MEASUREUP

? What is Web Service Definition Language (WSDL)?

○ A scripting language used for creating Web services
○ An XML document in an application that creates a reference to a Web service
○ The language used to consume a Web service
○ An XML format used for describing network services as a set of endpoints

Explanation:

WSDL is an Extensible Markup Language (XML) format used for describing Web services as a set of endpoints. WSDL operates on messages that may contain document-oriented or procedure-oriented information. It describes the messages and the operations abstractly, and then binds to a message format and a network protocol to define an endpoint. Descriptions of endpoints and their messages are allowed regardless of what message formats or network protocols are used.

WSDL is not a scripting language for creating or consuming Web services. WSDL represents the contract between the Web service and clients that use the Web service.

WSDL is not a XML document that creates a reference to a Web service. A reference to a Web service is created in an application, but it is not created in or by an XML document.

Exam Objective:
Understanding Web Applications

Exam SubObjective(s):
Understand Web services

MEASUREUP

? A Web application requires changes after it has been deployed.

What term is used to describe this process?

○ Upkeep
○ Maintenance
○ Cleanup
○ Support

Explanation:

Maintenance is the term used to describe changes that are made to an application after it has been deployed. Reasons for ongoing maintenance of an application might include the need to fix bugs that are found after deployment, the desire to incorporate users' suggestions to improve the functionality or usability of an application, and the need to incorporate new or changing specifications.

Support usually describes a process by which users can obtain help by reviewing documentation or by using e-mail or telephone contact with support personnel.

Upkeep and Cleanup are not terms that are used to describe phases of an application's lifecycle.

Exam Objective:
Understanding General Software Development

Exam SubObjective(s):
Understand application life cycle management

MEASUREUP

? Which type of application typically does not have a graphical user interface (GUI) and is often invoked from a command prompt?

○ Windows service
○ Web Forms
○ Console-based
○ Windows Forms

Explanation:

Console-based applications typically do not have a GUI and are often invoked from a command prompt. User input and output from the application are exchanged through the command prompt.

An application that runs as a Windows service presents no user interface. Microsoft Windows services run in their own Windows sessions and can be set to start automatically when Windows starts. They can also be paused and restarted. They run in the background, so they do not interfere with users who are working on the computer.

A Windows Forms application has a GUI and is not typically run from a command prompt. Windows Forms applications can be used when there is a need for intensive processing that can best be done by the client computer. Windows Forms applications are usually invoked through the Start menu.

A Web Forms application has a GUI and is not run from a command prompt. Web Forms applications are platform-independent. Web Forms are used when an application needs to be accessible over the Internet. Web Forms applications are invoked when a user enters the uniform resource locator (URL) of the application into the address bar of a browser.

Exam Objective:
Understanding Desktop Applications

Exam SubObjective(s):
Understand console-based applications

MEASUREUP

? What must you use as the condition of an if statement?

○ A string variable
○ An object instance
○ A Boolean expression
○ An integer constant

Explanation:

You must use a Boolean expression as the condition of an if statement. If the expression evaluates to true, the code in the if block executes. If the expression evaluates to false, the condition in the next else if block is evaluated. If none of those conditions is true, the code in the else block executes.

You cannot use an integer constant, object instance, or string variable as the condition of an if statement. Only Boolean expressions that evaluate to true or false can be used. Any other expression causes a compilation error.

Exam Objective:
Understanding Core Programming

Exam SubObjective(s):
Understand computer decision structures

? What term best describes a procedure that is automatically invoked when an object is first instantiated?

○ Method
○ Constructor
○ Routine
○ Creator

Explanation:

The term constructor best describes a procedure that is automatically invoked when an object is first instantiated. In a C# class, this constructor has the same name as the class. It is used to create a new instance of an object. Each instance has all of the methods, attributes, and members of the base class. The syntax for creating an instance of the Motorboat class might resemble the following:

Motorboat myMotorboat = new Motorboat();

This example uses a default constructor. A default constructor does not accept parameters.

A method is a set of statements that perform one or more actions within a program. A constructor is a method, but other methods are not automatically invoked when an object is first instantiated.

The terms routine and process are often used to describe groups of statements in code, but they do not describe a procedure that is automatically invoked when an object is first instantiated. Creator is not a valid Object Oriented Programming term.

Exam Objective:
Understanding Object-Oriented Programming

Exam SubObjective(s):
Understand the fundamentals of classes

You execute the code shown in the exhibit.

What is the value of x when the code has executed?

```
int x = 1;
while (x < 3)
{
    x = x + 1;
}
```

○ 3

○ 1

○ 2

◉ 4

Explanation:

When the code has executed, the value of x is 3.

In a while loop, the condition in the first line of the loop is evaluated before each pass through the loop. If the condition is met, the code inside the loop is executed. A while loop repeats the code until the condition evaluates to false.

In the first line of the code shown in the exhibit, the variable x is assigned a value of 1. As the code enters the while loop, x retains that value. The code inside the while loop executes and then the loop control variable, x, increments by 1. Therefore, when the condition is evaluated at the beginning of the second iteration, it is true because x has a value of 2. Inside the while loop, the code executes again, and the value of x is again incremented by 1. Therefore, x has a value of 3. When the condition is evaluated at the beginning of the third iteration, the condition x < 3 is not true, and the code exits the loop.

Exam Objective:
Understanding Core Programming

Exam SubObjective(s):
Identify the appropriate method for handling repetition

MEASURE**UP**

? You need to configure a Web application to consume a Web service.

What should you do?

○   Register the application with the Web service.
○   Add a reference to the Web service in the application.
○   Add the Web service code to the application.
○   Add a reference to the application in the Web service.

Explanation:

To configure a Web application to consume a Web service, you should add a reference to the Web service in the application. Adding a reference to a Web service in a Web application automatically creates a proxy. A service proxy allows you to work with a service in an object-oriented manner. Proxy classes abstract the communication model that services use, so that it is as if you are calling local code and not a remote service.

You should not add Web service code to the application. Adding the Web service code to the application would not allow the Web application to consume a Web service, and the code typically exists on a remote server to which you would not have access.

Web services can be provided by independent sources. A remote Web service can be consumed by your application, but you cannot access it directly or change it in any way. You cannot add a reference to your application in the Web service, and you cannot register your application with a Web service.

Exam Objective:
Understanding Web Applications

Exam SubObjective(s):
Understand Web services

MEASURE**UP**

? A class hierarchy is defined as follows: SqlLogger inherits from DbLogger, and DbLogger inherits from Logger. Logger defines a method named WriteToLog. DbLogger and SqlLogger override this method.

You declare a variable named appLogger of type DbLogger. You create an instance of SqlLogger and assign it to the appLogger variable. You then call the WriteToLog method.

What happens when you call this method?

○   The WriteToLog method of the DbLogger class executes.

○   The WriteToLog method of the Logger class executes.

○   The WriteToLog method of the SqlLogger class executes.

○   An exception occurs.

Explanation:

The WriteToLog method of the SqlLogger class executes. This happens because of polymorphism. Polymorphism is a feature that allows multiple classes to implement the same members and have each type of object use its specific implementation. Because SqlLogger inherits from DbLogger, and because SqlLogger overrides the WriteToLog method, calling the WriteToLog method on an instance of SqlLogger calls that method's implementation, even if the variable is of type DbLogger.

The WriteToLog method of the DbLogger class does not execute. This would happen only if SqlLogger did not override the WriteToLog method or if the method is called on a DbLogger instance.

The WriteToLog method of the Logger class does not execute. This would happen only if SqlLogger and DbLogger did not override the WriteToLog method or if the method is called on a Logger instance.

An exception does not occur. Polymorphism ensures that different classes can implement the same members, but provide their own implementation.

Exam Objective:
Understanding Object-Oriented Programming

Exam SubObjective(s):
Understand polymorphism

MEASUREUP

The Tricycle class and the Bicycle class are both derived from the ToysWithWheels class. Both inherit the WheelNumber property from the ToysWithWheels class.

When an instance of the Tricycle class is instantiated, WheelNumber = 3. When an instance of the Bicycle class is instantiated, WheelNumber = 2.

Which object-oriented programming term describes this concept?

○ Polymorphism
○ Inheritance
○ Encapsulation
○ Data hiding

Explanation:

The object-oriented programming term that describes this concept is polymorphism. Polymorphism is a feature that allows multiple classes to implement the same members and have each type of object use its specific implementation. In the scenario used in the question, both the Bicylce class and the Tricycle class inherit the WheelNumber attribute, but each overrides the WheelNumber attribute to provide a different implementation.

Encapsulation is an object-oriented feature that allows classes to hide their implementation. Access modifiers, such as private and protected, are keywords that you can use to allow or deny access to the members of a class. They designate whether a class and its members can be called from code in other classes and assemblies. Through the use of access modifiers, encapsulation allows you to contain and control access to a class and its members. For example, you could define a method in a class to perform a specific task. By defining a method, you hide the logic to perform the task from other classes that only call the method.

Data hiding is related to encapsulation. An example of data hiding would be when members of a class are designated as private. This prevents them from being used outside of a class, and it is said to hide the data from other classes.

A class that serves as a starting point or a base for new classes is called a base class. A class that is derived from a base class is called a derived class. Derived classes inherit all the fields, properties, methods, and events of the base class. This process is called inheritance.

Exam Objective:
Understanding Object-Oriented Programming

Exam SubObjective(s):
Understand polymorphism

MEASUREUP

? You are creating an application that will process ticket sales for a theater. Ticket requests must be taken in the same order in which they were received.

Which data structure should you use?

○   A queue

○   A heap

○   A stack

○   An array

Explanation:

To process requests in the same order in which they were received, you should use a queue. In a queue, data elements are added to the end of the queue, and they can be removed from the beginning of the queue. A queue is like a waiting line at a restaurant or amusement park that ensures that people are served in the order in which they appear. New elements go to the end of the line, and when they reach the head of the line, they can be removed. A queue handles requests on a first-in first-out (FIFO) basis.

In a stack, elements are stored so that only the most recently added element can be removed from the stack. Requests are said to be handled on a last-in-first-out (LIFO) basis.

In a heap, memory blocks can be allocated and freed as they are needed because the amount of memory necessary is determined at run time. They are not stored in sequential order. When a program calls a function, for example completeOrder(), memory will be set aside on the heap for the variables in that function. If other functions are called by completeOrder (), more memory will be allocated on the heap. Programs use the heap for many different purposes.

An array is a data structure that holds multiple values, called elements. Arrays are useful for manipulating, searching, and sorting data. Unlike queues and stacks, arrays do not require data to be processed in a predetermined order. You can use an index to randomly access specific elements in an array.

Exam Objective:
Understanding General Software Development

Exam SubObjective(s):
Understand algorithms and data structures

MEASUREUP

? A database table named Suggestions contains the following fields:

SuggestionID
SuggestionDate
SuggestionText
SubmittedBy

Which Structured Query Language (SQL) query will correctly retrieve only the SuggestionDate and SuggestionText fields, with the most recent suggestion listed first?

○ SELECT SuggestionDate, SuggestionText
FROM Suggestions
ORDER BY SuggestionDate DESC

○ SELECT FROM Suggestions
VALUES (SuggestionDate, SuggestionText)
ORDER BY SuggestionDate DESC

○ SELECT SuggestionDate, SuggestionText
FROM Suggestions;
ORDER BY SuggestionDate DESC

○ SELECT FROM Suggestions
VALUES (SuggestionDate, SuggestionText)
SORT BY SuggestionDate DESC

Explanation:

The SQL syntax that will correctly retrieve only the SuggestionDate and SuggestionText fields, with the most recent suggestion listed first is:

SELECT SuggestionDate, SuggestionText
FROM Suggestions
ORDER BY SuggestionDate DESC

To retrieve only the SuggestionDate and SuggestionText fields, they must be specified in the SELECT clause of the query. The name of the table from which the records are being selected is specified in the FROM clause. To sort the records with the most recent suggestion listed first, you must specify the SuggestionDate field in the ORDER BY clause and append the DESC keyword to the end of the ORDER BY clause. The DESC keyword in this statement will return the records sorted by SuggestionDate in descending order, with the most recent suggestion listed first. The ASC keyword would return the records sorted by SuggestionDate in ascending order. If DESC is not specified in an ORDER BY clause, ascending order is the default.

The following syntax is incorrect:

SELECT FROM Suggestions
VALUES (SuggestionDate, SuggestionText)
ORDER BY SuggestionDate DESC

The SuggestionDate and SuggestionText fields must be specified in the SELECT clause of the query. This query will generate an error because it has invalid syntax. The SELECT clause is incomplete, and you cannot use a VALUES clause in a SELECT statement. The VALUES clause is used in INSERT statements to specify the values that specific columns should be assigned.

The following syntax is incorrect:

SELECT FROM Suggestions
VALUES (SuggestionDate, SuggestionText)
SORT BY SuggestionDate DESC

The SuggestionDate and SuggestionText fields must be specified in the SELECT clause of the query. This query will generate an error because it has invalid syntax. The SELECT clause is incomplete, and you cannot use a VALUES clause in a SELECT statement. The VALUES clause is used in INSERT statements to specify the values that specific columns should be assigned. In addition, the SORT keyword is not used to order the results returned by a query. You use the ORDER BY clause to order the results returned by a query.

The following syntax is incorrect:

SELECT SuggestionDate, SuggestionText
FROM Suggestions;
ORDER BY SuggestionDate DESC

The semicolon between the table name and the ORDER BY clause is incorrect. This query will generate an error because it has invalid syntax.

Exam Objective:
Understanding Databases

Exam SubObjective(s):
Understand database query methods

Question 12 / 115   Mark: ☐

? Your company does not allow the use of ActiveX controls on its Web pages.

Which language should you use to dynamically add buttons to one of the company's Web pages in the user's browser on the client side?

○ Cascading Style Sheets (CSS)
○ Structured Query Language (SQL)
○ C++
○ <mark>JavaScript</mark>

Explanation:

You should use JavaScript. This language allows you to manipulate HTML and interact with a user's Web browser on the client side.

You should not use CSS. This language allows you to describe the look and feel of Web pages. For example, you can define font sizes, colors, and positioning. With CSS, you can define rules that are applied to every instance of an element without having to assign attributes to each element separately.

You should not use SQL. This language allows you to manage data in a relational database.

You should not use C++. You cannot use C++ to alter client content on Web pages unless you use ActiveX. However, in this scenario, the company does not allow the use of ActiveX controls.

Exam Objective:
Understanding Web Applications

Exam SubObjective(s):
Understand Web page development

? The Car class and the Truck class both inherit characteristics from the Vehicle class. However, the Truck class has methods that are unique to the Truck class, and the Car class has methods that are unique to the Car class. Methods belonging to these two classes can only be accessed by code that is in the same class.

Which object-oriented programming term describes this concept?

○   Data hiding

○   Inheritance

○   Encapsulation

○   Polymorphism

Explanation:

The object-oriented programming term that describes this concept is encapsulation. Encapsulation is an object-oriented feature that allows classes to hide their implementation. Access modifiers, such as private and protected, are keywords that you can use to allow or deny access to the members of a class. They designate whether a class and its members can be called from code in other classes and assemblies. When the private access modifier is used, the members of a class are accessible only to code that is within the same class. Through the use of access modifiers, encapsulation allows you to contain and control access to a class and its members. For example, you could define a method in a class to perform a specific task. By defining a method, you hide the logic to perform the task from other classes that only call the method.

Polymorphism is a feature that allows multiple classes to implement the same members and have each type of object use its specific implementation. For example, if a base class exposed a Start method, two derived classes might both override the method and each provide a different implementation. The method that is executed would depend on the type of object that invoked the method.

Data hiding is related to encapsulation. An example of data hiding would be when members of a class are designated as private. This prevents them from being used outside of a class, and it is said to hide the data from other classes.

A class that serves as a starting point or a base for new classes is called a base class. A class that is derived from a base class is called a derived class. Derived classes inherit all the fields, properties, methods, and events of the base class. This process is called inheritance.

Exam Objective:
Understanding Object-Oriented Programming

Exam SubObjective(s):
Understand encapsulation

MEASUREUP

? What is unit testing?

