

```
using (StringReader sr = new StringReader("log.txt"))
using (StreamReader sr = new StreamReader("log.txt"))
throw new FileNotFoundException();
throw;
```

```
using (StreamReader sr = new StreamReader("log.txt"))
{
    try
    {
        string line;
        while ((line = sr.ReadLine()) != null)
        {
            Console.WriteLine(line);
        }
    }
    catch (FileNotFoundException e)
    {
        Console.Write(e.ToString());
        throw;
    }
}
```

Section: (none)
Explanation

Explanation/Reference:
`StringReader` - Implements a TextReader that reads from a string. http://msdn.microsoft.com/en-us/library/system.io.stringreader(v=vs.110).aspx

`StreamReader` - Implements a TextReader that reads characters from a byte stream in a particular encoding. http://msdn.microsoft.com/en-us/library/system.io.streamreader(v=vs.110).aspx

Once an exception is thrown, part of the information it carries is the stack trace. The stack trace is a list of the method call hierarchy that starts with the method that throws the exception and ends with the method that catches the exception. If an exception is re-thrown by specifying the exception in the throw statement, the stack trace is restarted at the current method and the list of method calls between the original method that threw the exception and

the current method is lost. To keep the original stack trace information with the exception, use the throw statement without specifying the exception.
http://msdn.microsoft.com/en-us/library/ms182363(v=vs.110).aspx

QUESTION 27
You are developing an application that includes a class named `Kiosk`. The `Kiosk` class includes a static property named `Catalog`. The `Kiosk` class is defined by the following code segment. (Line numbers are included for reference only.)

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

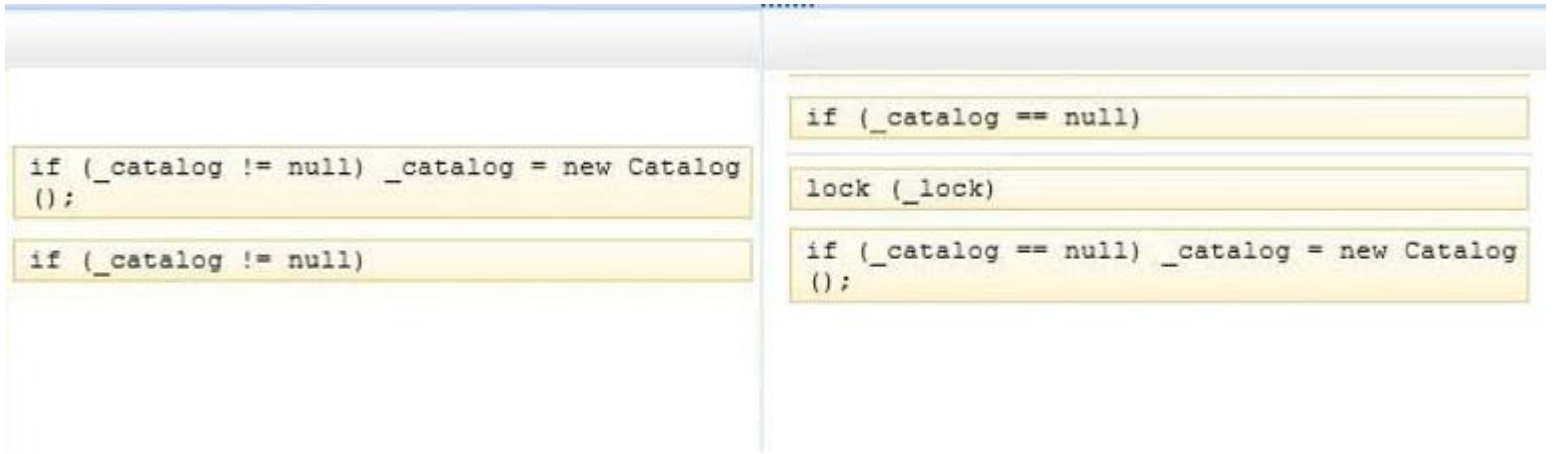
You have the following requirements:

- initialize the `_catalog` field to a `Catalog` instance.
- initialize the `_catalog` field only once.
- ensure that the application code acquires a lock only when the `_catalog` 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: (none)
Explanation

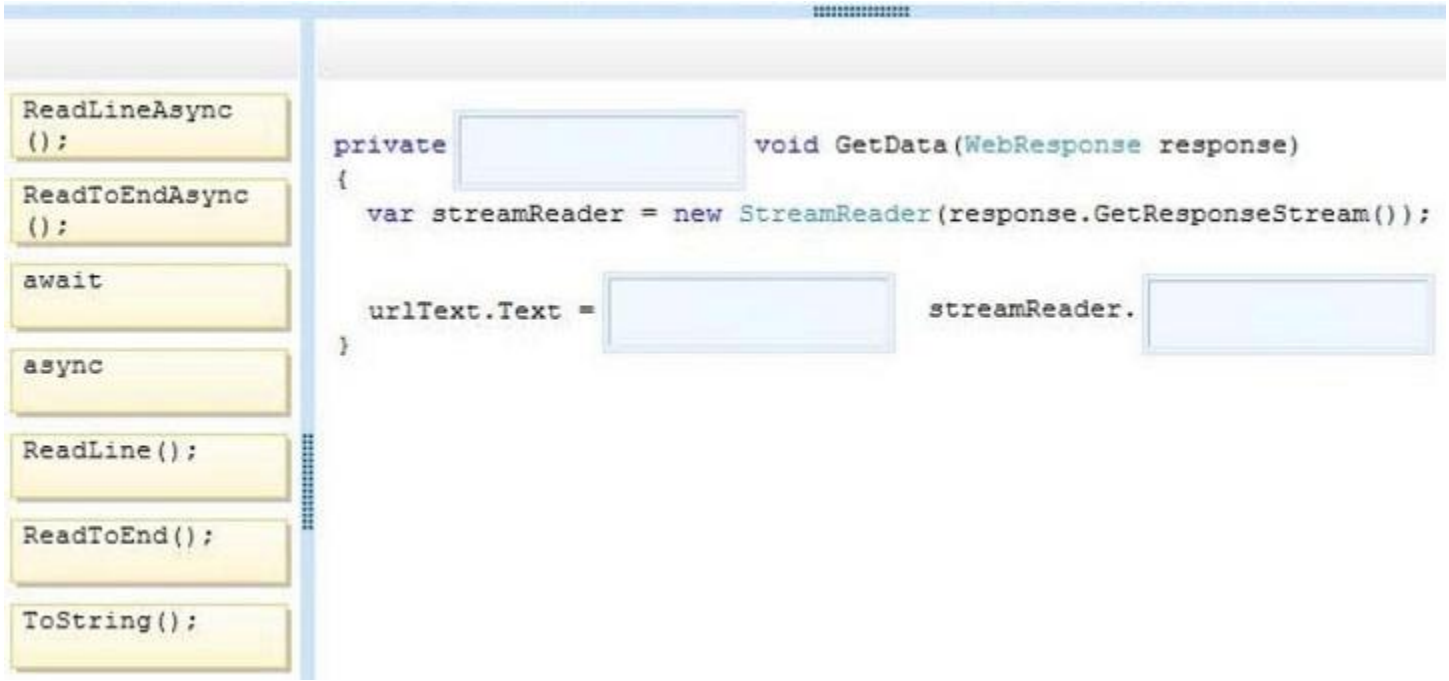
Explanation/Reference:
After taking a lock you must check once again the `_catalog` field to be sure that other threads didn't instantiated it in the meantime.