○   Testing to ensure that bugs fixed in previous releases are still fixed in later releases.

○   Testing to ensure that the entire application meets the requirements.

○   <mark>Testing to ensure that each small unit of code behaves as expected.</mark>

○   Testing to ensure that all the components of a multi-tiered application communicate as expected.

Explanation:

Unit testing is testing to ensure that each small unit of code behaves as expected. Unit testing is performed before small units of code are integrated and helps to minimize the effort required to locate the cause of a bug after code is integrated.

Integration testing is testing to ensure that all the individual units of code function together as expected. Integration testing is performed after unit testing to minimize the effort required to locate the cause of a bug.

Regression testing is testing to ensure that changes made to software do not inadvertently cause undesired side-effects or bugs in other areas of the software.

System testing is testing to ensure that the entire application meets the requirements.

Exam Objective:
Understanding General Software Development

Exam SubObjective(s):
Understand application life cycle management

A database table named Book has the following fields:

ISBN
Title
DatePublished
PublisherID

You need to retrieve the value of the PublisherID for all records where the ISBN field begins with 0972.

Which SQL statement should you use?

○   SELECT Publisher WITH ISBN > '0972'
○   SELECT PublisherID WHERE ISBN BEGINS '0972'
○   SELECT PublisherID FOR ISBN > '0972'
○   SELECT PublisherID WHERE ISBN LIKE '0972%'

Explanation:

You should use the following SQL statement:

SELECT PublisherID WHERE ISBN LIKE '0972%'

This statement retrieves the PublisherID field for the rows in the table that have an ISBN field that starts with 0972. The LIKE operator determines whether a string matches a pattern. The pattern 0972% indicates that matches should be made where the first four characters are 0972. The percent symbol (%) indicates no character or any character or group of characters. Therefore, the statement returns any rows that that have an ISBN field starting with 0972 followed by no other characters or followed by any other characters. For example, it would return rows with the following ISBN field values:

0972
0972317902
0972317937
097231797X

You should not use the following SQL statements because they have invalid syntax:

SELECT PublisherID FOR ISBN > '0972'
SELECT Publisher WITH ISBN > '0972'

The WHERE clause of a SELECT statement, not FOR or WITH, is used to filter the results returned by a query.

You should not use the following SQL statement because it has invalid syntax:

SELECT PublisherID WHERE ISBN BEGINS '0972'

BEGINS is not valid in a SELECT statement.

Exam Objective:
Understanding Databases

Exam SubObjective(s):
Understand database query methods

MEASUREUP

? The process of creating an object is called:

○ inheriting.
○ deriving.
○ encapsulation.
○ instantiation.

Explanation:

The process of creating an object is called instantiation because you are creating a new instance of the object. A class is a symbolic representation of an object. It describes the components of the object, including its methods, properties, fields, and events. An object is a usable instance of a class.

A class that serves as a starting point or a base for new classes is called a base class. A class that is derived from a base class is called a derived class. Derived classes inherit all the fields, properties, methods, and events of the base class. This process is called inheritance.

Encapsulation is an object-oriented feature that allows classes to hide their implementation. Access modifiers, such as private and protected, are keywords that you can use to allow or deny access to the members of a class. They designate whether a class and its members can be called from code in other classes and assemblies. Through the use of access modifiers, encapsulation allows you to contain and control access to a class and its members. For example, you could define a method in a class to perform a specific task. By defining a method, you hide the logic to perform the task from other classes that only call the method.

Exam Objective:
Understanding Object-Oriented Programming

Exam SubObjective(s):
Understand the fundamentals of classes

MEASUREUP

? You create a console application.

Which method must you implement?

○ Main
○ Start
○ Run
○ Load

Explanation:

You must implement a Main method in a console application. This is the first method that is called when you execute a console application. A console application is one that uses a standard input stream, standard output stream, and standard error stream. It typically runs from the command line.

Methods named Start, Run, and Load are not automatically called. Therefore, you do not need to implement methods with those names.

Exam Objective:
Understanding Desktop Applications

Exam SubObjective(s):
Understand console-based applications

? Your application contains the Cat class shown in the exhibit.

You execute the following code:

```
Cat myKitten1 = new Cat();
Cat myKitten2 = new Cat("black");
Response.Write("One kitten is " + myKitten1._color + ".<br />");
Response.Write("The other kitten is " + myKitten2._color + ".<br />");
```

What text is displayed when the code has executed?

```
public class Cat
{
        public string _color = "white";

        public Cat()
        {
        }

        public Cat(string color)
        {
                _color = color.ToString();
        }
}
```

○   One kitten is white.
    The other kitten is white.

○   One kitten is black.
    The other kitten is white.

○   One kitten is white.
    The other kitten is black.

○   One kitten is black.
    The other kitten is black.

Explanation:

The code executes, the text that will be displayed is:

One kitten is white.
The other kitten is black.

The code in the exhibit creates a class named Cat that contains a string variable _color and two subroutines that have the same name as the class, Cat(). A procedure that has the same name as the class is called a constructor, and a constructor is automatically invoked when an object is first instantiated. A constructor that does not accept parameters is referred to as a default constructor.

The string variable _color is assigned a default value of "white." The first subroutine accepts no arguments, and the second one accepts a string argument. If an argument is passed, it is assigned to the variable _color in place of the default value.

When the first line of code executes, a new instance of the Cat class is created named myKitten1. The default constructor executes because no argument is passed, and the default constructor accepts no parameters. The variable _color still holds the default value of "white" designated at the beginning of the Cat class, so the value of myKitten1_color is "white." When the third line of code executes, the result is the line, "One kitten is white."

When the second line of the code executes, a new instance of the Cat class is created named myKitten2. Because the parameter "black" is being passed, the second constructor executes instead of the default constructor, and the variable myKitten2._color is assigned the value of the argument that was passed ("black"). This results in the following line being output to the screen:

The other kitten is black.

Exam Objective:
Understanding Object-Oriented Programming

Exam SubObjective(s):
Understand the fundamentals of classes

MEASUREUP

? What is the purpose of a primary key in a relational database table?

○ It uniquely identifies a record in the table.

○ It creates a foreign key constraint to a parent table.

○ It always creates a non-clustered index on the table.

○ It defines the complete Data Definition Language (DDL) statement for the table.

Explanation:

A primary key uniquely identifies a record in a relational database table. There can be only one primary key per table. For example, in a database table that contains driver information, the primary key might be a field that represents a driver license number.

A primary key can be used to create either a clustered index or a non-clustered index. An index is a data structure that helps speed data retrieval operations on a database table. It is similar to an index in a book. By default in SQL Server, a primary key creates a clustered index on the table. This means that records are sorted by the column or columns that represent the primary key. A non-clustered index stores the index keys separate from the table.

In a relationship, a primary key can also participate in a foreign key constraint to a child table. A foreign key is a field or group of fields that reference a primary key in another related table. For example, assume that a database contains a table of driver data and a table of traffic violation data. The table of traffic violation data could contain a column that represents a driver license number. This column could then reference the driver license number in the table of drivers to associate a driver with traffic violations.

You can specify a primary key in the DDL statement for a table. However, a primary key is only one object in the DDL statement. A DDL statement is used to define an object in a relational database, such as a table or view. An example of a DDL statement is a CREATE statement, which creates a database table.

Exam Objective:
Understanding Databases

Exam SubObjective(s):
Understand relational database management systems

MEASUREUP

You execute the code shown in the exhibit.

What is the value of x after the code has executed?

```
int i = 0;
int x = 0;

for (i = 1; i < 10; i = i + 3)
{
    x = i * 2;
}
```

○ 27
○ 14
○ 0
○ 30

Explanation:

After the code in the exhibit has executed, the value of x is 14. Initially, both i and x are set to zero. At the beginning of the for loop, i is assigned a value of 1. Each iteration through the loop, i will be incremented by 3 and x will be assigned the value of i multiplied by two, (x = i * 2). The code will continue looping until i is no longer less than 10. The first time through the loop, the value of i is 1 and the value of x is 2. The second time through the loop, i is incremented by 3, so the value of i is 4 and the value of x is 8. The third time through the loop, i is again incremented by 3, so the value of i is 7 and the value of x is 14. The code then exits the loop because i has a value of 10 and the code only continues looping while i is less than 10.

Exam Objective:
Understanding Core Programming

Exam SubObjective(s):
Identify the appropriate method for handling repetition

? You need to execute a set of statements once, test for a condition, and then repeat execution only if the condition is true.

Which loop structure should you use?

○   foreach
○   while
○   do
○   for

Explanation:

You should use a do loop. A do loop allows you to execute a set of statements once, test for a condition, and then repeat execution if the condition is true. In this case, you would use a do-while loop to be able to execute the loop the first time before testing the loop condition.

You should not use a while loop. A while loop allows you to test for a condition and then execute a set of statements if the condition is true. The loop will not execute at all if the initial loop condition is not true.

You should not use a for loop. A for loop allows you to execute a set of statements a set number of times.

You should not use a foreach loop. A foreach loop allows you to execute a set of statements once for each item in a collection.

Exam Objective:
Understanding Core Programming

Exam SubObjective(s):
Identify the appropriate method for handling repetition

MEASUREUP

? You need to create an application that cannot have a graphical user interface, but it needs to accept user input.

Which type of application should you create?

○ Windows Forms

○ Console-based

○ Windows service

○ Web Forms

Explanation:

You should create a console-based application. Console-based applications typically do not have a Graphical User Interface (GUI), and they can accept user input. They are often invoked from a command prompt. User input and output from the application are exchanged through the command prompt.

An application that runs as a Windows service presents no user interface and does not accept user input. Microsoft Windows services run in their own Windows sessions and can be set to start automatically when Windows starts. They can also be paused and restarted. They run in the background, so they do not interfere with users who are working on the computer.

A Windows Forms application accepts user input, but it also has a GUI. Windows Forms applications can be used when there is a need for intensive processing that can best be done by the client computer. Windows Forms applications are usually invoked through the Start menu. Windows Forms applications are installed on the client.

A Web Forms application accepts user input, but it also has a GUI. Web Forms applications are platform-independent, which means that it does not matter which operating system is installed on the client computer. Web Forms are used when an application needs to be accessible over the Internet. Web Forms applications are invoked when a user enters the uniform resource locator (URL) of the application into the address bar of a browser.

Exam Objective:
Understanding Desktop Applications

Exam SubObjective(s):
Understand console-based applications

MEASUREUP

? You execute the code shown in the exhibit.

What is the value of the variable result when the code has executed?

```
int a = 6;
int b = 4;
int c = 1;
bool _result;
Single answer;

_result = (a % b > c);
```

○   2
○   true
○   false
○   null

Explanation:

When the code has executed, the value of the variable _result is true. The variable _result has a bool data type. A bool value represents an 8-bit field that is set to 1 when it is true and 0 when it is false. bool data types cannot hold a numeric value, and they cannot be null.

Modulus arithmetic uses the % operator. The % operator performs division and returns the remainder. In the exhibit, a % b results in the value 2, because six divided by four leaves a remainder of two. The variable c has a value of one, and two is greater than one, so the expression evaluates to true.

Exam Objective:
Understanding Core Programming

Exam SubObjective(s):
Understand computer decision structures

MEASUREUP

? You execute the following Structured Query Language (SQL) query:

SELECT *
FROM Users
ORDER BY LastName, FirstName

What happens when the query runs?

○   It selects all fields and all records from the Users table, displaying LastName first, and FirstName second.

○   It selects only the LastName and the FirstName from the Users table, sorted by LastName and then FirstName.

○   It selects all fields and all records from the Users table sorted by LastName and then FirstName.

○   It generates an error because LastName and FirstName are not specified in the SELECT clause.

Explanation:

When this SQL query runs, it selects all fields and all records from the Users table sorted by LastName and then FirstName.

The SELECT clause specifies the fields to be selected. The FROM clause specifies the database object from which the records are being selected. The ORDER BY clause determines the order in which the records are returned by the query. The asterisk (*) notation in the SELECT clause can be interpreted as selecting all of the columns in the specified table or view. The WHERE clause includes a condition to filter the results returned by a query. However, this query did not include a WHERE clause. Therefore, all of the rows in the table are returned. Consequently, all fields and all records in the table are being selected.

When this SQL query runs, it does not select all fields and all records from the Users table, displaying LastName first, and FirstName second. The order in which the fields are displayed is determined by their order in the SELECT clause, not the ORDER BY clause. If the SELECT * notation is used, the fields are displayed in the order they are defined in the specified table or view.

When this SQL query runs, it does not select only the LastName and the FirstName from the Users table, sorted by LastName and then FirstName. The fields that are selected are designated in the SELECT clause, not in the ORDER BY clause.

When this SQL query runs, it does not generate an error because LastName and FirstName are not specified in the SELECT clause. The asterisk (*) notation in the SELECT clause can be interpreted as selecting all of the columns in the specified table or view. The WHERE clause includes a condition to filter the results returned by a query. However, this query did not include a WHERE clause. Therefore, all of the rows in the table are returned. Consequently, all fields and all records in the table are being selected. All queries must have columns specified in the SELECT clause or use the asterisk notation.

Exam Objective:
Understanding Databases

Exam SubObjective(s):
Understand database query methods

MEASUREUP

? Which statement about classes and structures is true?

○   Classes are value types, and structures are reference types.

○   <mark>Classes are allocated on the heap, and structures are allocated on the stack.</mark>

○   Classes are passed by value, and structures are passed by reference.

○   Classes are allocated on the stack, and structures are allocated on the heap.

Explanation:

Classes are allocated on the heap, and structures are allocated on the stack. Classes are reference types. All reference types are allocated on the heap. The reason is because they have no predefined storage allocation. Whenever you set one variable to an instance of a class, you are actually creating a variable that stores a reference to the instance of the class on the heap. Whenever you pass a class instance to a method, a reference to the class instance is actually passed. Structures are value types. All value types are allocated on the stack. The reason is because they have a predefined storage allocation. For example, the Int32 type always occupies a maximum of four bytes (32 bits). Whenever you set one variable to an instance of a structure, you are creating a variable that stores the structure instance on the stack. Whenever you pass instances of structures between method calls, you are actually copying the structure and creating a new instance of it on the stack.

Classes are not allocated on the stack, and structures are not allocated on the heap. Classes are allocated on the heap, and structures are allocated on the stack.

Classes are not value types, and structures are not reference types. Classes are reference types, and structures are value types.

Classes are not passed by value, and structures are not passed by reference. Classes are passed by reference, and structures are passed by value.

Exam Objective:
Understanding Core Programming

Exam SubObjective(s):
Understand computer storage and data types

? The purpose of a data warehouse is to:

○ validate all real-time data transactions.
○ support real-time business operations.
○ <mark>collect, consolidate, and organize data.</mark>
○ support large numbers of concurrent users.

Explanation:

The purpose of a data warehouse is to collect, consolidate, and organize data in order to better enable business-related decisions. A data warehouse can be optimized for bulk loads and large, complex, unpredictable queries that access many rows per table.

A data warehouse is not used for real-time business transactions, and it does not validate transactions. Real-time business transactions should use a database designed to support Online Transaction Processing (OLTP). Applications that perform such business transactions should validate the data.

Because data warehouses store historical data, they are loaded with consistent, valid data that does not require real-time validation. A data warehouse database generally supports fewer concurrent users than a database designed to support OLTP.

Exam Objective:
Understanding Databases

Exam SubObjective(s):
Understand database connection methods

? What is a multiple-document interface (MDI) application?

○   ==It consists of a parent form with multiple child forms.==
○   It displays multiple types of documents on the same form.
○   It saves content to multiple document sources.
○   It allows you to open multiple types of documents to view.

Explanation:

An MDI application consists of a parent form with multiple child forms. Each form can represent a different document. You can switch between open forms, and each form typically has its own menu. A single-document interface (SDI) application allows only one document to be opened at a time. An example of an SDI application is Notepad. Microsoft Word allows you to open more than one document, each in its own window. This is an example of an MDI application.

An MDI application is not defined as one that displays multiple types of documents on the same form.

An MDI application is not defined as one that allows you to open multiple types of documents to view.

An MDI application is not defined as one that saves content to multiple document sources.

Exam Objective:
Understanding Desktop Applications

Exam SubObjective(s):
Understand Windows Forms applications

MEASUREUP

? The Car class and the Truck class both inherit the BlowHorn method from the Vehicle class, but when the BlowHorn method is invoked for an instance of the Truck class, the result is a loud blast. When the BlowHorn method is invoked for an instance of the Car class, the result is a soft beep.

Which object-oriented programming term describes this concept?

○ Polymorphism

○ Encapsulation

○ Data hiding

○ Inheritance

Explanation:

The object-oriented programming term that describes this concept is polymorphism. Polymorphism is a feature that allows multiple classes to implement the same members and have each type of object use its specific implementation. In the scenario used in the question, both the Truck class and the Car class inherit the BlowHorn method, but each overrides the BlowHorn method to provide a different implementation.

Encapsulation is an object-oriented feature that allows classes to hide their implementation. Access modifiers, such as private and protected, are keywords that you can use to allow or deny access to the members of a class. They designate whether a class and its members can be called from code in other classes and assemblies. Through the use of access modifiers, encapsulation allows you to contain and control access to a class and its members. For example, you could define a method in a class to perform a specific task. By defining a method, you hide the logic to perform the task from other classes that only call the method.

Data hiding is related to encapsulation. An example of data hiding would be when members of a class are designated as private. This prevents them from being used outside of the class, and it is said to hide the data from other classes.

A class that serves as a starting point or a base for new classes is called a base class. A class that is derived from a base class is called a derived class. Derived classes inherit all the fields, properties, methods, and events of the base class. This process is called inheritance.

Exam Objective:
Understanding Object-Oriented Programming

Exam SubObjective(s):
Understand polymorphism

? The following integers are added to a stack in this order: 3, 8, 4, 6, 1.

You perform the following operations on the stack:

    * Push 7
    * Pop
    * Push 2

What is at the bottom of the stack after you perform these operations?

○   7
○   2
○   **3**
○   1

Explanation:

The stack contains the number 3 at the bottom of the stack after you perform the operations. A stack is a last-in, first-out (LIFO) data structure. This means that the last item added using a push operation is at the top of the stack. It will always be the first item removed when a pop operation is performed. When the integers are originally pushed onto the stack, they are pushed in the following order: 3, 8, 4, 6, 1. This means that the stack is physically built as follows:

1
6
4
8
3

The first operation pushes the number 7 onto the top of the stack. The stack now contains the following:

7
1
6
4
8
3

The second operation pops the number 7 from the top of the stack. Therefore, the stack resembles its original structure. The last operation pushes the number 2 onto the top of the stack. Because the integer at the bottom of the stack is never popped, it remains the number 3.

Exam Objective:
Understanding General Software Development

Exam SubObjective(s):
Understand algorithms and data structures

? Notepad is an example of a:

○   Multiple-document interface (MDI) application

○   Windows service

○   Single-document interface (SDI) application

○   Web service

Explanation:

Notepad is an example of an SDI application. An SDI application allows only one document to be opened at a time. Notepad allows you to open only one document at a time.

Notepad is not an example of an MDI application. An MDI application consists of a parent form with multiple child forms. Each form can represent a different document. You can switch between open forms, and each form typically has its own menu. Microsoft Word is an example of an MDI application. It allows you to open multiple documents in different windows.

Notepad is not an example of a Web service. A Web service exposes functionality to users and applications over the Internet. It supports standard Web protocols such as Hypertext Transfer Protocol (HTTP) and Simple Object Access Protocol (SOAP). HTTP is a communication protocol that describes how packets are sent over the Internet. SOAP is a communication protocol that describes how Web service messages are exchanged. A Web service does not provide a rich graphical user interface like Notepad does.

Notepad is not an example of a Windows service. A Windows service is an application that runs in the background without user interaction. It does not provide a graphical user interface like Notepad does.

Exam Objective:
Understanding Desktop Applications

Exam SubObjective(s):
Understand Windows Forms applications

? Which language should you use to change the background color of all <div> elements on a Web page?

○   Extensible Application Markup Language (XAML)

○   Extensible Markup Language (XML)

○   Structured Query Language (SQL)

○   Cascading Style Sheets (CSS)

Explanation:

CSS allows you change the background color of all <div> elements on a Web page. It allows you to describe the look and feel of Web pages. For example, you can define font sizes, colors, and positioning. With CSS, you can define rules that are applied to every instance of an element without having to assign attributes to each element separately.

SQL does not allow you to change the background color of all <div> elements on a Web page. This language allows you to manage data in a relational database.

XAML does not allow you to change the background color of all <div> elements on a Web page. This language is used to define the user interface in Windows Presentation Foundation (WPF) applications.

XML does not allow you to change the background color of all <div> elements on a Web page. XML is a platform-independent markup language for describing data or information.

Exam Objective:
Understanding Web Applications

Exam SubObjective(s):
Understand Web page development

☑ You need to represent a number that has decimal places requiring 15 digits of precision.

Which numeric data types could you use? (Each correct answer presents a complete solution. Choose two.)

☐   float

☑   double

☑   decimal

☐   int

Explanation:

The double data type and the decimal data type can both can be used to represent a number that has decimal places requiring 15 digits of precision. The double data type represents a 64-bit floating-point number. A double value has 15 decimal digits of precision. The decimal data type represents a 128-bit floating-point number. A decimal value has 28 or 29 decimal digits of precision.

The int structure cannot be used to represent a number that has decimal places requiring 15 digits of precision. The int structure represents a 32-bit signed integer. It can be used for values that range from negative 2,147,483,648 through positive2,147,483,647, but it cannot be used to represent numbers that have decimal points.

The float data type cannot be used to represent a number that has decimal places requiring 15 digits of precision. The float data type represents a 32-bit floating-point number. A float value has 7 decimal digits of precision.

Exam Objective:
Understanding Core Programming

Exam SubObjective(s):
Understand computer storage and data types

? Which of the following is a possible advantage of creating an index on a SQL Server database table?

○   It makes the database smaller and more efficient.

○   Query execution remains unchanged.

○   It makes creating views easier.

○   It allows queries to execute more quickly.

Explanation:

The advantage of creating an index on a SQL Server database table is that it allows queries to execute more quickly by creating pointers to the underlying data and allowing records to be retrieved without the need to read the whole table. Indexes can be created on tables or views, and they can be created before there is data in a table.

Creating an index on a SQL Server database table does not make the database smaller or more efficient. Shrinking a database refers to a process that makes a database smaller by eliminating unused space and rearranging the data in a more efficient way.

Creating an index on a SQL Server database table does not make creating views easier. A view is a query or a virtual database table. The process for creating views is the same with or without indexes.

Exam Objective:
Understanding Databases

Exam SubObjective(s):
Understand relational database management systems

? You are creating a Web application that processes ticket sales for a stadium. You need to verify that a seat is available before selling a ticket.

What term describes the type of programming needed to ensure that the seat is available when a request is made?

○   Client-side

○   Server-side

○   Database-side

○   Live processing

Explanation:

Server-side programming is needed to ensure that the seat is available when a request is made. Server-side scripts are executed on the Web server. Server-side processing enables real-time transactions between an application and a database. The application mentioned in the scenario would interact in real-time with a database in which the ticket information was stored, allowing you to verify that a seat was still available before selling a ticket.

Client-side scripting languages execute code on the client browser (the user's Web browser). One of the main uses of client-side scripting is to confirm page submission. When processing can be performed on the client computer, client-side scripting can save resources by limiting round trips to the server. Client-side processing does not allow for interaction with a Web server or a database server because it is executed remotely on the client machine browsers. JavaScript is an example of a client-side scripting language.

Database-side and live processing are not terms used to describe programming strategies.

Exam Objective:
Understanding Web Applications

Exam SubObjective(s):
Understand Microsoft ASP.NET Web application development

? You need to define a JavaScript function on a Web page.

In which HTML tag should you enclose the function?

○ <HTML>
○ <HEAD>
○ **<SCRIPT>**
○ <BODY>

Explanation:

You should enclose the function in a <SCRIPT> tag. Browsers that support scripting in HTML use the <SCRIPT> tag to locate scripts. All of the text between the opening <SCRIPT> tag and the closing </SCRIPT> tag are interpreted and executed.

You should not enclose the function in a <HEAD> tag. The <HEAD> tag provides information about the HTML document that might be useful to a browser but does not affect how the page is rendered, such as a title.

You should not enclose the function in a <BODY> tag. The <BODY> tag defines the content of the HTML document.

You should not enclose the function in an <HTML> tag. The <HTML> tag identifies a document as an HTML document.

Exam Objective:
Understanding Web Applications

Exam SubObjective(s):
Understand Web page development

? The AutoEventWireup attribute of the @ Page directive is set to true for a page.

Which method should you implement in the code-behind file to be called whenever the page loads?

○ Load_Page
○ PageLoad
○ Load
○ **Page_Load**

Explanation:

You should implement a method named Page_Load. The AutoEventWireup attribute specifies whether a page's life cycle events are automatically wired to predefined event handlers. When the AutoEventWireup attribute of the @ Page directive is set to true, ASP.NET automatically attaches the Load event of the page to the Page_Load event handler. This eliminates the need for you to explicitly attach an event handler to the Load event.

ASP.NET does not attempt to invoke event handlers named Load, PageLoad, or Load_Page. No such predefined event handlers exist.

Exam Objective:
Understanding Web Applications

Exam SubObjective(s):
Understand Microsoft ASP.NET Web application development

MEASUREUP

? What information does a database connection string contain?

○ Views and indexes

○ Database tables, columns, and relationships

○ Database server, database name, and credentials

○ SQL statements and stored procedures

Explanation:

A database connection string contains the database server, database name, and credentials for connecting to a database. It can also include other information that is needed to be able to successfully create a connection to a database or control how the connection is established. The credentials might include a user name and password to use to access the database, or it might include information to indicate that the current user's Windows credentials should be used to access the database.

A database connection string does not include database tables, columns, or relationships. It only includes information needed to connect to a database. A table is an object in a database that stores data. For example, a table named Customer might store customer data. A column represents a single attribute of data in a table. For example, a Customer table might have a column named FirstName that stores each customer's first name. A relationship is used to associate two tables. For example, a Customer table that stores customer data might participate in a relationship with an Order table that stores order data to be able to relate customers with their corresponding orders.

A connection string does not include SQL statements or stored procedures. It only includes information needed to connect to a database. SQL statements are instructions that retrieve data from or manipulate data in a database. A stored procedure is a compiled set of SQL statements that is stored in the database.

A connection string does not include views or indexes. It only includes information needed to connect to a database. A view is a stored query that presents a subset of data in a table or an aggregate of data from multiple tables. An index is a data structure that helps speed data retrieval operations on a database table. It is similar to an index in a book.

Exam Objective:
Understanding Databases

Exam SubObjective(s):
Understand database connection methods

You anticipate that an exception might occur in a block of code.

Which type of statement should you use to handle the exception?

○   if-else
○   <mark>try-catch-finally</mark>
○   do
○   while

Explanation:

To handle exceptions, you should use a try-catch-finally statement. The try-catch-finally statement is designed for structured error handling.

When an exception occurs within the try block, the code is said to throw an exception, which is then caught by a catch block of the exception handler. A catch block of the exception handler can then execute special code to deal with the exception. Multiple catch blocks can be specified to handle different exception conditions differently. The finally block of the try-catch-finally statement runs whenever execution of the code exits any part of the try block. The finally block is executed even if there is an unhandled exception. However, if a StackOverflowException is encountered, the finally block will not execute.

You should not use a do statement or a while statement. These statements are loop structures that allow you to run sections of code repetitively until a specified condition evaluates to false.

The if-else decision structure executes code conditionally based on the value of one or more conditions. If the condition evaluates to true, the statements specified after if execute. Otherwise, the statements specified after else execute. It is not designed for structured error handling.

Exam Objective:
Understanding Core Programming

Exam SubObjective(s):
Understand error handling

When a program calls a function, in which type of data structure is memory allocated for the variables in that function?

○   A queue

◉   A heap

○   A stack

○   LIFO

Explanation:

When a program calls a function, memory is allocated in a heap for the variables in that function. When the function returns a value, the space for its variables is deallocated and it can be reused by the program as it continues to execute. In a heap, memory blocks can be allocated and freed as needed because the amount of memory needed is determined at run time.

A queue is a data structure that stores elements that are processed on a First-In First-Out (FIFO) basis. In a queue, data elements can be added to the end of the queue, and they can be removed from the beginning of the queue. A queue is like a waiting line.

A stack is a Last-In First-Out storage structure. With a stack, the last item that gets pushed onto the stack becomes the first item to get popped off the stack. Therefore, stack memory is allocated and deallocated using this LIFO algorithm. Stack memory is used for local variables.

Exam Objective:
Understanding Core Programming

Exam SubObjective(s):
Understand computer storage and data types

A class member defined with the private access modifier can only be accessed from:

○   other public classes.

○   classes defined in the same assembly.

○   the class in which it is defined.

○   derived classes.

Explanation:

A class member defined with the private access modifier can only be accessed from the class in which it is defined. It cannot be accessed from other classes. Public class members can be accessed from other classes. Class members declared as internal can be accessed by other classes defined in the same assembly. Class members declared as protected can be accessed by derived classes.

Exam Objective:
Understanding Object-Oriented Programming

Exam SubObjective(s):
Understand encapsulation

MEASUREUP

? Which of the following is a relational database management system (RDBMS)?

○ Microsoft Internet Information Services (IIS)
○ Microsoft Excel
○ Microsoft SQL Server
○ Service Control Manager (SCM)

Explanation:

SQL Server is a RDBMS. An RDBMS is used to manage databases and the data stored in them. An RDBMS maintains relationships between tables that contain data. For example, a table containing orders can be related to a table containing customers through a relationship. This allows you to determine the customer who placed an order.

Excel is not an RDBMS. It is a spreadsheet application. It does not manage databases or maintain relationships between data stored in databases. A spreadsheet consists of rows and columns that display data or contain mathematical formulas for performing calculations.

IIS is not an RDBMS. It is a Web hosting application. IIS hosts Web applications and Web services, such as ASP.NET and Windows Communication Foundation (WCF) applications.

SCM is not an RDBMS. SCM manages Windows services. A Windows service is an application that runs in the background without user interaction. You can use SCM to stop, start, pause, or resume services.

Exam Objective:
Understanding Databases

Exam SubObjective(s):
Understand relational database management systems

An application has a graphical user interface (GUI) and runs on individual computers that do not have network connectivity.

What type of application is it?

○ Console-based
○ Web Forms
○ **Windows Forms**
○ Windows service

Explanation:

A Windows Forms application has a GUI and can run on individual computers that do not have network connectivity. Windows Forms applications can be used when there is a need for intensive processing that can best be done by the client computer. Windows Forms applications are installed on the client.

An application that runs as a Windows service presents no user interface. Windows services run in their own Windows sessions. They can be set to start automatically when Windows starts. They can be paused and restarted. They run in the background, so they do not interfere with users who are working on the computer.

A Web Forms application has a GUI, but it also needs network connectivity. Web Forms are used when an application needs to be accessible over the Internet. They are platform-independent, which means that it does not matter which operating system is installed on the client computer.

Console-based applications can run on computers that do not have network connectivity, but they typically do not have a GUI. Console-based applications are often invoked from a command prompt. User input and output from the application are exchanged through the command prompt.

Exam Objective:
Understanding Desktop Applications

Exam SubObjective(s):
Understand Windows Forms applications

? In the agile software methodology, what is a sprint?

○   A list of all desired changes to a product

○   A mockup that illustrates how the application should look and feel

○   A daily meeting

○   <mark>A month-long or shorter development life cycle</mark>

Explanation:

In the agile methodology, a sprint is a month-long or shorter development life cycle. During a sprint, a meeting is held and the team evaluates the remaining tasks based on their priority and business impact. Then, the team selects the tasks that the team can accomplish during the timeframe. After this, the task is designed, coded, tested, and released. Each month, new tasks are added to new sprints.

A daily meeting helps to keep the team focused and ensure that the tasks are getting completed.

A product backlog lists all of the desired changes to a product. The tasks for each sprint are chosen from the product backlog based on priority and team resources.