QUESTION 28
You are developing an application that will include a method named `GetData`. The `GetData()` method will retrieve several lines of data from a web service by using a `System.IO.StreamReader` object. You have the following requirements:

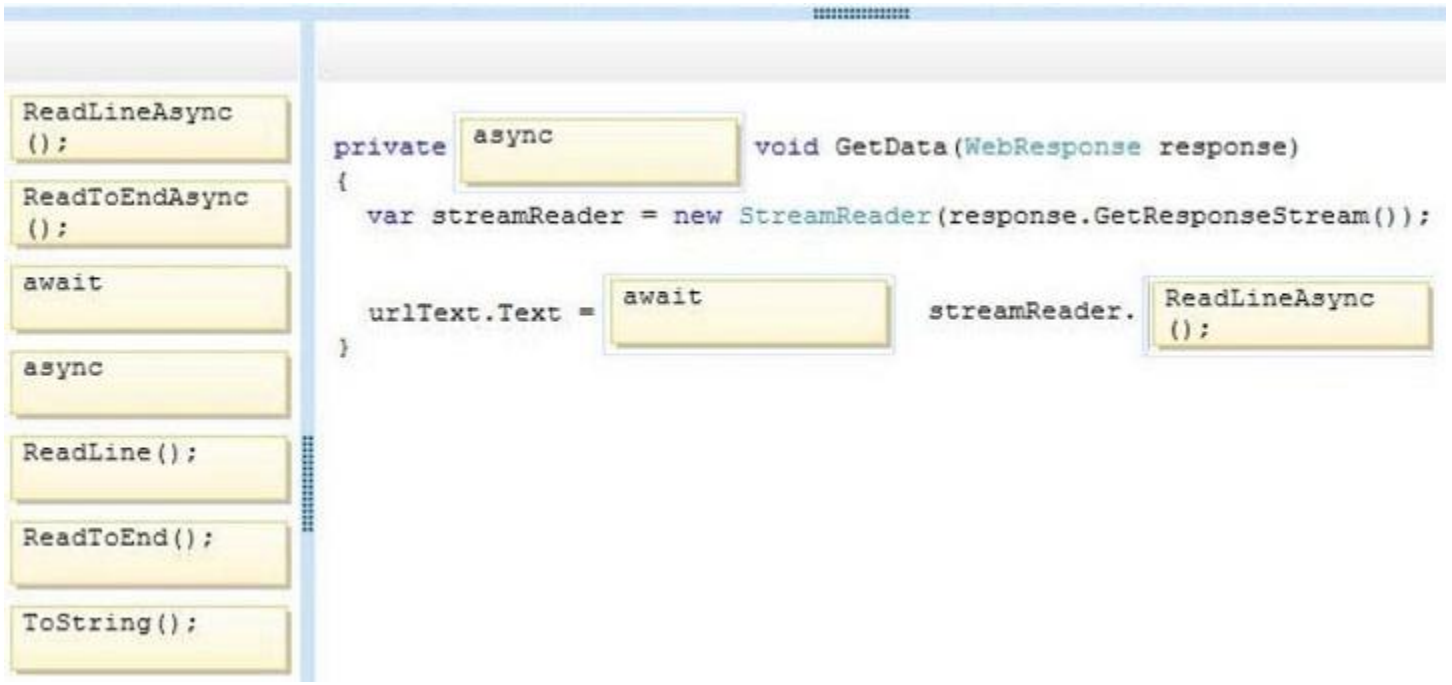
- the `GetData()` method must return a string value that contains the first line of the response from the web service.
- the application must remain responsive while the `GetData()` method runs.

You need to implement the `GetData()` method. How should you complete the relevant code? (To answer, drag the appropriate objects to the correct locations in the answer area. Each object 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: (none)
Explanation

Explanation/Reference:

QUESTION 29
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 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))
{
   ...
}
```

Correct Answer: B
Section: (none)
Explanation

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

comment:
A locks entire ScoreCard and we don't want that
D lock all object of type ScoreCard
C it should work but B is much more preferred

QUESTION 30
You are developing an application that implements a set of custom exception types. You declare the custom exception types by using the following code segments:

```
public class AdventureWorksException : System.Exception { ... }
public class AdventureWorksDbException : AdventureWorksException { ... }
public class AdventureWorksValidationException : AdventureWorksException { ... }
```

The application includes a function named `DoWork` that throws .NET Framework exceptions and custom exceptions. The application contains only the following logging methods:

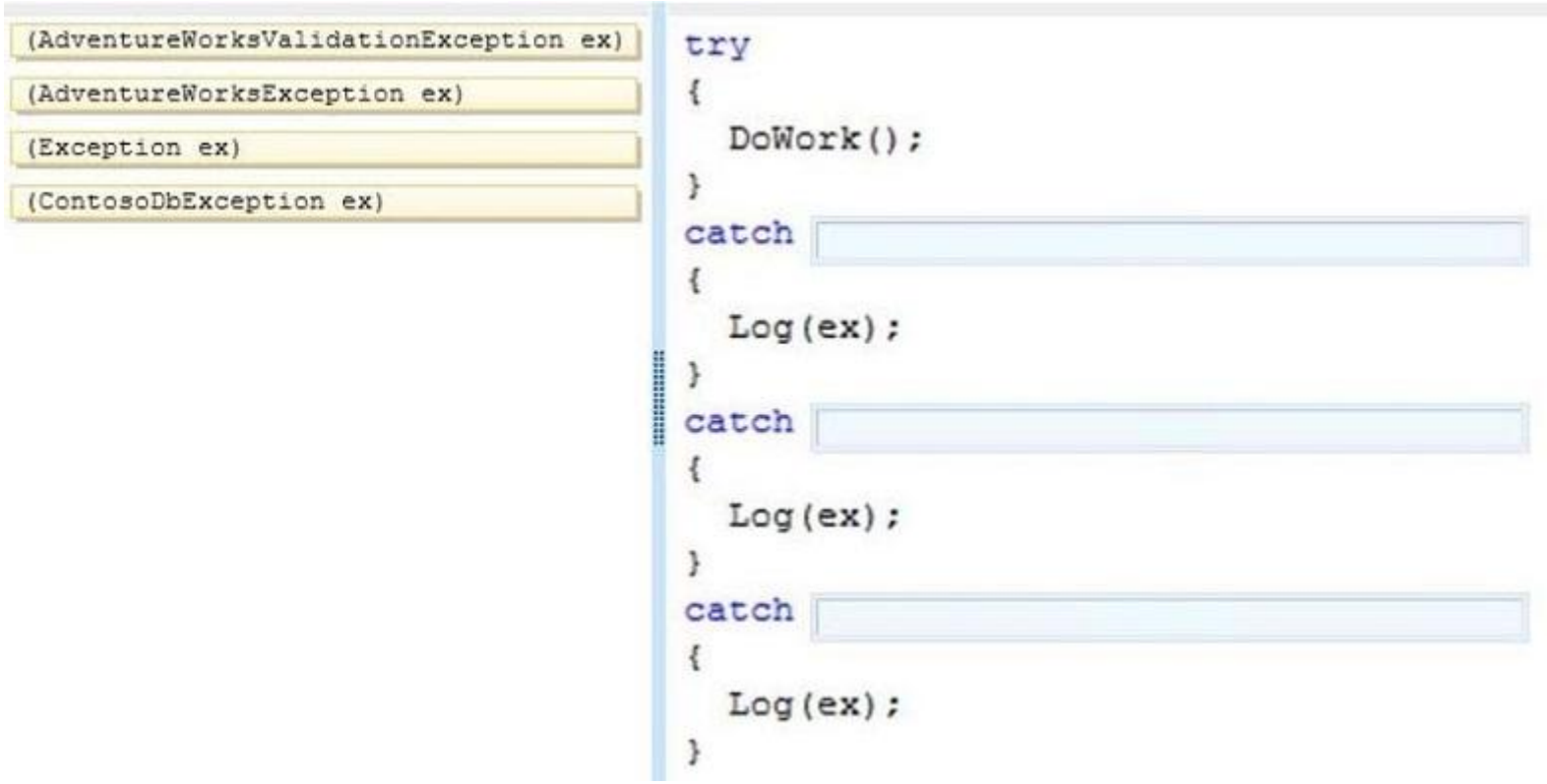
```
static void Log(Excpetion ex) { ... }
static void Log(AdventureWorksException ex) { ... }
static void Log(AdventureWorksValidationException ex) { ... }
```

The application must meet the following requirements:

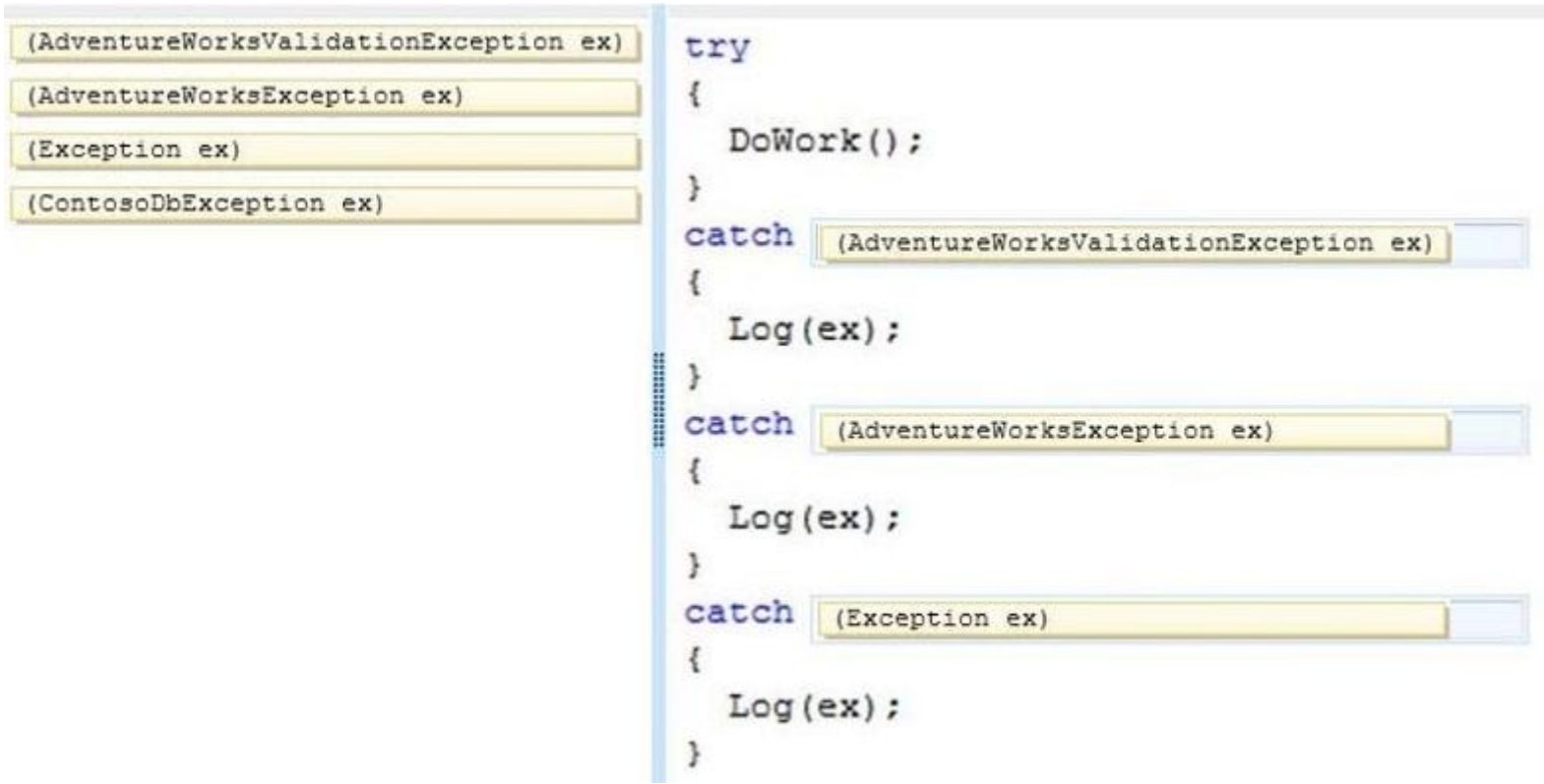
- when `AdventureWorksValidationException` exceptions are caught, log the information by using the `static void Logx (AdventureWorksValidationException ex)` method.
- when `AdventureWorksDbException` or other `AdventureWorksException` exceptions are caught, log the information by using the `static void Log(AdventureWorksException ex)` method.

You need to meet the requirements. 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: (none)
Explanation

Explanation/Reference:

QUESTION 31
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);
```

Correct Answer: D
Section: (none)
Explanation

Explanation/Reference:
`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. http://msdn.microsoft.com/en-us/library/system.text.regularexpressions.regexoptions.aspx

Additional info http://stackoverflow.com/questions/513412/how-does-regexoptions-compiled-work

QUESTION 32
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: (none)
Explanation

Explanation/Reference:

QUESTION 33
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 = PerformanceCounterType.RawBase;`
B. `CounterType = PerformanceCounterType.AverageBase;`
C. `CounterType = PerformanceCounterType.SampleBase;`
D. `CounterType = PerformanceCounterType.CounterMultiBase;`

Correct Answer: C
Section: (none)
Explanation

Explanation/Reference:
`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 %.