A prototype is a mockup that illustrates how the application should look and feel. A prototype is typically created before coding starts.

Exam Objective:
Understanding General Software Development

Exam SubObjective(s):
Understand application life cycle management

? Which of the following is a weakly-typed, client-side scripting language?

○ C#
○ HTML
○ CSS
○ **JavaScript**

Explanation:

JavaScript is considered to be a weakly-typed, client-side scripting language. Client-side scripting languages execute code on the client browser (the user's Web browser). Server-side scripts are executed on the Web server. One of the main uses of client-side scripting is to confirm page submission. JavaScript is a client-side scripting language.

In programming languages, a language is said to be strongly-typed when the language specifications place one or more restrictions on how operations involving values with different data types can be intermixed. JavaScript is said to be a weakly-typed language because it does not have any such specifications.

C# is not considered to be a weakly-typed, client-side scripting language. C# is an example of an object-oriented programming language. It is considered to be strongly-typed.

HyperText Markup Language (HTML) is a markup language that is used to create Web pages. It is a markup language that uses tags and attributes to define the structure and layout of a Web document. It is not a scripting language.

Cascading Style Sheets (CSS) are used to control the appearance of Web pages. CSS is not a scripting language.

Exam Objective:
Understanding Web Applications

Exam SubObjective(s):
Understand Web page development

MEASUREUP

A relational database table named Product contains the following fields:

ID
Name
Price
Category

You need to return only the Name and Category fields sorted by Category.

Which SQL statement should you use?

○   SELECT Name, Category FROM Product

○   SELECT Name, Category FROM Product WHERE Category > 'Category'

○   SELECT Name, Category FROM Product ORDER BY Category

○   SELECT * FROM Product ORDER BY Category

Explanation:

You should use the following SQL statement:

SELECT Name, Category FROM Product ORDER BY Category

The SELECT clause specifies the fields that should be returned from the data source. The FROM clause specifies the data source, which in this case is the Product table. It could alternatively specify a view. The ORDER BY clause specifies the fields that should be used to order the result set. In this scenario, the result set is ordered by the Category field. By default, the result set is in ascending order. You can explicitly append ASC or DESC to sort the result set in ascending or descending order, respectively.

You should not use the following SQL statement:

SELECT Name, Category FROM Product

This statement returns the Name and Category fields from the table in the order in which they exist in the table. The data might not necessarily be ordered by the Category field.

You should not use the following SQL statement:

SELECT Name, Category FROM Product WHERE Category > 'Category'

This statement returns data where the value of the Category field comes alphabetically after the string 'Category.' Values enclosed in single quotes are string literals.

You should not use the following SQL statement:

SELECT * FROM Product ORDER BY Category

This statement uses an asterisk (*) in the select list, which returns all fields from the Product table. In this case, you only wanted to return the Name and Category.

Exam Objective:
Understanding Databases

Exam SubObjective(s):
Understand database query methods

MEASUREUP

? The following integers are added to a stack in this order: 4, 7, 9, 2, 6.

You perform the following operations on the stack:

* Pop
* Pop
* Push 8
* Pop
* Push 3

What does the stack contain from top to bottom after the operations are performed?

○   6, 2, 9, 3

○   3, 9, 7, 4

○   3, 9, 2, 6

○   4, 7, 9, 3

Explanation:

The stack contains the following items from top to bottom after the operations are performed: 3, 9, 7, 4. A stack is a last-in, first-out (LIFO) data structure. This means that the last item added to the stack using a push operation is at the top of the stack. Therefore, it will always be the first item removed from the stack when a pop operation is performed. When the integers are originally pushed onto the stack, they are pushed in the following order: 4, 7, 9, 2, 6. This means that the stack is physically built as follows:

6
2
9
7
4

After the first pop operation, the number 6 is removed from the stack, and the stack now contains the following:

2
9
7
4

After the second pop operation, the number 2 is removed from the stack, and the stack now contains the following:

9
7
4

Next, there is a push operation that pushes the number 8 onto the top of the stack. The stack now contains the following:

8
9
7
4

Then, there is another pop operation that removes the number 8 from the stack. The stack now contains the following:

9
7
4

Finally, there is a push operation that pushes the number 3 onto the top of the stack. Therefore, the final stack contains the following:

3
9
7
4

Exam Objective:
Understanding General Software Development

Exam SubObjective(s):
Understand algorithms and data structures

MEASUREUP

? You have the following XHTML markup:

```
<head>
<title>This is the title</title>
</head>

<body>
<h1>This is head one.</h1>
<br>
<h2>This is head two.</h2>
</body>
```

What will cause an error in this markup?

○   The tags are not properly nested.

○   The line break tag is not closed.

○   XHTML tags should be all uppercase.

○   There should not be an extra line between the closing </head> tag and the opening <body> tag.

Explanation:

In the given Extensible Hyper Text Markup Language (XHTML) markup, the line break tag that is not closed will cause an error. XHTML and Hyper Text Markup Language (HTML) both descended from a language called Standard Generalized Markup Language (SGML). However, XHTML inherits features of Extensible Markup Language (XML), which has much stricter syntax rules than HTML.

XHTML syntax rules dictate that all tags must be lowercase. Uppercase letters will cause an error in XHTML. All tags must be closed, either with a matching closing tag, or they must be implicitly closed by adding a slash character (/) to the tag. In the given markup, the line break tag is not closed. You could close it implicitly using the following tag:

All tags must be properly nested. This means that the most recently opened tag must be closed first. In the example shown, the tags are properly nested, and they will not cause an error.

The extra line between the <head> tag and the <body> tag will not cause an error because extra spaces are ignored on HTML and XML.

Exam Objective:
Understanding Web Applications

Exam SubObjective(s):
Understand Web page development

MEASUREUP

? You need to iterate through a collection of strings and print each item in the collection. You do not know how many items are in the collection. You do not want to cast the collection to IEnumerable.

Which loop structure should you use?

○   do-while

○   while

○   foreach

○   for

Explanation:

You should use a foreach loop. A foreach loop allows you to execute a set of statements once for each item in a collection. The collection must implement the IEnumerable interface.

You should not use a do-while loop. A do-while loop executes the loop the first time and then tests the loop condition. In this case, if the collection contains no items, you would be still be executing the loop once.

You should not use a while loop. A while loop allows you to test for a condition and then execute a set of statements if the condition succeeds. You could cast the collection to IEnumerable, call the GetEnumerator method of IEnumerable to return an IEnumerator instance, call the MoveNext method of IEnumerator, and then access its Current property to iterate through the collection.

You should not use a for loop. A for loop allows you to execute a set of statements a set number of times. In this scenario, you do not know how many items there are in the collection.

Exam Objective:
Understanding Core Programming

Exam SubObjective(s):
Identify the appropriate method for handling repetition

MEASUREUP

? In a try-catch-finally block, where should you put code that must execute when a specific exception occurs?

○   Inside all catch blocks
○   Inside the try block
○   Inside the finally block
○   Inside a catch block

Explanation:

The catch block contains code that must execute when a specific exception occurs. The catch block handles the exception. The try block contains code that might cause an exception. If a statement in the try block causes an exception, control is passed to one of the catch blocks to handle the exception. Each catch block contains code that executes when a specific exception occurs. An exception for which a catch block is specified is referred to as being a handled exception. When no catch block exists for an exception, the exception is referred to as being unhandled.

You should not put the code inside the finally block. The finally block executes either after all try block statements execute successfully or after a catch block executes.

You should not put the code inside the try block. The try block contains code that might cause an exception. A catch block is used to execute code when an exception occurs within the try block.

You should not put the code inside all catch blocks. Each catch block contains code for a specific exception. Therefore, you would only include the code in one of the catch blocks.

Exam Objective:
Understanding Core Programming

Exam SubObjective(s):
Understand error handling

? You create an if statement that specifies a condition.

You need to include code that should execute if the condition is not true.

What should you use?

○ finally

○ else

○ do

○ foreach

Explanation:

You should use else. An else block contains code that should execute if the condition specified in an if statement evaluates to false.

You should not use finally. A finally block is used in a try-catch-finally statement. The finally block contains code that should always execute regardless of whether an exception occurred. For example, the code in a finally block executes either after all statements in the try block execute successfully or after a catch block executes to handle an exception.

You should not use do. A do block allows repetition. It executes a set of statements while or until a condition succeeds.

You should not use foreach. A foreach is used to repeat execution for every element in an array or collection.

Exam Objective:
Understanding Core Programming

Exam SubObjective(s):
Understand computer decision structures

? You need to model an "is a" relationship.

What should you do?

○ Create a class that accesses properties on another class.

○ Create a class that invokes methods on another class.

○ Create a class that inherits from another class.

○ Create a class that references another class instance.

Explanation:

You should create a class that inherits from another class. This model is an "is a" relationship. For example, a manager is an employee. To model this relationship, you can create a class named Manager that inherits from a class named Employee.

You should not create a class that references another class instance, invokes methods on another class, or accesses properties on another class. This is referred to as association. Association models are "has a" relationships.

Exam Objective:
Understanding Object-Oriented Programming

Exam SubObjective(s):
Understand inheritance

MEASUREUP

? You need to create an application that runs in the background and has no user interface.

Which type of application should you create?

○   Windows service
○   Web Forms
○   Console-based
○   Windows Forms

Explanation:

You should create a Windows service application. An application that runs as a Windows service presents no user interface. Windows services run in their own Windows sessions. They can be set to start automatically when Windows starts. They can be paused and restarted. They run in the background, so they do not interfere with users who are working on the computer.

A Windows Forms application has a user interface. Windows Forms applications do not run in the background. Windows Forms applications can be used when there is a need for intensive processing that can best be done by the client computer.

A Web Forms application has a user interface. Web Forms applications do not run in the background. Web Forms applications are used when an application needs to be accessible over the Internet. They run in a Web browser and are platform-independent, which means that it does not matter which operating system is installed on the client computer.

Console-based applications have a user interface. They do not run in the background. Console-based applications are often invoked from a command prompt. User input and output from the application are exchanged through the command prompt.

Exam Objective:
Understanding Desktop Applications

Exam SubObjective(s):
Understand Windows Services

? The finally block of an exception handler is:

○   always executed.

○   executed when an exception is thrown.

○   always executed when the code leaves any part of the try statement.

○   <mark>always executed when the code leaves any part of the try statement, except when a StackOverflowException is thrown.</mark>

Explanation:

The finally block of an error handler is executed when the code leaves any part of the try statement, except when a StackOverflowException is thrown.

The try-catch-finally statement is designed for structured error handling. When an exception occurs, the code is said to throw an exception, which is then caught by a catch block of the exception handler. A catch block of the exception handler can then execute special code to deal with the exception. Multiple catch blocks can be specified to handle different exception conditions differently.

The finally block of the try-catch-finally statement runs whenever execution of the code exits any part of the try statement. The finally block is executed even if there is an unhandled exception. However, if a StackOverflowException is encountered, the finally block will not execute.

Exam Objective:
Understanding Core Programming

Exam SubObjective(s):
Understand error handling

? You need to create an application that runs on startup. The application should run in the background and not interfere with people using the computer.

Which type of application should you create?

○ Web Forms

○ Windows service

○ Windows Forms

○ Console-based

Explanation:

You should create a Windows service application. An application that runs as a Windows service can be set to start automatically when Windows starts. Windows service applications run in the background, so they do not interfere with users who are working on the computer. They present no user interface. Windows services run in their own Windows sessions. They can be paused and restarted.

A Windows Forms application has a user interface. Windows Forms applications are installed on the client computer, and they can be used when there is a need for intensive processing that can best be done by the client computer.

A Web Forms application has a user interface. Web Forms are used when an application needs to be accessible over the Internet. They run in a Web browser and are platform-independent, which means that it does not matter which operating system is installed on the client computer.

Console-based applications have a user interface, although they typically do not have a graphical user interface (GUI). Console-based applications are often invoked from a command prompt. User input and output from the application are exchanged through the command prompt.
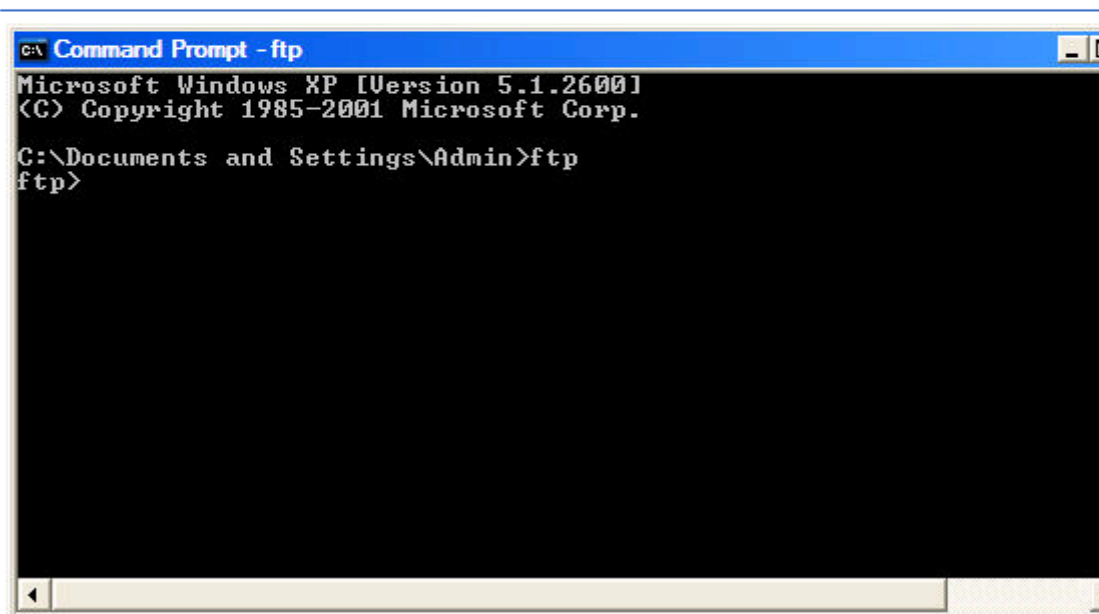
Exam Objective:
Understanding Desktop Applications

Exam SubObjective(s):
Understand Windows Services

? You open a command prompt and enter ftp. You are then presented with a screen shown in the graphic exhibit.

This is an example of which type of application?

```
Command Prompt - ftp                                    _ □

Microsoft Windows XP [Version 5.1.2600]
(C) Copyright 1985-2001 Microsoft Corp.

C:\Documents and Settings\Admin>ftp
ftp>
```

○ ASP.NET
○ Console
○ Windows Forms
○ Windows service

Explanation:

This is an example of a console application. Console applications do not provide a rich graphical user interface. They use a standard input stream, standard output stream, and standard error stream. They are typically run from the command line. They are typically rendered as a black box with gray text.

This is not an example of a Windows service. A Windows service is an application that runs in the background without user interaction. A Windows service does not provide a user interface.

This is not an example of a Windows Forms application. A Windows Forms application provides a rich graphical user interface that supports keyboard and mouse input. You cannot use the mouse with console applications.

This is not an example of an ASP.NET application. ASP.NET applications run on Web servers. Users access ASP.NET applications from their Web browsers.

Exam Objective:
Understanding Desktop Applications

Exam SubObjective(s):
Understand console-based applications

MEASUREUP

? A data structure that stores data on a last-in first-out (LIFO) basis is called:

○   an array.

○   a queue.

○   a heap.

○   a stack.

Explanation:

A stack stores data on a LIFO basis. In a stack, elements are stored so that only the most recently added element can be removed from the stack. Requests are said to be handled on a last-in first-out (LIFO) basis.

In a queue, data elements are added to the end of the queue, and they can be removed from the beginning of the queue. A queue is like a waiting line at a restaurant or amusement park that ensures that people are served in the order in which they appear. New elements go to the end of the line, and when they reach the beginning of the line, they can be removed.

In a heap, memory blocks can be allocated and freed as they are needed because the amount of memory necessary is determined at run time. They are not stored in sequential order. When a program calls a function, for example completeOrder(), memory will be set aside on the heap for the variables in that function. If other functions are called by completeOrder(), more memory will be allocated on the heap. Programs use the heap for many different purposes.

An array is a data structure that holds multiple values, called elements. Arrays are useful for manipulating, searching, and sorting data. Unlike queues and stacks, arrays do not require data to be processed in a predetermined order. You can use an index to randomly access specific elements in an array.

Exam Objective:
Understanding General Software Development

Exam SubObjective(s):
Understand algorithms and data structures

MEASUREUP

? In the lifecycle of an ASP.NET Web page, which phase follows the PreRenderComplete phase?

○ SaveStateComplete
○ Render
○ PreInit
○ Init

Explanation:

In the lifecycle of an ASP.NET Web page, the SaveStateComplete phase follows the PreRenderComplete phase and comes before the Render phase. The SaveStateComplete event is raised after view state and control state have both been saved for the page and its controls.

The PreRenderComplete phase is raised after the PreRender phase and before the SaveStateComplete phase. It is raised after the DataBind method is called for each data bound control for which the DataSourceID property has been set.

The Render phase follows the SaveStateComplete phase. During the Render phase, the Page object calls the Render method on each control and sends the control's markup to the browser.

The PreInit phase is raised after the start stage is complete and prior to initialization. You can use this phase to check for IsPostBack, IsCallBack or IsCrossPagePostBack, create or recreate dynamic controls, set a theme or master page dynamically, and to read and set property values during this event.

The Init phase is raised after controls have been initialized and skin settings have been applied if there are any. This phase is where you should read or initialize control properties.

Exam Objective:
Understanding Web Applications

Exam SubObjective(s):
Understand Microsoft ASP.NET Web application development

MEASUREUP

? How many bytes does the Int32 type allocate?

○ 4
○ 16
○ 8
○ 32

Explanation:

The Int32 type represents a 32-bit signed integer. Therefore, it allocates four bytes because there are 8 bits in each byte. The binary system is a Base 2 numeral system that uses the digits 0 and 1. To calculate the possible values that can be stored, you raise the number 2 to a power that represents the number of bits. For example, to calculate the maximum possible value for an unsigned 32-bit integer, you raise the number 2 to the 32nd power, which equals 4,294,967,296. Therefore, an unsigned 32-bit integer can have values ranging from 0 to 4,294,967,296. However, an Int32 type is signed, meaning it can have negative and positive values. The first bit is used to store the sign. Then, the possible values are distributed so that negative and positive numbers are allowed. For example, an Int32 type can have values ranging from -2,147,483,648 to 2,147,483,647.

Exam Objective:
Understanding Core Programming

Exam SubObjective(s):
Understand computer storage and data types

You want to execute a set of statements 10 times.

Which loop structure should you use?

○   for

○   while

○   do

○   foreach

Explanation:

You should use a for loop. A for loop allows you to execute a set of statements a set number of times. In this case, you are executing the statements 10 times.

You should not use a foreach loop. A foreach loop allows you to execute a set of statements once for each item in a collection.

You should not use a do loop. A do loop allows you to execute a set of statements once, test for a condition, and then repeat execution if the condition is true. Although you can use a do loop, a for loop is a better choice when you know in advance the number of repetitions.

You should not use a while loop. A while loop allows you to test for a condition and then execute a set of statements if the condition is true. The loop will not execute at all if the initial loop condition is not true. Although you can use a while loop, a for loop is a better choice when you know in advance the number of repetitions.

Exam Objective:
Understanding Core Programming

Exam SubObjective(s):
Identify the appropriate method for handling repetition

? What must you invoke to instantiate a class?

○ Property
○ **Constructor**
○ Event
○ Field

Explanation:

You must invoke a constructor to instantiate a class. A constructor is a special method that allows you to create an instance of a class. A constructor has the same name as the class. It can accept zero or more parameters. A zero-parameter constructor is a default constructor. All classes that do not specifically implement constructors have default constructors. If a class specifically implements only constructors that have parameters, then no default constructor exists. The class would need to specifically implement a default constructor. An overloaded constructor is one that accepts parameters.

You cannot invoke an event to instantiate a class. Events provide notification that something has happened or is happening.

You cannot invoke a property to instantiate a class. A property is a class member that contains some piece of data about the object. Properties can be retrieved or set and include custom logic that controls how this occurs. For example, a Vehicle object might have a Color property to identify the color of the vehicle and perform validation when the property value is set that ensures that the vehicle is a valid color.

You cannot invoke a field to instantiate a class. A field is also a class member that contains some piece of data about the object. However, it only allows direct access. Unlike a property, you have no control over what happens when the value of a field is set or accessed.

Exam Objective:
Understanding Object-Oriented Programming

Exam SubObjective(s):
Understand the fundamentals of classes

? When hosting or consuming a Web service, what is the role of Simple Object Access Protocol (SOAP)?

○ <mark>SOAP is a communications protocol intended for exchanging information.</mark>
○ SOAP is a scripting language that can dynamically produce client-side content.
○ SOAP is a security protocol for Web services.
○ SOAP registers the Web service in a .NET application.

Explanation:

SOAP is a communications protocol intended for exchanging information. It is an XML-based protocol that is used by Web services. SOAP allows communication in a decentralized environment.

SOAP is not a scripting language that can dynamically produce client-side content. Client-side scripting languages execute code on the client browser (the user's Web browser). One of the main uses of client-side scripting is to confirm page submission. JavaScript is an example of a client-side scripting language.

SOAP does not register a Web service in a .NET application. You must create a reference to a Web service in an application to consume that service. However, SOAP is a communications protocol used by Web services to exchange information, and it cannot be used to create a reference to a Web service in a Web application.

SOAP is not a security protocol for Web services. SOAP communications can be secured by various means, including digital signatures and encryption.

Exam Objective:
Understanding Web Applications

Exam SubObjective(s):
Understand Web services

? Which of the following characteristics does a console application have?

○ <mark>It can run with minimal user interaction without mouse input.</mark>
○ It provides a rich graphical user interface that accepts mouse and keyboard input.
○ It can share its functionality by being loaded into the processes of other applications.
○ It can start automatically by the Service Control Manager (SCM).

Explanation:

A console application can run with minimal user interaction without mouse input. It uses a standard input stream, standard output stream, and standard error stream. It typically runs from the command line.

A console application does not provide a rich graphical user interface that accepts mouse and keyboard input. It uses the standard input stream for keyboard input. It does not support mouse input.

You can configure Task Manager to automatically start a console application, but you cannot use the SCM to do so. The SCM is used to manage Windows services. A console application runs in its own process. It cannot be loaded into the processes of other applications.

Exam Objective:
Understanding Desktop Applications

Exam SubObjective(s):
Understand console-based applications

MEASUREUP

? You need to record whether users have signed up to receive e-mail from your Web application. Your solution should use the least amount of memory possible.

Which data type should you choose?

○   int

○   double

○   float

○   bool

Explanation:

You should use the bool data type. A bool value represents an 8-bit field that is set to 1 when it is true and 0 when it is false.

The double data type can be used to represent a number that has decimal places requiring up to 15 digits of precision. The double data type represents a 64-bit floating-point number.

The int data type represents a 32-bit signed integer. It can be used for values that range from negative 2,147,483,648 through positive 2,147,483,647. It cannot be used to represent numbers that have decimal points.

The float data type represents a 32-bit floating-point number. A float value has 7 decimal digits of precision.

Exam Objective:
Understanding Core Programming

Exam SubObjective(s):
Understand computer storage and data types

MEASUREUP

? In relational database design, the process of eliminating unnecessary duplication in the data is called:

○   shrinking.

○   isolating.

○   normalization.

○   separation.

Explanation:

In relational database design, the process of eliminating unnecessary duplication in the data is called normalization. Benefits of normalization include enhanced data integrity (because there is no redundant data that needs to be maintained in more than one place), optimization of queries (because normalized tables result in faster and more efficient joins), improved concurrency resolution (because there will be fewer table locks), and faster performance in general.

In relational database design, the process of eliminating unnecessary duplication in the data is not called shrinking, isolation, or separation. Isolation and separation are not terms that apply to relational database design. Shrinking a database refers to a process that makes a database smaller by eliminating unused space and rearranging the data in a more efficient way.

Exam Objective:
Understanding Databases

Exam SubObjective(s):
Understand relational database management systems

MEASUREUP

? A requirements document contains the following information:

* A customer has one or more accounts.
* An account can belong to only one customer.

Which class or classes should you create to model the requirements and minimize the number of classes?

○   Customer, CustomerAccount, and Account

○   CustomerAccount

○   Account

○   Customer and Account

Explanation:

You should create two classes named Customer and Account. The Customer class would be created to represent a customer. This class would contain class members associated with a customer. For example, properties could hold information about the customer's name and address. The Account class would be created to represent a customer's account. This class would contain class members associated with an account. For example, properties could hold information about the account number, status, and expiration date. You could then create a property of the Customer class named Accounts that is an array of Account instances. This models the "has a" relationship between customers and accounts. In a "has a" relationship, one entity has another entity. For example, a customer has an account.

You should not create a Customer, CustomerAccount, and Account class. You only need two classes to model a customer and a customer's account because there are only two entities being modeled, customer and account.

You should not create only one class named CustomerAccount. Because there are two entities to model, you should create two classes. Each class should represent a single object.

You should not create only one class named Account. Because there are two entities to model, you should create two classes. Each class should represent a single object.

Exam Objective:
Understanding General Software Development

Exam SubObjective(s):
Interpret application specifications

? Which statement about Internet Information Services (IIS) is true?

○   IIS must be configured on the computer where a Web application's files are located and on the computer where a Web application's database is located.

○   IIS must be configured on the computer where a Web application's files are located.

○   IIS must be configured on the computer that hosts a Web application.

○   IIS must be configured on the computer that publishes a Web application.

Explanation:

IIS must be configured on the computer that hosts a Web application. Hosting is the term used to describe placing a Web site on a server that maintains the infrastructure necessary for the site's operation and makes it available to the intended audience. IIS fulfills that role. IIS responds to user requests for Web pages, and it also logs activity. IIS keeps track of Web site home directories, virtual directories, files, and security information regarding who is permitted access to the files. It keeps track of other miscellaneous information about Web sites, including IP addresses, configuration settings, the versions of .NET that sites run under, and whether sites have been configured to run on Secure Socket Layer (SSL) or as part of an application pool.

IIS does not need to be configured on the same server where a Web application's files are located. Although it is very common for a Web site's files to be on the same server that is hosting the application, IIS allows for virtual directories. A virtual directory can be located on the same network as the server running IIS. However, when a virtual directory is created, IIS points to it and treats it as though it were part of the directory structure of the Web application, even though the virtual directory is not located on the same server.

IIS does not need to be configured on the computer that publishes a Web application. A Web application can be developed locally on another computer or on a development server. When it is ready to be deployed, then it can be published to the server that will be hosting the application.

IIS does not need to be configured on the computer where a Web application's database is located. IIS does not maintain information about databases, and it does not interact with a Web application's databases or database servers.

Exam Objective:
Understanding Web Applications

Exam SubObjective(s):
Understand Microsoft ASP.NET Web application development

MEASUREUP

? You want to display data from an XML file on your Web page.

Which control provides the necessary information to access the XML file so that the application can read and display the data?

○   XmlDataSource

○   DataList

○   ListView

○   DataProvider

Explanation:

An XmlDataSource control provides the necessary information to access the XML file so that the application can read and display the data. A DataSource control is a server control that is part of the data-binding architecture. A DataSource control enables the automatic data-binding behavior exhibited by data-bound controls on a Web page. A DataSource control allows you to connect to and retrieve data from a data source. It makes the data available so that other controls, such as the ListView control, can bind to it. It also supports modifications to the data.

The XmlDataSource control presents data from an XML file, which is typically specified by the DataFile property, to data-bound controls. The XmlDataSource control is often used for read-only data. However, it can also be used to modify XML data. The data source control can also store XML data in string form using the Data property.

You should not use a ListView control or a DataList control. These controls are used to display data on a Web page. ListView and GridView use a DataSource control to connect to a data source.

A .NET data provider is a bridge between an application and a data source. A data provider retrieves data from a data source and returns data to the data source. A data provider enables a Web application to connect to a database, but there is no DataProvider control.

Exam Objective:
Understanding Databases

Exam SubObjective(s):
Understand database connection methods

MEASUREUP

? Which tool or application is used to host Web sites?

○   Internet Information Services (IIS)
○   Microsoft Visual SourceSafe
○   Service Control Manager (SCM)
○   Microsoft SQL Server

Explanation:

IIS is used to host Web sites. In addition to Web sites, IIS can host Web services and Simple Mail Transfer Protocol (SMTP) virtual servers. An SMTP server is one that can send and receive e-mail.

The SCM cannot host Web sites. It is used to manage Windows services. Windows services are applications that run in the background without a graphical user interface.

SQL Server cannot host Web sites. It is a relational database management system (RDBMS). It manages database tables.

Visual SourceSafe cannot host Web sites. It is a source control repository. It keeps track of different versions of items, such as source code.

Exam Objective:
Understanding Web Applications

Exam SubObjective(s):
Understand Web hosting

MEASUREUP

? You want a Web control event to be processed on the computer that hosts the application.

Which attribute setting should you include in the Web control?

○ AutoEventWireup="false"

○ runat="server"

○ AutoEventWireup="true"

○ runat="host"

Explanation:

For a Web control event to be processed on the computer that hosts the application, you should include the following attribute setting:

runat="server"

When the runat="server" attribute setting is included in a Web control, ASP.NET treats the element as a server control, and it causes the code to be processed on the server. In addition to ASP.NET server controls, adding an ID attribute and the runat="server" attribute setting to any HTML element on a Web page will cause ASP.NET to make that element available for server-side processing.

You should not include the runat="host" attribute setting because host is not a valid value for the runat attribute.

You should not include the AutoEventWireup="true" attribute setting. The AutoEventWireup attribute does not affect the location where an event is processed. When AutoEventWireup is set to true, you are not required to explicitly bind event handlers to a page event. ASP.NET handles the binding process automatically. When AutoEventWireup is set to true, ASP.NET makes multiple attempts to match events with the appropriate method. Therefore, you should not set AutoEventWireup to true if performance is an issue.

You should not include the AutoEventWireup="false" attribute setting. When AutoEventWireup is false, you are required to explicitly bind event handlers to page events. In VB.NET, this is done using the Handles statement. Methods use the naming convention of Page_event. In C#, the explicit binding is done using event handler code.

Exam Objective:
Understanding Web Applications

Exam SubObjective(s):
Understand Microsoft ASP.NET Web application development

MEASUREUP

? You implement a method to create an instance of a class named Shape and store it in a local variable.

How do the stack and the heap participate in the creation of the Shape instance?

○   The Shape instance is created on the stack. The heap is not used.

○   The Shape instance is created on the stack. The heap stores a pointer to the Shape instance.

○   The Shape instance is created on the heap. The stack is not used.

○   <mark>The Shape instance is created on the heap. The stack stores a pointer to the Shape instance.</mark>

Explanation:

The Shape instance is created on the heap, and the stack stores a pointer to the Shape instance. The stack and heap are different areas of memory. Stack memory is used for local variables. Heap memory is used to for class object instances. A stack is a last-in, first-out (LIFO) storage structure. With a stack, the last item that gets pushed onto the stack becomes the first item to get popped off the stack. Therefore, memory for local variables is allocated and deallocated using this LIFO algorithm. Because Shape is a class, it gets instantiated on the heap. The local variable then contains a pointer to the location of the Shape instance on the heap. Class instances get allocated on the heap because they have no predefined storage allocation.

The Shape instance is not created on the stack because it is a class object instance. The stack stores the local variable that references the Shape instance.

The heap does not store a pointer to the Shape instance because local variables are stored on the stack, not the heap. The heap stores the Shape instance.

Exam Objective:
Understanding Core Programming

Exam SubObjective(s):
Understand computer storage and data types

MEASUREUP

? A requirements document contains the following information:

* A vendor has zero or more products.
* A product can be sold by one or more vendors.

Which class or classes should you create to model the requirements and minimize the number of classes?