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

QUESTION 34
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: (none)
Explanation

Explanation/Reference:
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 35

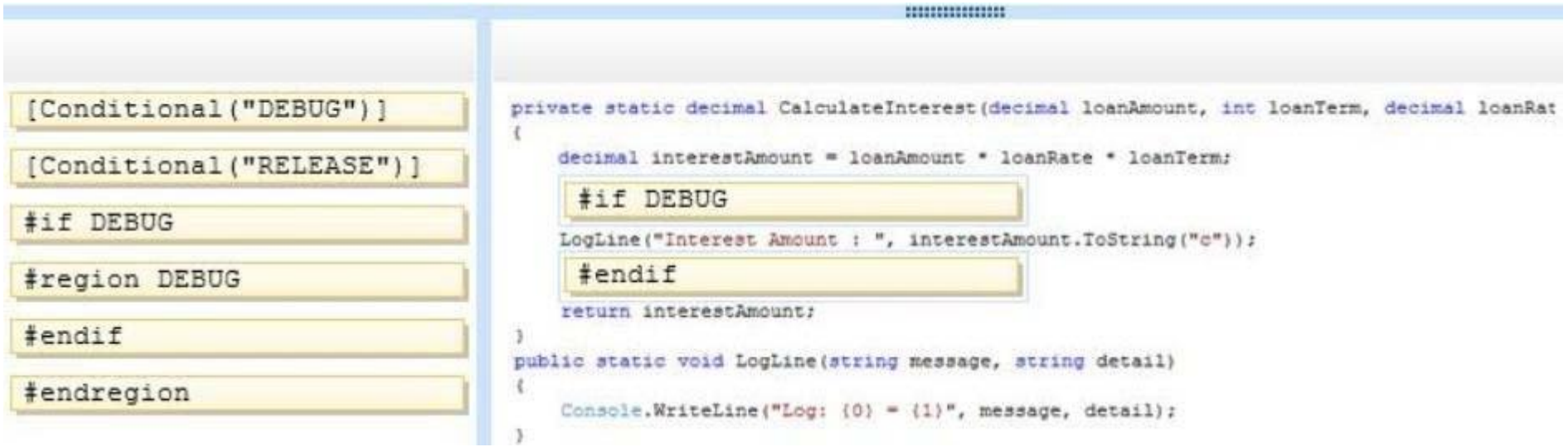
You are testing an application. The application includes methods named `CalculateInterest` and `LogLine`. The `CalculateInterest()` method calculates loan interest. The `LogLine()` method sends diagnostic messages to a console window. You have the following requirements:

- the `CalculateInterest()` method must run for all build configurations.
- `LogLine()` method must run 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: (none)
Explanation

Explanation/Reference:

QUESTION 36
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: (none)
Explanation

Explanation/Reference:
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.

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

QUESTION 37
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: (none)
Explanation

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

QUESTION 38
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);
```

Correct Answer: A
Section: (none)
Explanation

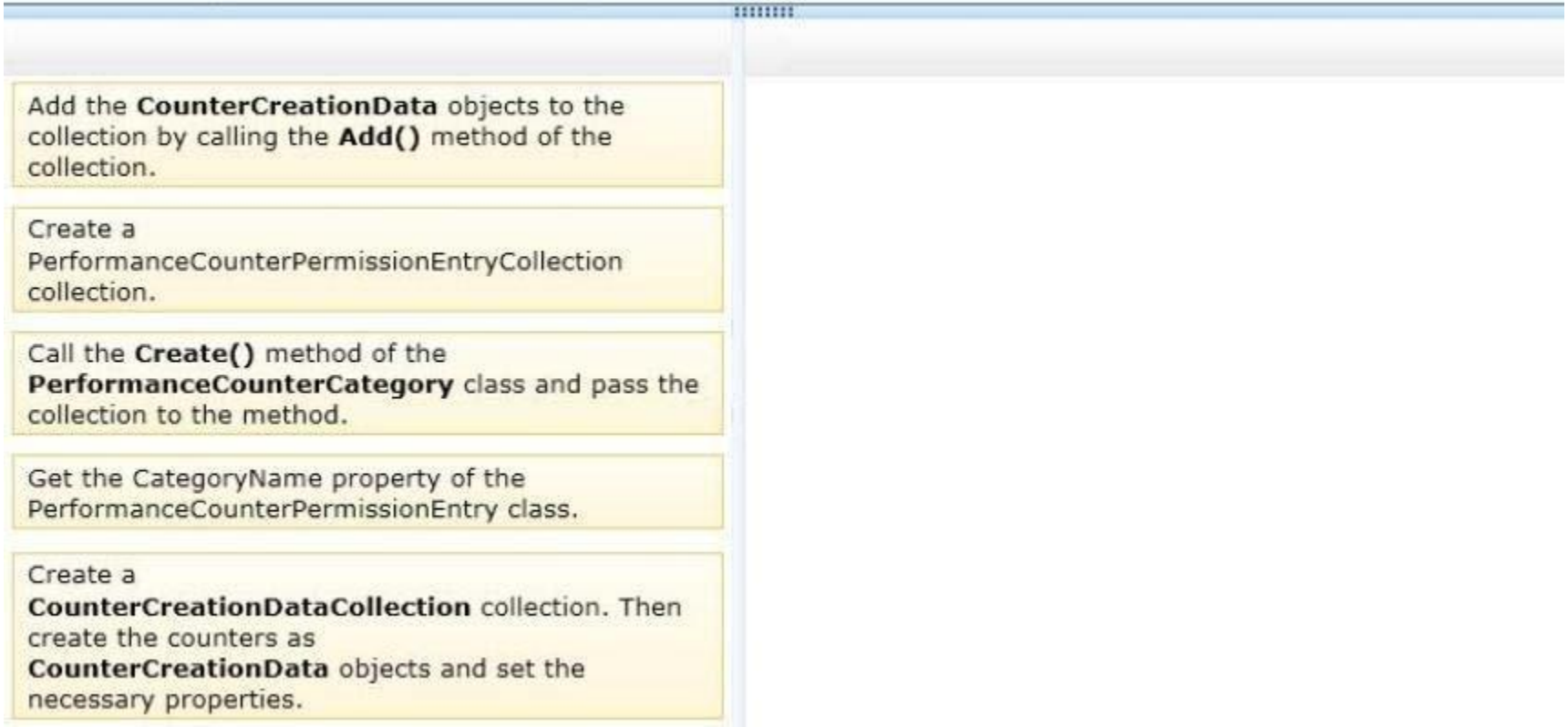
Explanation/Reference:
`DateTimeStyles.AdjustToUniversal` - Date and time are returned as a Coordinated Universal Time (UTC). If the input string denotes a local time, through a time zone specifier or AssumeLocal, the date and time are converted from the local time to UTC. If the input string denotes a UTC time, through a time zone specifier or AssumeUniversal, no conversion occurs. If the input string does not denote a local or UTC time, no conversion occurs and the resulting Kind property is Unspecified. This value cannot be used with RoundtripKind.

`DateTimeStyles.AssumeLocal` - If no time zone is specified in the parsed string, the string is assumed to denote a local time. This value cannot be used with AssumeUniversal or RoundtripKind.

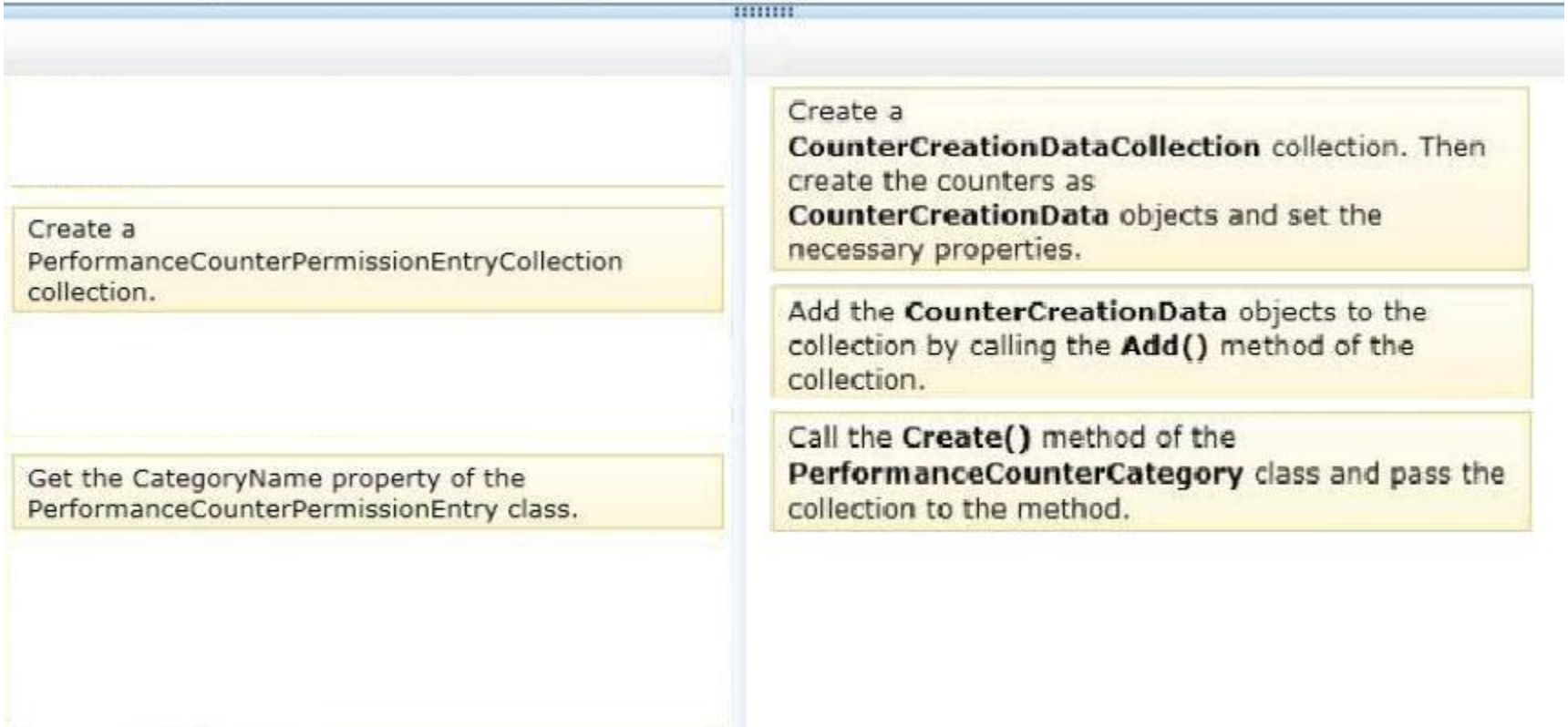
http://msdn.microsoft.com/en-us/library/vstudio/91hfhz89(v=vs.110).aspx

QUESTION 39
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: (none)
Explanation

Explanation/Reference:
Refer to Q33

QUESTION 40
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: (none)
Explanation

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

QUESTION 41
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 }
```