- ○ Product
- ○ <mark>Vendor and Product</mark>
- ○ Vendor, Vendors, and Product
- ○ VendorProduct

Explanation:

You should create two classes named Product and Vendor. The Product class would be created to represent a product. This class would contain class members associated with a product. For example, properties could hold information about the product's name and description. The Vendor class would be created to represent a vendor. This class would contain class members associated with a vendor. For example, properties could hold information about the vendor's name and address. You could then create a property of the Vendor class named Products that is an array of Product instances. This models the "has a" relationship between vendors and products. In a "has a" relationship, one entity has another entity. For example, a vendor has a product.

You should not create a Vendor, Vendors, and Product class. You only need two classes to model a vendor and a product because there are only two entities being modeled, vendor and product.

You should not create only one class named VendorProduct. Because there are two entities to model, you should create two classes. Each class should represent a single object.

You should not create only one class named Product. Because there are two entities to model, you should create two classes. Each class should represent a single object.

Exam Objective:
Understanding General Software Development

Exam SubObjective(s):
Interpret application specifications

MEASUREUP

? What is the purpose of a data warehouse?

○ It keeps a record of bad data.

○ It stores and organizes large amounts of data for analysis and retrieval purposes.

○ It is an online service that provides database table schemas to end users.

○ It keeps versions of all changes to data in a relational database.

Explanation:

A data warehouse stores and organizes large amounts of data for analysis and retrieval purposes. It is typically used for reporting, and it contains summaries of large amounts of data.

A data warehouse does not keep versions of all changes to data in a relational database. It stores and organizes large amounts of data for analysis and retrieval purposes. After data is stored a data warehouse, it does not typically change.

A data warehouse is not an online service that provides database table schemas to end users. It stores and organizes large amounts of data for analysis and retrieval purposes.

A data warehouse does not keep a record of bad data. Data is usually verified before it is stored in a data warehouse.

Exam Objective:
Understanding Databases

Exam SubObjective(s):
Understand relational database management systems

MEASUREUP

? Planning, developing, testing, and deploying are all aspects of:

○ Application lifecycle management

○ Application software management

○ Application resource management

○ Application systems management

Explanation:

Planning, developing, testing, and deploying are all aspects of application lifecycle management. In software development, an application's lifecycle describes the stages that an application goes through from its inception through to its deployment and maintenance.

A deployment is a deployed, running instance of an application. Maintenance refers to changes made after an application has been deployed.

Resource management refers to management of resources such as servers, processing capabilities, and bandwidth.

Systems management refers to management of the groups of applications that make up systems.

Software management is a generic term that can refer to managing many different types of applications and software.

Exam Objective:
Understanding General Software Development

Exam SubObjective(s):
Understand application life cycle management

MEASUREUP

? A class named Employee contains a protected member named Salary. A class named Manager does not define the Salary member, but the Manager class can access the Salary member in the Employee class.

Which object-oriented feature does this represent?

○ Polymorphism

○ Inheritance

○ Abstraction

○ Encapsulation

Explanation:

Inheritance allows one class to inherit functionality from a base class. In this scenario, the Employee class contains a protected member named Salary. Only a class and its derived class can access members declared as protected. A derived class inherits the members defined in its base class. This means that the Manager class inherits the Salary member. A derived class can also define additional members to extend the class's functionality if needed. For example, in this case, you might include additional properties or methods in the Manager class that are applicable to managers, but not all employees.

Encapsulation is a feature that allows classes to hide their implementation. For example, a method named CalculateWitholding could be defined for the Employee class to calculate the amount of taxable withholding for an employee. By defining a method, you hide the logic used to calculate the withholding amount. If the logic ever changes, only the Employee class itself needs to change. Other classes that only call the method do not need to be changed.

Polymorphism is a feature that allows multiple classes to implement the same members and have each type of object use its specific implementation. For example, assume the Employee class exposed a Hire method. Two derived classes, for example Manager and Executive, might both override the Hire method. The Hire method in the Manager class would include code to execute when the Hire method was called on a Manager object, and the Hire method in the Executive class would include code to execute when the Hire method was called on an Executive object.

Abstraction is a feature that allows you to model real-world objects in code. For example, the Employee class is an abstraction of an employee. You typically identify the business objects by examining the nouns in a business requirement. For example, consider these requirements: A student must be able the register for one or more courses. Each teacher must be assigned to one or more courses. The nouns are student, course, and teacher. Therefore, these are the candidate business objects.

Exam Objective:
Understanding Object-Oriented Programming

Exam SubObjective(s):
Understand inheritance

MEASUREUP

You need to write a block of code that will log user activity in a text file, but it does not need to return a value to the code that is executing.

What type of code block should you write?

○ An if-else statement

○ A try-catch-finally statement

○ A method with a return type of void

○ A method with a return type that is not void

Explanation:

You should write a method with a return type of void. A method is a set of statements that perform one or more actions within a program. When void is specified as the return type for a method, that method does not return a value.

The following is an example of a simple method that does not return a value. It redirects a user to the MSDN site:

```
public void RedirectMs()
{
 Response.Redirect("http://msdn.com");
}
```

To call the method from the program, you would use the following code:

```
RedirectMs();
```

When a return type other than void is specified for a method, that method returns a value to the code that called it. For example, the following method would accept a string value, convert the string to lowercase letters, and return a new string value containing only the first three characters of the original string with an asterisk prepended to it:

```
public string ChangeCase(string myString)
{
string myNewString = myString.Substring(0, 3);
myNewString = "*" + myNewString;
return myNewString.ToLower();
}
```

You could use the following code to call the method passing it a string of "ABCDE", and it would return "*abc" and assign the returned value to the myResult variable:

```
string myResult = ChangeCase("ABCDE");
```

You should not use an if-else statement. The if-else decision structure tests for conditions and executes a set of statements based on whether the conditions are true.

You should not use a try-catch-finally statement. The try-catch-finally statement is designed for structured error handling.

Exam Objective:
Understanding General Software Development

Exam SubObjective(s):
Interpret application specifications

MEASUREUP

Two classes are derived from the same base class and both override the same inherited method to provide their own implementation.

Which term best describes this concept?

○   Inheritance
○   Polymorphism
○   Encapsulation
○   Data Hiding

Explanation:

Polymorphism is a feature that allows multiple classes to implement the same members and have each type of object use its specific implementation. For example, if a base class exposed a Start method, two derived classes might both override the method and each provide a different implementation. The method that is executed would depend on the type of object that invoked the method.

Encapsulation is an object-oriented feature that allows classes to hide their implementation. For example, a method could be defined in a class to perform a specific task. By defining a method, you hide the logic to perform the task from other classes that only call the method.

Data hiding is related to encapsulation. An example of data hiding would be when members of a class are designated as private. This prevents them from being used outside of a class, and it is said to hide the data from other classes.

A class that serves as a starting point or a base for new classes is called a base class. A class that is derived from a base class is called a derived class. Derived classes inherit all the fields, properties, methods, and events of the base class. This process is called inheritance.

Exam Objective:
Understanding Object-Oriented Programming

Exam SubObjective(s):
Understand polymorphism

? Three concrete classes named Circle, Square, and Triangle all inherit from a base class named Shape. The three concrete classes provide different implementations of a method named CalculateArea, which is defined in the Shape class.

Which concept is representative of polymorphism?

○   The hiding of the logic used to calculate the area

○   The modeling of the four classes as two-dimensional figures

○   The inheritance hierarchy of one base class and three derived classes

○   The different implementations of the CalculateArea method

Explanation:

The different implementations of the CalculateArea method are representative of polymorphism. Polymorphism is a feature that allows multiple classes to implement the same members and have each type of object use its specific implementation. For example, in this case each of the three concrete classes could provide its own logic to calculate the area for the specific shape. Then, the CalculateArea method that executed would depend on the type of object on which the method was called. If the method were called on a Circle object, the implementation defined in the Circle class would be used.

Inheritance allows a class to inherit functionality from a base class. The base class can implement members that provide basic functionality. Other classes can inherit from the base class and gain access to the basic functionality. These derived classes can also expose other functionality if necessary. For example, you might have an Employee class that exposes properties and methods. Then, you could create a derived class named Manager by inheriting from the Employee class. You would be able to use the functionality defined in the Employee class, but also expose additional properties and methods within the Manager class that can be used only for managers.

Encapsulation is a feature that allows classes to hide their implementation. For example, you might have a class that defines a method. By defining a method, you hide the logic used within the method from other code that only needs to call the method.

Abstraction is a feature that allows you to model real-world objects in code. For example, the Shape class is an abstraction of a two-dimensional shape. You typically identify the business objects by examining the nouns in a business requirement. For example, consider these requirements: A student must be able the register for one or more courses. Each teacher must be assigned to one or more courses. The nouns are student, course, and teacher. Therefore, these are the candidate business objects.

Exam Objective:
Understanding Object-Oriented Programming

Exam SubObjective(s):
Understand polymorphism

MEASUREUP

A database contains two tables named Employees and Payrecords. The two tables are joined on the EmployeeID field common to both tables.

The EmployeeID uniquely identifies each employee. Each pay period, a record is entered into the table Payrecords for every employee that is paid.

Which term describes the relationship between Employees and Payrecords?

- ○ One-to-many
- ○ Many-to-many
- ○ One-to-one
- ○ Unrelated

Explanation:

In this scenario, the term one-to-many describes the relationship between Employees and Payrecords. Each EmployeeID can be entered into Employees only once, but each employee will have multiple pay records in Payrecords. The relationship is described as one-to-many. There are many pay records for one employee.

The term one-to-one does not describe the relationship between Employees and Payrecords. The term one-to-one describes a relationship in which only one record can be entered into a table for each related record entered into another related table.

The term many-to-many does not describe the relationship between Employees and Payrecords. The term many-to-many describes a relationship in which both tables might contain multiple records for a single EmployeeID.

The scenario states that the tables Employees and Payrecords are related. Therefore, they cannot be described as being unrelated.

Exam Objective:
Understanding Databases

Exam SubObjective(s):
Understand relational database management systems

In the code shown in the exhibit, the keywords public, protected, and private:

```
public class Car
{
    protected void engine() { }

    private int doors = 2;
}
```

○　are methods of the Car class.

○　assign values to the Car class.

○　determine the accessibility of this class and its members to code within other classes.

○　describe attributes of the Car class.

Explanation:

In the code shown in the exhibit, the keywords public, protected, and private determine the accessibility of this class and its members to code from other classes. These keywords are called access modifiers because they are used to allow or deny access. The Car class is public, meaning that it is accessible to any other code in the same assembly or in any assembly that references the class. The startEngine subroutine is protected, so it can only be accessed by code in the same class or struct, or derived classes. Doors is a variable that has been assigned a value of 2. It is designated as private, meaning that it can only be accessed by code in the same class or struct.

The keywords public, protected, and private are not methods of the Car class. A method is a function or a subroutine that is associated with a class or an object. A function or procedure that is defined within a class is referred to as a method of that class.

The keywords public, protected, and private are not attributes of the Car class. An attribute is a quality or characteristic of a class.

The keywords public, protected, and private do not assign values to the Car class. An assignment statement is used to assign a value. For example, x=2 assigns the variable x a value of 2.

Exam Objective:
Understanding Object-Oriented Programming

Exam SubObjective(s):
Understand encapsulation

? A class constructor has no parameters.

What type of constructor is this?

○ Overloaded
○ Virtual
○ **Default**
○ Overridden

Explanation:

A class constructor with no parameters is referred to as a default constructor. All classes that do not specifically implement constructors have a single default constructor. If a class specifically implements only constructors that have parameters, then no default constructor exists. The class would need to specifically implement a default constructor.

An overloaded constructor is one that accepts parameters.

A constructor cannot be virtual or overridden.

Exam Objective:
Understanding Object-Oriented Programming

Exam SubObjective(s):
Understand the fundamentals of classes

? You are creating an application that must accept user input, perform resource-intensive processing, and display bar graphs in color. It will be used on computers that do not have Internet or network connectivity.

Which type of application should you create?

○ **Windows Forms**
○ Console-based
○ Windows service
○ Web Forms

Explanation:

You should create a Window Forms application. Windows Forms applications have a graphical user interface (GUI) that can accept user input and display text, color, and images much as a Web form does, except they do not require Internet connectivity. They can run on individual computers that do not have network connectivity. Windows Forms applications can be used when there is a need for intensive processing that can best be done by the client computer.

An application that runs as a Windows service presents no user interface. Windows services run in their own Windows sessions. They can be set to start automatically when Windows starts. They can be paused and restarted. They run in the background, so they do not interfere with users who are working on the computer.

A Web Forms application has a graphical user interface, but it also needs network connectivity. Web Forms are used when an application needs to be accessible over the Internet. They are platform-independent. This means that a client browser can retrieve and display a Web page regardless of which operating system it runs under.

Console-based applications can run on computers that do not have network connectivity, but they typically do not have a GUI. Console-based applications are often invoked from a command prompt. User input and output from the application are exchanged through the command prompt.

Exam Objective:
Understanding Desktop Applications

Exam SubObjective(s):
Understand Windows Forms applications

MEASUREUP

? In a try-catch-finally block, where should you put code that must always execute regardless of whether an exception occurs?

○   Inside a catch block
○   <mark>Inside the finally block</mark>
○   Inside the try block
○   Inside all catch blocks

Explanation:

You should put the code inside the finally block for it to always execute regardless of whether an exception occurs. The try block contains code that might cause an exception. Code included within the try block executes. During execution, if a statement in the try block causes an exception, control is passed to one of the catch blocks to handle the exception. Each catch block contains code that must execute when a specific exception occurs. An exception for which a catch block is specified is referred to as being a handled exception. When no catch block exists for an exception, the exception is referred to as being unhandled. The finally block executes either after all try block statements execute successfully or after a catch block executes.

You should not put the code inside a catch block. This would only execute the code if a specific exception occurred. It would not execute the code if all statements in the try block were successful or if a different exception occurred.

You should not put the code inside all catch blocks. This would not execute the code if all statements in the try block were successful. In addition, it is not a good programming practice to include the same code more than once if an alternative exists because code is more difficult to maintain.

You should not put the code inside the try block. If the try block generated an exception, control would pass immediately to one of the catch blocks. Therefore, the code might not be executed.

Exam Objective:
Understanding Core Programming

Exam SubObjective(s):
Understand error handling

MEASUREUP

? You execute the following code.

```
int a = 6;
int b = 4;
int y = 6;
int z = 2;
bool _result;

_result = (a < (b - z) && (y > z));
```

What is the value of the variable named _result when the code has executed?

○ 2

○ false

○ true

○ Null

Explanation:

When the code has executed, the value of the variable named _result is false.

When an expression is evaluated, expressions in parentheses are evaluated before the rest of the expression. In this example, the variable b has a value of 4, and z has a value of 2, so the expression (b - z) evaluates to 2. The variable a has a value of 6, and 6 is not less than 4, so the left side of the expression, a < (b | z), evaluates to false. The variable y has a value of 7, and z has a value of 2, so the right half of the expression, y > z, evaluates to true because 7 is greater than 5. When the && operator appears in an expression, the conditions on both sides must evaluate to true for the entire statement to be true. In this case, the left half of the expression evaluates to false, making the entire expression false.

If the || operator had been used in this expression instead of &&, the condition would evaluate to true. When the || operator is used in an expression, only one of the conditions must evaluate to true in order for the entire statement to evaluate to true.

Exam Objective:
Understanding Core Programming

Exam SubObjective(s):
Understand computer decision structures

MEASUREUP

? In software development, a model that is created during the planning and specification phase is called a:

○   flowchart.
○   hosted application.
○   <mark>prototype.</mark>
○   deployment.

Explanation:

In software development, a model that is created during the planning and specification phase is called a prototype. Prototypes can be created during any stage of an application's lifecycle. Prototypes created during the planning and specification phase are usually created to demonstrate that a proposed solution is technically feasible. Prototypes created as part of the development process are often used for demonstration purposes and to assess how usable the application's interface will be. They are usually developed early in the development process before much production code is written. For example, a user interface (UI) prototype might be created to demonstrate to an application user what the application will look like and how they would interact with it. The prototype would not contain the code to actually perform the tasks, but rather just give the user a feel for the proposed user interface. This allows the end user to assess the usability of it and make suggestions for changes early in the process.

A flowchart is a diagram that is used to plan and illustrate the decision making process used by a program and the actions that the program performs based on those decisions.

A deployment is a deployed, running instance of an application. One application might be deployed on many different servers. Conversely, different versions of an application might also be deployed on the same server to provide different functionality to different groups of users.

A hosted application is not a model. Hosting is the term used to describe placing a Web site on a server that maintains the infrastructure necessary for the site's operation and makes it available to the intended audience.

Exam Objective:
Understanding General Software Development

Exam SubObjective(s):
Interpret application specifications

What is the purpose of a virtual directory in Microsoft Internet Information Services (IIS)?

- ○ It provides access to different versions of an operating system.
- ○ It serves as a container for application pools.
- ○ It acts as a logical directory to Web browsers for locating Web resources.
- ○ It represents a logical disk for storing session-related data.

Explanation:

A virtual directory acts as a logical directory to Web browsers for locating Web resources. For example, assume a Web site is hosted at www.bcdtrain.com. Then suppose there is a virtual directory of the root named Accounts. To Web browsers, Accounts appears as a directory of the Web site root. However, in actuality, Accounts may not be a physical directory at all. The Accounts virtual directory could be mapped to a physical directory or another URL.

A virtual directory does not serve as a container for application pools. The container for application pools is IIS itself.

A virtual directory does not represent a logical disk for storing session-related data. It acts as a logical directory to Web browsers.

A virtual directory does not provide access to different versions of an operating system. It acts as a logical directory to Web browsers.

Exam Objective:
Understanding Web Applications

Exam SubObjective(s):
Understand Web hosting

? You are creating a Web application for someone who sews custom-made clothing. The application will use a simple shopping cart. Interested buyers can put together specifications for garments and place garments in the shopping cart to receive an estimate of the cost.

Which classes should you create to model the requirements and minimize the number of classes?

○ ShoppingCart class, Garment class

○ ShoppingCart class, Garment class, TotalGarmentsSelected class

○ ShoppingCart class, Garment class, Quantity class

○ ShoppingCart class, Garment class, Quantity class, Size class, Color class

Explanation:

To meet the requirements in this scenario, you should create the ShoppingCart class and the Garment class.

Object-oriented design is a type of software design in which a programmatic solution to a problem is modeled after an existing, tangible system and the objects that are associated with that system. A class is a blueprint from which you can create usable instances called objects. Each object represents a business entity involved in the solution. Developers must first determine what objects are needed to solve a problem. A common way to identify the needed objects is to examine the nouns involved in the solution. Then, developers must determine what properties and attributes each object should have. These are represented by properties within a class. Finally, developers must determine what tasks the object should be able to perform and how the object will behave. Methods in a class are used to define tasks to be performed, and events in a class are used to determine how the object will behave.

In this example, you would need a ShoppingCart class to create different instances of the shopping cart for different users. You should also create a Garment class so that you can create different instances for each garment that is requested. Each garment object would have the unique attributes specified by the end user, such as color and size.

Quantity, color, size, and the total number of garments selected are not objects. Quantity, color, and size are characteristics that are would be attributes of each garment object. The total number of garments that are in the cart would be a property of the shopping cart. Because quantity, color, size, and the number of garments selected are not objects, you should not create classes for them.

Exam Objective:
Understanding General Software Development

Exam SubObjective(s):
Interpret application specifications

? When a single inheritance model is used:

○   base class members are not available in a derived class.

○   <mark>a class can inherit from only one base class.</mark>

○   a base class can contain only one member.

○   a derived class cannot override any base class members.

Explanation:

When a single inheritance model is used, a class can inherit from only one base class. All languages in the .NET Framework support single inheritance. Multiple inheritance is the ability for a class to inherit from two or more base classes. Many languages do not support multiple inheritance because it has some intrinsic problems. For example, suppose a class exposes a method and two other classes inherit from the class and override the method. Then, if the method is called from another class, there is no guarantee which overridden method gets called.

Single inheritance does not determine how many members a base class can contain. You can define as many members as needed in a base class.

Single inheritance does not determine whether base class members can be overridden in a derived class.

Single inheritance does not determine whether base class members are available in a derived class. You can use an access modifier of private to allow base class members not to be available in a derived class.

Exam Objective:
Understanding Object-Oriented Programming

Exam SubObjective(s):
Understand the fundamentals of classes

? A .NET data provider is a:

○   user account that has permission to access a database.

○   <mark>bridge between an application and a data source.</mark>

○   special code in your application that allows it to connect to a database.

○   database or file where data is stored.

Explanation:

A .NET data provider is a bridge between an application and a data source. A data provider retrieves data from a data source and returns data to the data source. A data provider enables an application to connect to a database.

A .NET data provider is not a database, code, or a user account that has permission to access a database. A database stores information in an organized, structured manner. User accounts that have permission to access a database are stored in the database application. Code makes up the body of the application.

Exam Objective:
Understanding Databases

Exam SubObjective(s):
Understand database connection methods

? When a user logs on to a Web site, you need to remember the user's full name as long as the user is logged on and until the user closes his or her browser.

Where should you store the user's full name?

○ Control state
○ Application state
○ View state
○ Session state

Explanation:

You should store the user's full name in session state. Session state is a storage location that is available for a user's browser session. It is maintained as long as the user's browser session is active.

You should not store the user's full name in control state. Control state is a storage location that controls and pages use to store data between post backs. Unlike view state, control state cannot be turned off. Data stored in control state is available only to the page that stored the data. By default, control state is stored as a hidden field on the page.

You should not store the user's full name in view state. View state is a storage location that controls and pages use to store data between post backs. It can be turned off by page developers. Data stored in view state is available only to the page that stored the data. By default, view state is stored as a hidden field on the page.

You should not store the user's full name in application state. Application state is a storage location that is available for the entire application. It is maintained as long as the application is running.

Exam Objective:
Understanding Web Applications

Exam SubObjective(s):
Understand Microsoft ASP.NET Web application development

MEASUREUP

? You are creating an application that routes technical support requests to employees. The application must route the requests in the order in which they were received.

Which data structure should you use to store the requests?

○   Array

○   Stack

○   Queue

○   Hash Table

Explanation:

You should use a queue. A queue is a first-in, first-out (FIFO) data structure. This means that the first item added to the queue will always be the first item removed. This allows you to store the requests in the order in which they are received.

You should not use a stack. A stack is a last-in, first-out (LIFO) data structure. This means that the last item added is at the top of the stack. Therefore, it will always be the first item removed.

You should not use a hash table. A hash table stores a collection of key-value pairs that are organized based on a hash code of the key. You might use a hash table to keep a collection of customer data that is organized by account numbers.

You should not use an array. An array stores a collection of data by numeric index. You can access the elements of the array randomly using the index. You cannot do this with a queue or stack. In a queue or stack, you can only work with specific items. For example, with a stack, you can only access the item stored at the top of the stack.

Exam Objective:
Understanding General Software Development

Exam SubObjective(s):
Understand algorithms and data structures

? The catch block of an error handler:

○ records an error code and exits the exception handler.

○ executes every time the code runs.

○ <mark>executes when an exception is thrown.</mark>

○ records an error code and exits the application.

Explanation:

The catch block of an error handler executes when an exception is thrown. It does not execute every time the code runs. It would only record an error, exit the exception handler, or exit the application if code was written in the exception handler to specifically perform these actions.

The try-catch-finally statement is designed for structured error handling. When an exception occurs, the code is said to throw an exception, which is then caught by a catch block of the exception handler. A catch block of the exception handler can then execute special code to deal with the exception. Multiple catch blocks can be specified to handle different exception conditions differently.

The finally block of the try-catch-finally statement runs whenever execution of the code exits any part of the try block. The finally block is executed even if there is an unhandled exception. However, if a StackOverflowException is encountered, the finally block will not execute.

Exam Objective:
Understanding Core Programming

Exam SubObjective(s):
Understand error handling

? A class named Shape contains a method named CalculateArea that is declared as protected.

Which classes can access the CalculateArea method?

○ <mark>Only the Shape class and all classes that inherit from Shape</mark>

○ Only classes that do not inherit from Shape

○ All other classes that are declared as Public

○ All other classes that are declared without an access modifier

Explanation:

If you declare a base class member as protected, only the base class itself and all classes that inherit from the base class can access the member. This means that if you declare the CalculateArea method as protected, only the Shape class and all classes that inherit from Shape can access the CalculateArea method.

Classes that do not inherit from Shape cannot access the CalculateArea method.

The accessibility level of the other classes does not matter.

Exam Objective:
Understanding Object-Oriented Programming

Exam SubObjective(s):
Understand inheritance

MEASUREUP

? A data structure that stores data on a First-In First-Out (FIFO) basis is called:

○   a stack.

○   a heap.

○   a queue.

○   an array.

Explanation:

A data structure that stores data on a FIFO basis is called a queue. In a queue, data elements are added to the end of the queue, and they can be removed from the beginning of the queue. A queue is like a waiting line at a restaurant or amusement park that ensures that people are served in the order they appear. New elements go to the end of the line, and when they reach the head of the line, they can be removed.

In a stack, elements are stored in such a way that only the most recently added element can be removed from the stack, just as you would remove the top plate from a stack of dishes. Requests are said to be handled on a Last-In-First-Out (LIFO) basis, and are said to be pushed onto the stack and popped off of the stack.

In a heap, memory blocks can be allocated and freed as they are needed because the amount of memory necessary is determined at run time. They are not stored in sequential order. Programs usually use the heap for many different purposes.

When a program calls a function, for example completeOrder(), memory will be set aside on the heap for the variables in that function. If other functions are called by completeOrder (), more memory will be allocated on the heap.

An array is a data structure that holds multiple values. Arrays are useful for manipulating, searching, and sorting data. Unlike queues and stacks, arrays do not require data to be processed in a predetermined order. You can use an index to randomly access specific elements in an array.

Exam Objective:
Understanding General Software Development

Exam SubObjective(s):
Understand algorithms and data structures

? Which of the following is a characteristic of a Microsoft Windows service?

○   It provides a rich graphical user interface that accepts mouse and keyboard input.

○   It can be described by using Extensible Application Markup Language (XAML).

○   <mark>It can start automatically and run in the background until the operating system is shut down.</mark>

○   It can be hosted in Microsoft Internet Information Services (IIS).

Explanation:

A Windows service can start automatically by the Service Control Manager (SCM). It can run in the background with no user interaction until the operating system is shut down. You would use a Windows service, for example, if you needed an application to monitor a directory for incoming files and then import their contents into a database. The service would require no user interaction, and it could run from the moment the operating system starts until it shuts down.

Windows services do not provide a graphical user interface. They run in the background. Application types that do provide graphical user interfaces include Windows Forms and Windows Presentation Foundation (WPF).

Windows services are not hosted in IIS. They are managed by the SCM. IIS manages Web applications and Web services, such as ASP.NET and Windows Communication Foundation (WCF) applications.

Windows services must be implemented in code. They cannot be described by using XAML. WPF uses XAML to describe user interfaces.

Exam Objective:
Understanding Desktop Applications

Exam SubObjective(s):
Understand Windows Services

? Which of the following is a characteristic of a Web service?

○   It can be managed in the Service Control Manager (SCM).
○   It can be started and stopped by end users.
○   <mark>It exposes functionality to users and applications over the Internet.</mark>
○   It provides a rich graphical user interface that can be shared by all types of client applications.

Explanation:

A Web service exposes functionality to users and applications over the Internet. It supports standard Web protocols such as Hypertext Transfer Protocol (HTTP) and Simple Object Access Protocol (SOAP). HTTP is a communication protocol that describes how packets are sent over the Internet. SOAP is a communication protocol that describes how Web service messages are exchanged.

A Web service cannot be managed in the SCM. The SCM is used to manage Windows services. Windows services are applications that run in the background with no user interaction. A Web service is managed by a Web hosting application such as Microsoft Internet Information Services (IIS).

A Web service cannot be started or stopped by end users. Only the Web hosting application, such as IIS, can start or stop a Web service.

A Web service does not provide a rich graphical user interface that can be shared by client applications. Web services typically exchange XML data. A rich graphical user interface cannot be shared by all types of client applications with XML. Windows Presentation Foundation (WPF) is one technology that does allow rich graphical user interfaces to be presented in XML.

Exam Objective:
Understanding Web Applications

Exam SubObjective(s):
Understand Web services

? When the code in the exhibit has been executed, what will the value of the variable salutation be?

```
bool parent = false;
bool mother = false;
bool brother = false;
string salutation = "Hello";

if (parent == true){
    if (mother == true){
        salutation = "Hi mom!";
    }
    else {
        salutation = "Hi dad!";
    }
}
else {
    if (brother == true){
        salutation = "Hey bro!";
    }
    else {
        salutation = "Hey sis!";
    }
}
```

○ "Hi dad!"
○ "Hey bro!"
○ "Hello!"
○ "Hey sis!"

Explanation:

When the code in the exhibit has been executed, the value of the variable salutation will be "Hey sis!"

The value of the variable salutation will not be "Hello!", "Hi dad!", or "Hey bro!". The if-else decision structure tests for several conditions and executes a set of statements based on whether the condition is true. If the condition evaluates to true, the statements specified in the section following the condition execute. Otherwise, the statements specified after "else" execute.

In the first section of code, the bool variables parent, mother, and brother are all set to false. The string variable named salutation is set to "Hello!"

The first if-else statement evaluates whether the variable parent is true or false. The condition (parent = true) is not met, so the else code is executed next. The first nested if-else statement never executes because the condition parent = true has not been met.

The second nested if-else statement evaluates whether the variable brother is true or false. The condition (brother = true) is not met, so the else code executes. The value of salutation is set to "Hey sis!" in the second nested if-else statement.

Exam Objective:
Understanding Core Programming

Exam SubObjective(s):
Understand computer decision structures

? Internet Information Services (IIS) maintains information on:

○   passwords for password-protected Web sites.

○   the location of a Web site's database.

○   network accounts that are permitted to access a database.

○   <mark>the location of Web site's files.</mark>

Explanation:

IIS maintains information on the location of Web site files. IIS plays the role of a Web server. It responds to user requests for Web pages, and it also logs activity. IIS also keeps track of Web site home directories, virtual directories, and security information regarding who is permitted access to the files. It keeps track of other miscellaneous information about Web sites, including IP addresses, configuration settings, the versions of .NET that sites run under, and whether sites have been configured to run on Secure Socket Layer (SSL) or as part of an application pool.

IIS does not maintain information on the location of a Web site's database or on network accounts that are permitted to access a database. It does not interact with a Web application's databases or database servers.

IIS does not keep track of passwords for password-protected sites. User credentials for password-protected sites are usually stored in a secure database.

Exam Objective:
Understanding Web Applications

Exam SubObjective(s):
Understand Web hosting

? Your company uses the waterfall software development life cycle.

In which phase are software bugs discovered and fixed?

○   Deployment

○   Design

○   <mark>Testing</mark>

○   Requirements

Explanation:

Software bugs are discovered and fixed in the Testing phase. In the waterfall life cycle, phases occur in the following order: planning, requirements, design, coding, testing, and deployment. During the requirements phase, you gather requirements from the customer and analyze them to translate the business requirements into functional requirements that the software being developed must meet. For example, you might determine whether the software must be developed as a Web application or a desktop application. During the design phase, the design and architecture of the application is created. During the coding phase, code is written. During the testing phase, software bugs are discovered and fixed. During the deployment phase, the application is deployed to the customer.

Software bugs are not discovered and fixed in the Requirements, Design, or Deployment phases. These phases involve other tasks.

Exam Objective:
Understanding General Software Development

Exam SubObjective(s):
Understand application life cycle management

? In a Windows Forms application, which event is raised before a Windows Form is displayed for the first time?

○ Form.Shown

○ Form.FormClosed

○ Form.Load

○ Form.Activated

Explanation:

In a Windows Forms application, the Load event is raised when a user requests a form, before it is displayed for the first time. In the Load event handler, you might include code to perform various tasks, such as dynamically assigning values to variables, setting text for controls, or allocating resources needed by the form.