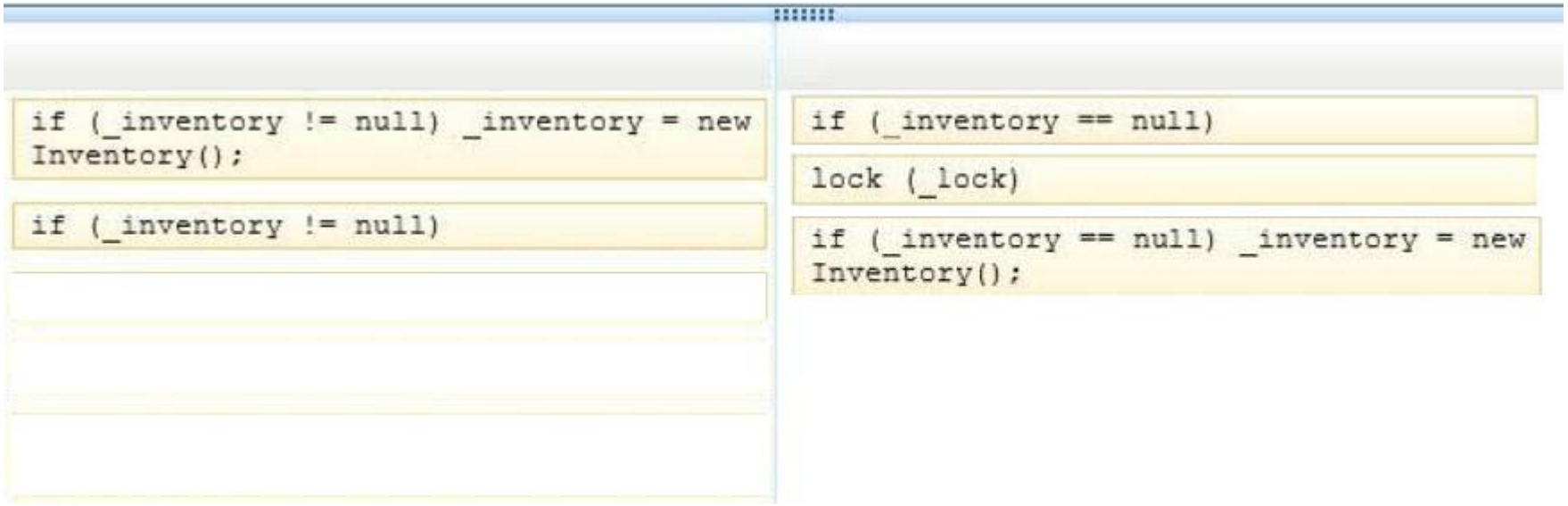
You have the following requirements:

- 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: (none)
Explanation

Explanation/Reference:
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 42
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 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)]
```

Correct Answer: A
Section: (none)
Explanation

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

QUESTION 43
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 book 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, AddBoookCallback callback);
```

Insert the following code segment at line 18:
```
AddBookDelegate adder = (i, callback) =>
  {
    ...
  };
```

Correct Answer: B
Section: (none)
Explanation

Explanation/Reference:

QUESTION 44
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<RenamedEventArgs> 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)
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);
  user.Renamed += (sender, e) =>
  {
    Log("User {0} was renamed to {1}", e.OldName, e.Name);
  };
  users.Add(user);
}
```

Section: (none)
Explanation

Explanation/Reference:

QUESTION 45
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: (none)
Explanation

Explanation/Reference:
`Assembly.LoadFile` - Loads the contents of an assembly file on the specified path. http://msdn.microsoft.com/en-us/library/b61s44e8.aspx

QUESTION 46
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: (none)
Explanation

Explanation/Reference:
`GC.KeepAlive` - 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.A common scenario where this might happen is when there are no references to the object in managed code or data, but the object is still in use in unmanaged code such as Win32 APIs, unmanaged DLLs, or methods using COM. http://msdn.microsoft.com/en-us/library/system.gc.keepalive.aspx

QUESTION 47
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: (none)
Explanation

Explanation/Reference:
`private` - The type or member can be accessed only by code in the same class or struct. http://msdn.microsoft.com/en-us/library/ms173121.aspx

QUESTION 48
You are creating an application that manages information about your company's products. The application includes a class named `Product` and a method named `Save`. The `Save()` method must be strongly typed. It must allow only types inherited from the `Product` class that use a constructor that accepts no parameters. You need to implement the `Save()` method. Which code segment should you use?

A.
```
public static void Save(Product target)
{
  ...
}
```
B.
```
public static void Save<T>(T target) where T: new(), Product
{
  ...
}
```
C.
```
public static void Save<T>(T target) where T: Product
{
  ...
}
```
D.
```
public static void Save<T>(T target) where T: Product, new()
{
  ...
}
```

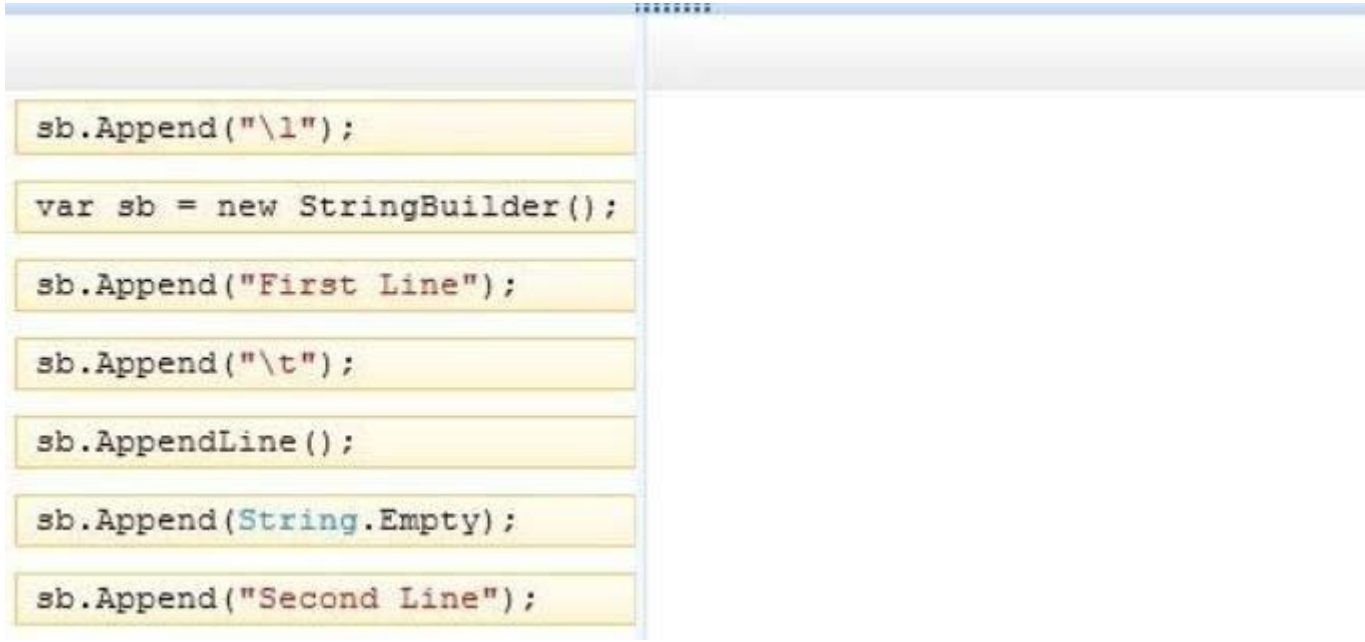
Correct Answer: D
Section: (none)
Explanation

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

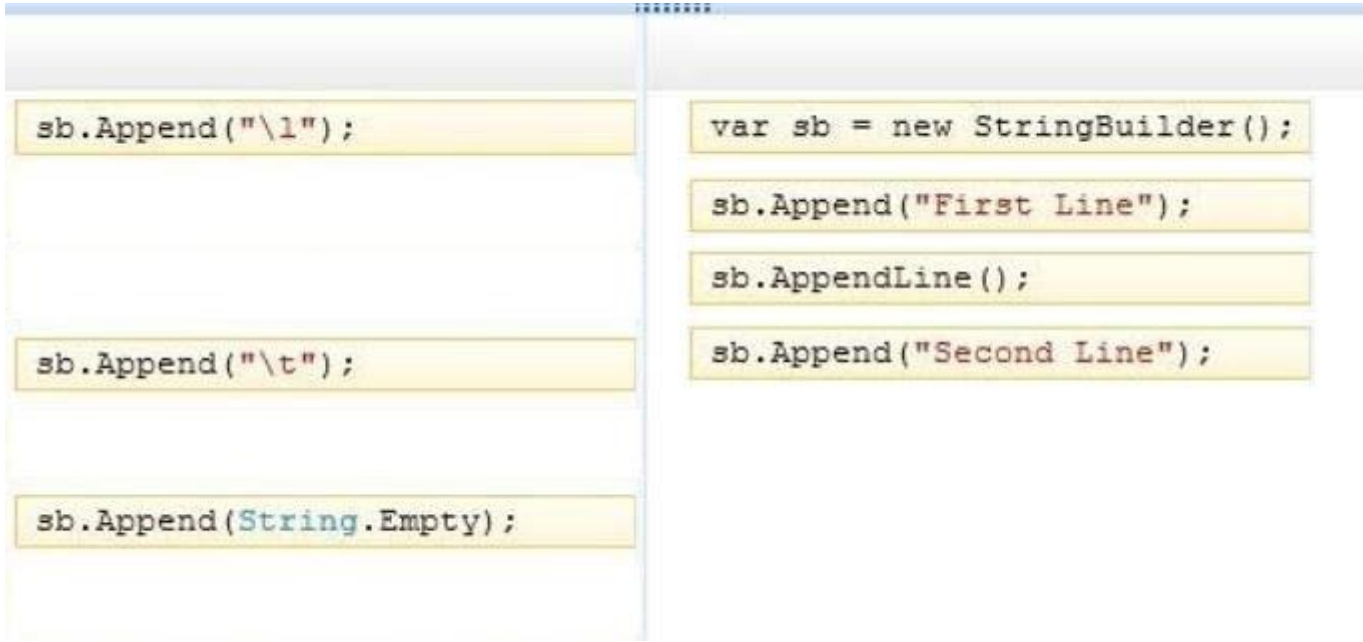
QUESTION 49

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:



Section: (none)
Explanation

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

QUESTION 50
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
{
  ...
}
```

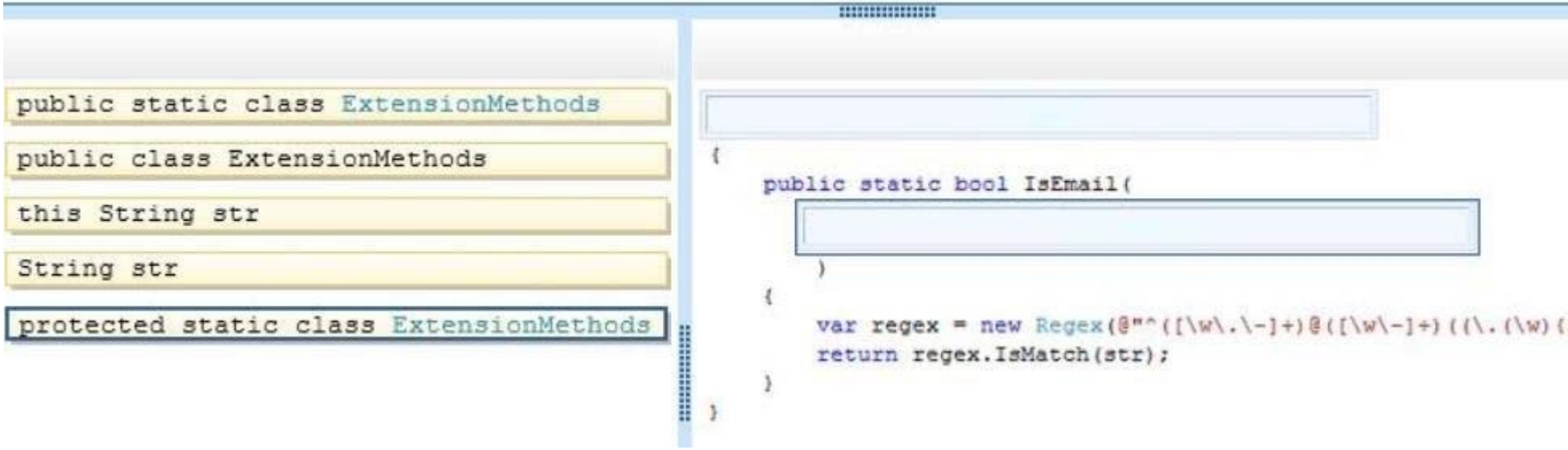
B.
```
sealed class Mammal : IAnimal
{
  ...
}
```
C.
```
abstract class Mammal : Animal
{
  ...
}
```
D.
```
sealed class Mammal : Animal
{
  ...
}
```

Correct Answer: AC
Section: (none)
Explanation

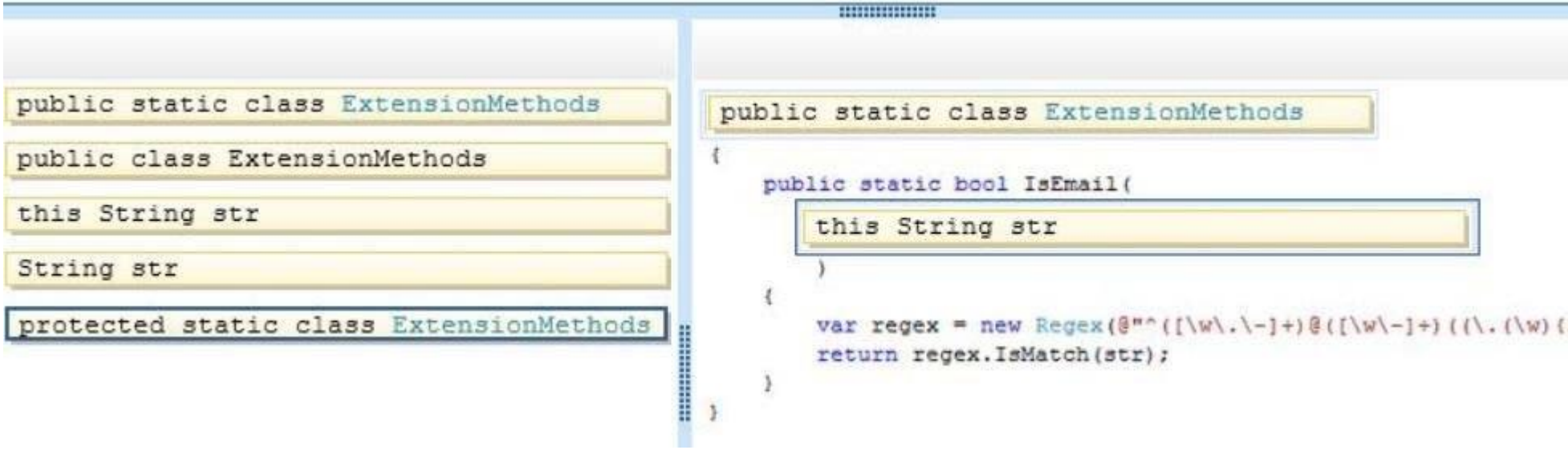
Explanation/Reference:
`sealed` - When applied to a class, the sealed modifier prevents other classes from inheriting from it. http://msdn.microsoft.com/en-us/library/88c54tsw(v=vs.110).aspx

QUESTION 51
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: (none)
Explanation

Explanation/Reference:
http://msdn.microsoft.com/en-us/library/vstudio/bb311042.aspx

QUESTION 52
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 throw an `InvalidCastException` exception if the `obj` object is not of type `IDataContainer` 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. `dataContainer = obj as IDataContamer;`
C. `var dataContainer = obj is IDataContainer;`
D. `dynamic dataContainer = obj;`

Correct Answer: A
Section: (none)
Explanation

Explanation/Reference:
http://msdn.microsoft.com/en-us/library/ms173105.aspx

QUESTION 53
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 sqlSelectCustomerss = "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: (none)
Explanation

Explanation/Reference:
`SqlConnection.Open` - Opens a database connection with the property settings specified by the ConnectionString. http://msdn.microsoft.com/en-us/library/system.data.sqlclient.sqlconnection.open.aspx

`SqlDataReader.Read` - Advances the SqlDataReader to the next record. http://msdn.microsoft.com/en-us/library/system.data.sqlclient.sqldatareader.read.aspx

QUESTION 54
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")]
[XmlRoot("Prospect", Namespace = "http://prospect")]
[XmlAttribute("ProspectId")]
[XmlElement("ProspectId")]
[XmlChoiceIdentifier]
[XmlIgnore]
[XmlArrayItem]
[XmlElement("FullName")]
```

```
[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: (none)
Explanation

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

QUESTION 55
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);
```

Correct Answer: D
Section: (none)
Explanation

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

QUESTION 56
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: (none)
Explanation

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

QUESTION 57
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: (none)
Explanation

Explanation/Reference:
`SortedList<TKey, TValue>` - Represents a collection of key/value pairs that are sorted by key based on the associated IComparer<T> implementation. http://msdn.microsoft.com/en-us/library/ms132319.aspx

QUESTION 58
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: (none)
Explanation

Explanation/Reference:
B and C will throw exception when user enters non-integer value. D is exactly the opposite what we want to achieve.

`Int32.TryParse` - Converts the string representation of a number to its 32-bit signed integer equivalent. A return value indicates whether the conversion succeeded. http://msdn.microsoft.com/en-us/library/f02979c7.aspx

QUESTION 59
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:

- he debugger must break execution within the `Calculatelnterest()` 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: (none)
Explanation

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

QUESTION 60
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/";
}
```

Correct Answer: C
Section: (none)
Explanation

Explanation/Reference:
There is no such constraint (unless you define one explicitly) RELEASE. http://stackoverflow.com/questions/507704/will-if-release-work-like-if-debug-does-in-c

QUESTION 61
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("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 01: `#if DEBUG`
   Insert the following code segment at line 10: `#endif`
E. Insert the following code segment at line 01: `[Conditional("DEBUG")]`
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: (none)
Explanation

Explanation/Reference:

- `#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.

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

QUESTION 62
You use the `Task.Run()` method to launch a long-running data processing operation. The data processing operation often fails in times of heavy network congestion. If the data processing operation fails, a second operation must clean up any results of the first operation. You need to ensure that the second operation is invoked only if the data processing operation throws an unhandled exception. What should you do?

A. Create a task by calling the `Task.ContinueWith()` method
B. Use the `TaskScheduler` class to create a task and call the `TryExecuteTask()` method on the class.
C. Create a `TaskFactory` object and call the `ContinueWhenAll()` method of the object.
D. Create a task within the operation, and set the `Task.StartOnError` property to true.