The Form.Shown event is not raised before a Windows Form is displayed for the first time. The Form.Shown event is only raised after the first time a form is displayed. Other activities, such as minimizing, maximizing, or restoring the form will not raise this event.

The Form.Activated event is not raised before a Windows Form is displayed for the first time. The Form.Activated event is raised each time a user activates the form.

The Form.FormClosed event is not raised before a Windows Form is displayed for the first time. The Form.FormClosed event is raised when the form is closed by the user. It is also raised when the Close method is called for the form or the Exit method of the Application class is called.

Exam Objective:
Understanding Desktop Applications

Exam SubObjective(s):
Understand Windows Forms applications

? Which communication protocol is used to describe messages in a Web service?

○ Internet Control Message Protocol (ICMP)

○ Simple Mail Transfer Protocol (SMTP)

○ Simple Object Access Protocol (SOAP)

○ Lightweight Directory Access Protocol (LDAP)

Explanation:

SOAP is a communication protocol that describes messages that are exchanged in a Web service. SOAP is based on XML, and it consists of the following core XML elements: Envelope, Header, Body, and Fault. The Envelope element identifies the message as a SOAP message. The Header element is optional, and it is used to specify information such as security credentials. The Body element specifies the data that is being sent. The Fault element specifies any errors that occurred.

SMTP is not the protocol that describes messages in a Web service. It is a protocol for sending and receiving e-mail messages.

ICMP is not the protocol that describes messages in a Web service. It is a protocol for sending and receiving e-mail messages.

LDAP is not the protocol that describes messages in a Web service. It is a protocol for searching and manipulating Internet directories.

Exam Objective:
Understanding Web Applications

Exam SubObjective(s):
Understand Web services

MEASUREUP

? You want to return values from all fields and all rows in a table named Suggestions.

Which Structured Query Language (SQL) query should you use?

○   SELECT !
    FROM Suggestions

○   SELECT ?
    FROM Suggestions

○   SELECT *
    FROM Suggestions

○   SELECT *
    FROM Suggestions
    WHERE SuggestionID < 10000000000

Explanation:

You should use the following SQL query:

SELECT *
FROM Suggestions

When an asterisk (*) is included in a SELECT clause of a SQL statement, it represents all columns in the table. In addition, this statement does not include a WHERE clause to filter the returned rows. Therefore, all columns and all rows in the Suggestions table would be returned.

You should not use the SQL query that includes a WHERE clause. It will only return records with a SuggestionID value less than 10000000000. A WHERE clause is used to filter the returned results based on a condition.

You should not use the SQL query that includes an exclamation point (!) in the SELECT clause. This query will generate an error because it has invalid syntax. The exclamation point is not used in the SELECT clause of SQL queries.

You should not use the SQL query that includes a question mark (?) in the SELECT clause. This query will generate an error because it has invalid syntax. The question mark is not used in the SELECT clause of SQL queries.

Exam Objective:
Understanding Databases

Exam SubObjective(s):
Understand database query methods

MEASUREUP

? You need to execute a set of statements and retain control of execution if one of three exceptions occurs.

Which decision structure should you use?

○   <mark>try-catch-finally</mark>
○   switch
○   if-else
○   if

Explanation:

You should use a try-catch-finally decision structure. It allows you to execute a set of statements in a try block. If one of the statements in the try block causes an exception, control moves to a catch block that handles the exception. Each catch block can handle a different exception to perform different logic when different exceptions occur. After a catch block executes or all statements in the try block execute successfully, control moves to the finally block. The finally block always executes regardless of whether an exception occurred. Lastly, if the exception was not caught in a catch block, the exception moves higher up the call stack.

You should not use an if decision structure. This decision structure tests for a condition and executes a set of statements if that condition evaluates to true. It does not allow you to retain control of execution if an exception occurs.

You should not use an if-else decision structure. This decision structure tests for several conditions and executes a set of statements based on whether the condition is true. If the condition evaluates to true, the statements specified in the if block execute. Otherwise, the statements specified in the else block execute. It does not allow you to retain control of execution if an exception occurs.

You should not use a switch decision structure. This decision structure evaluates an expression and executes a set of statements based on the result of the expression. It does not allow you to retain control of execution if an exception occurs.

Exam Objective:
Understanding Core Programming

Exam SubObjective(s):
Understand computer decision structures

MEASUREUP

? The primary purpose of Internet Information Services (IIS) is to:

- ○   test ASP.NET Web applications.
- ○   host ASP.NET Web applications.
- ○   develop ASP.NET Web applications.
- ○   publish ASP.NET Web applications.

Explanation:

The primary purpose of IIS is to host ASP.NET Web applications. Hosting is the term used to describe placing a Web site on a server that maintains the infrastructure necessary for the site's operation and makes it available to the intended audience. IIS plays the role of a Web server. IIS responds to user requests for Web pages, and it also logs activity. IIS keeps track of Web site home directories, virtual directories, files, and security information regarding who is permitted access to the files. It keeps track of other miscellaneous information about Web sites, including IP addresses, configuration settings, the versions of .NET that sites run under, and whether sites have been configured to run on Secure Socket Layer (SSL) or as part of an application pool.

The primary purpose of IIS is not to develop, test, or publish ASP.NET Web applications. An ASP.NET Web application can be developed and tested on a remote computer or on a development server. When it is ready to be deployed, then it can be published to the server that will be hosting the application. Publishing is the process of uploading a Web site from the computer on which it was developed onto the hosting server.

Exam Objective:
Understanding Web Applications

Exam SubObjective(s):
Understand Web hosting

MEASUREUP

? What is a benefit of stored procedures in a database?

- ○   They allow client applications to manage individual copies of SQL statements.
- ○   They can be ported between different database management systems (DBMS) without modification.
- ○   They reduce network traffic and execution time by compiling and storing SQL statements in the database.
- ○   They can execute in the process of the client applications that call them.

Explanation:

A stored procedure is a compiled set of SQL statements that is stored in the database. Because stored procedures are compiled, they allow faster execution. They also reduce network traffic because fewer commands need to travel over the network.

Client applications cannot use stored procedures to manage individual copies of SQL statements. Stored procedures are stored in the database. Therefore, the only copies that exist are on the database server.

Stored procedures cannot be easily ported to different DBMS without modification. For example, Microsoft SQL Server allows stored procedure implementation through Transact-SQL or common language runtime (CLR) assemblies, whereas other systems might use PL/SQL (Procedural Language/Structured Query Language) or Java.

Stored procedures cannot execute in the process of the client applications that call them. They execute in the process created by the database server.

Exam Objective:
Understanding Databases

Exam SubObjective(s):
Understand database query methods

MEASUREUP

? What is the purpose of a Data Source Name (DSN)?

○   It provides data to data-bound controls.

○   It translates names to IP addresses.

○   **It stores and centralizes connection information for a data source.**

○   It serves as a source control repository for database definitions.

Explanation:

A DSN stores and centralizes connection information for a data source. You can view DSNs by opening the Data Sources (ODBC) Control Panel applet. A DSN allows you to configure an application to reference the DSN without having to know the connection string to the actual data source. A connection string contains information needed to connect to a database, such as the database server name or IP address, the name of the database, and other information to control how the connection is established.

A DSN does not translate names to IP addresses. Domain Name System (DNS) does this. A DNS database contains a dictionary of network names and IP addresses. Whenever you attempt to locate a network resource by name, a query is sent to the DNS database to determine the resource's IP address.

A DSN does not provide data to data-bound controls. Data-bound user interface elements in an application can be bound to data stored in an underlying database. Data-bound controls are used to allow applications to display and or modify data in a database.

A DSN does not serve as a source control repository for database definitions. Microsoft Visual SourceSafe and Microsoft Team Foundation Server are source control repositories. Source control systems allow you to store and track different versions of items, such as source code.

Exam Objective:
Understanding Databases

Exam SubObjective(s):
Understand database connection methods

You have an Employee class. You need to expose a class member to hold the value of each employee's department.

What should you create?

○   A private method
○   A public event
○   A default constructor
○   A public property

Explanation:

You should create a public property. A property contains a piece of information about a specific object. Properties can be retrieved or set and include custom logic that controls how this occurs. For example, an Employee object might have a Department property to identify the department in which the employee works and perform validation when the property value is set that ensures that the department is a valid department. By making the property public, you allow other classes to access the property.

You should not create a private method. Methods are class members that contain code that can be executed on an object, not a value that can be set for an object. Private methods cannot be accessed by other classes.

You should not create a default constructor. A constructor includes code that executes when a new object instance is created. A default constructor is the constructor that does not contain any parameters. However, you can create overloaded constructors that have different parameters.

You should not create a public event. Events provide notification that something has happened or is happening.

Exam Objective:
Understanding Object-Oriented Programming

Exam SubObjective(s):
Understand encapsulation

? You want the members of a class to be accessible only to code that is within the same class.

Which access modifier should you use?

○   internal
○   public
○   protected
○   private

Explanation:

You should use the private access modifier when you want the members of a class to be accessible only to code that is within the same class. Access modifiers are keywords that are used to allow or deny access to the members of a class.

You should not use the public access modifier when you want the members of a class to be accessible only to code that is within the same class. The public access modifier allows members of a class to be accessible from anywhere. The members could be accessed by code in the same assembly and from all other assemblies that have a reference to it. Public is the least restrictive access level.

You should not use the protected access modifier when you want the members of a class to be accessible only to code that is within the same class. The protected access modifier allows members of a class to be accessed by code in the same assembly, but it also allows access to code in any class that is derived from the base class.

You should not use the internal access modifier when you want the members of a class to be accessible only to code that is within the same class. The internal access modifier allows access to members of a class from any code in the same assembly, including code in other classes in that assembly.

Exam Objective:
Understanding Object-Oriented Programming

Exam SubObjective(s):
Understand encapsulation

? What type of application presents no user interface?

○ Windows Forms
○ Web Forms
○ **Windows service**
○ Console-based

Explanation:

An application that runs as a Windows service presents no user interface. Windows services run in their own Windows sessions. They can be set to start automatically when Windows starts. They can be paused and restarted. They run in the background, so they do not interfere with users who are working on the computer.

A Windows Forms application has a user interface. Windows Forms applications can be used when there is a need for intensive processing that can best be done by the client computer.

A Web Forms application has a user interface. Web Forms are used when an application needs to be accessible over the Internet, and they are platform-independent.

Console-based applications have a user interface, although they typically do not have a graphical user interface (GUI). Console-based applications are often invoked from a command prompt. User input and output from the application are exchanged through the command prompt.

Exam Objective:
Understanding Desktop Applications

Exam SubObjective(s):
Understand Windows Services

? What term is used to describe a class that serves as a starting point for new classes?

○ **Base class**
○ Derived class
○ public class
○ Inherited class

Explanation:

A class that serves as a starting point or a base for new classes is called a base class. The base class can implement members that provide basic functionality. Other classes can inherit from the base class and gain access to the basic functionality. These classes are referred to as derived classes, and they can also expose other functionality if necessary.

A class that is derived from a base class is called a derived class. Derived classes inherit all the fields, properties, methods, and events of the base class. This process is called inheritance. Although a derived class may inherit the characteristics of the base class, it is referred to as a derived class, not an inherited class.

Access modifiers, such as public, private and protected, are keywords that are used to allow or deny access to the members of a class. A public class is accessible to all code in the same assembly and any other assembly that references it.

Exam Objective:
Understanding Object-Oriented Programming

Exam SubObjective(s):
Understand inheritance

MEASUREUP

? A class named Pet is derived from a class named Animal. The Dog class is derived from the Pet class and includes attributes belonging to the Pet class and the Animal class.

What object-oriented programming term best describes this concept?

○ <mark>Inheritance</mark>
○ Polymorphism
○ Data Modeling
○ Encapsulation

Explanation:

The object-oriented programming term that best describes the concept used in the scenario is inheritance. A class that serves as a starting point or a base for new classes is called a base class. A class that is derived from a base class is called a derived class. Derived classes inherit all the fields, properties, methods, and events of the base class. This process is called inheritance.

The term encapsulation does not best describe the concept used in the scenario. Encapsulation is an object-oriented feature that allows classes to hide their implementation. For example, a method could be defined in a class to perform a specific task. By defining a method, you hide the logic to perform the task from other classes that only call the method.

The term polymorphism does not describe the concept used in the scenario. Polymorphism is a feature that allows multiple classes to implement the same members and have each type of object use its specific implementation. For example, if a base class exposed a Start method, two derived classes might both override the method and each provide a different implementation. The method that is executed would depend on the type of object that invoked the method.

The term data modeling does not describe the concept used in the scenario. Data modeling refers to the analysis of data objects and the identification of relationships among data objects.

Exam Objective:
Understanding Object-Oriented Programming

Exam SubObjective(s):
Understand inheritance

? A class contains a public method named ComputeSalesTax that computes the sales tax based on a specified state abbreviation and a dollar amount. This eliminates the need for client code to know the sales tax rates for each state.

Which object-oriented feature is this called?

○   Abstraction
○   Polymorphism
○   Inheritance
○   Encapsulation

Explanation:

Encapsulation is a feature that allows classes to hide implementation details. The ComputeSalesTax method hides the logic used to calculate sales tax for a state. If the logic or the tax rate ever changes, only the class that defines the ComputeSalesTax method needs to change. Other classes that call the ComputeSalesTax method do not need to be modified.

Inheritance allows one class to inherit functionality from a base class. Basic functionality can be inherited from the base class, but then additional functionality can be created in a derived class by adding new methods or the basic functionality can be modified by overriding methods defined in the base class. For example, suppose the class in this scenario is named TaxCalculator. A class named GrocerySalesTaxCalculator could inherit from TaxCalculator. In the GrocerySalesTaxCalculator class, you could override the functionality provided by the ComputeSalesTax method available from the base class to calculate a different sales tax for grocery items.

Polymorphism is a feature that allows multiple classes to implement the same members and have each type of object use its specific implementation. For example, suppose the class in this scenario is named TaxCalculator. A class named GrocerySalesTaxCalculator could inherit from TaxCalculator to override the functionality provided by the ComputeSalesTax method to calculate a different sales tax for grocery items. If you declare a variable of type TaxCalculator and assign an instance of GrocerySalesTaxCalculator to the variable, the ComputeSalesTax method of GrocerySalesTaxCalculator would get called.

Abstraction is a feature that allows you to model real-world objects in code. For example, a class named TaxCalculator could model a calculator that computes sales tax. As another example, the Employee class is an abstraction of an employee. You typically identify the business objects by examining the nouns in a business requirement. So, consider these requirements: A student must be able the register for one or more courses. Each teacher must be assigned to one or more courses. The nouns are student, course, and teacher. Therefore, these are the candidate business objects.

Exam Objective:
Understanding Object-Oriented Programming

Exam SubObjective(s):
Understand encapsulation

MEASUREUP

? How should you configure your application's project to communicate with an XML Web service?

○   Copy the .asmx file to the directory of your project.

○   Add the assembly that contains the Web service as a reference to your project.

○   Add the .wsdl file as a Web reference to your project.

○   Add the project file that contains the Web service as a reference to your project.

Explanation:

You should add the .wsdl file as a Web reference to your project. The .wsdl file of a Web service represents the Web Service Description Language (WSDL) document. This document describes the Web service. When you build your project, Microsoft Visual Studio uses the .wsdl file to generate a proxy that can be used to communicate with the Web service. A proxy is simply code that acts like the real Web service. After you create the proxy, you can write code to call the methods on the proxy, which in turn forwards the calls to the real Web service.

You should not copy the .asmx file to the directory of your project. The .asmx file represents the endpoint of a Web service. It should be deployed to the server that hosts the Web service.

You should not add the assembly that contains the Web service as a reference to your project. The assembly should be deployed to the server that hosts the Web service.

You should not add the project file that contains the Web service as a reference to your project. The Web service's project file should be used only to develop the Web service. This project contains code that defines the Web methods exposed by the Web service.

Exam Objective:
Understanding Web Applications

Exam SubObjective(s):
Understand Web services

MEASUREUP

You need to develop an application that provides a rich graphical user interface and that runs locally on users' desktops.

Which type of application should you create?

○   ASP.NET

○   Windows Forms

○   Console

○   Web service

Explanation:

You should create a Windows Forms application. This