Correct Answer: A
Section: (none)
Explanation

Explanation/Reference:
`Task.ContinueWith` - Creates a continuation that executes asynchronously when the target Task completes.The returned Task will not be scheduled for execution until the current task has completed, whether it completes due to running to completion successfully, faulting due to an unhandled exception, or exiting out early due to being canceled. http://msdn.microsoft.com/en-us/library/dd270696.aspx

QUESTION 63
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: (none)
Explanation

Explanation/Reference:
`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"..

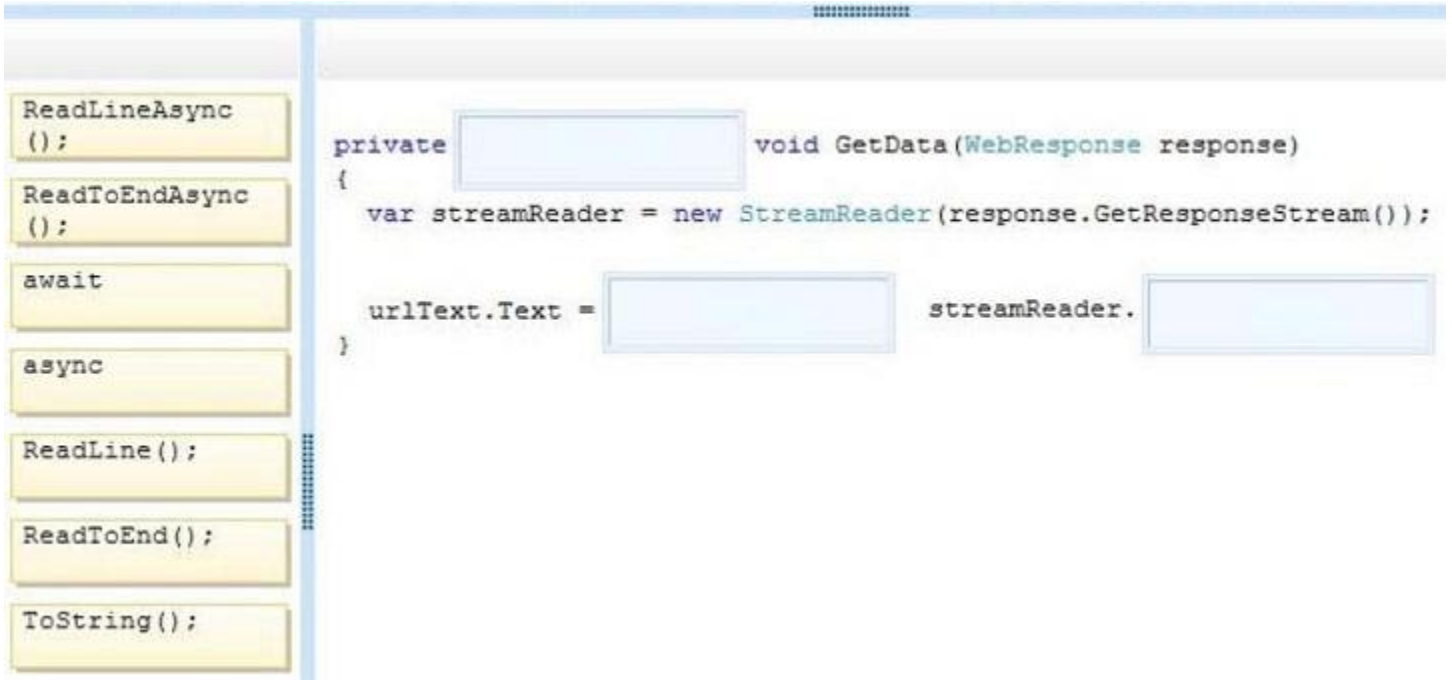
http://msdn.microsoft.com/en-us/library/system.diagnostics.performancecountertype.aspx

QUESTION 64
You are developing an application that will include a method named `GetData`. The `GetData()` method will retrieve several lines of data from a web service by using a `System.IO.StreamReader` object. You have the following requirements:

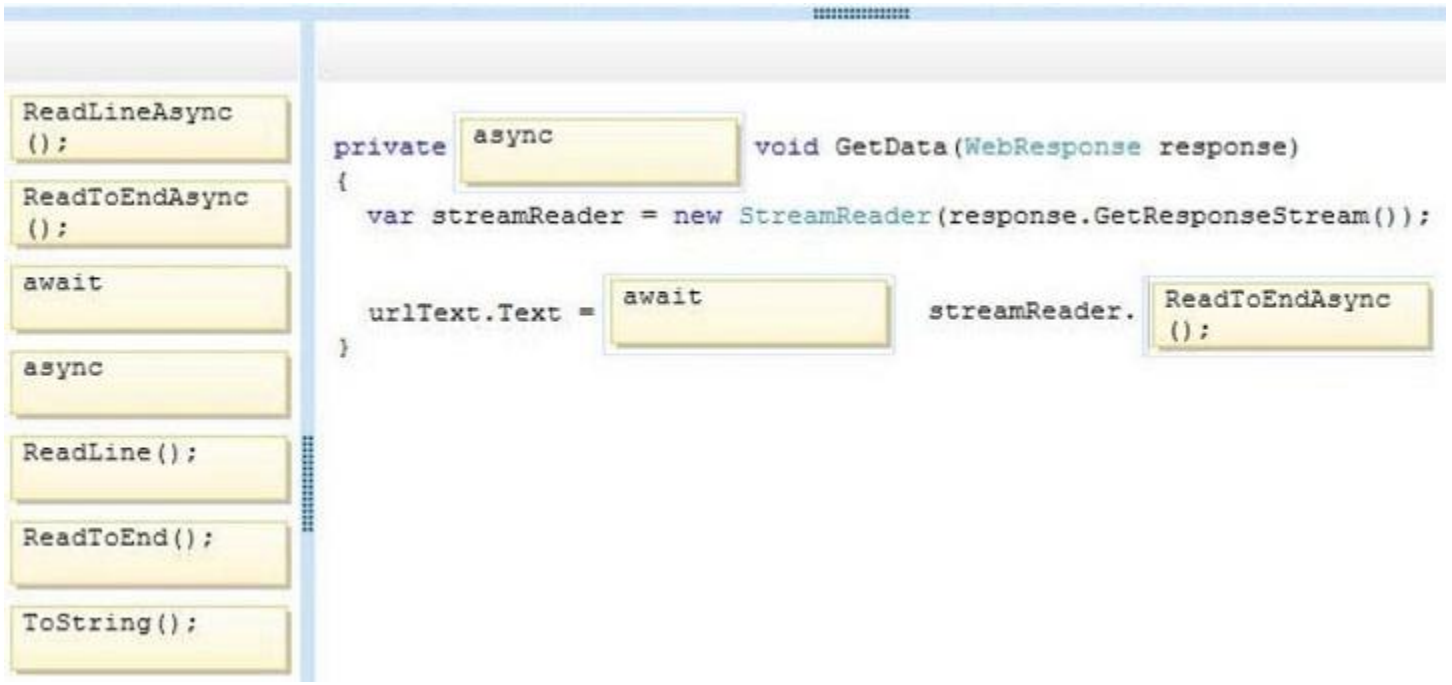
- the `GetData()` method must return a string value that contains whole response from the web service.
- the application must remain responsive while the `GetData()` method runs.

You need to implement the `GetData()` method. How should you complete the relevant code? (To answer, drag the appropriate objects to the correct locations in the answer area. Each object 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: (none)
Explanation

Explanation/Reference: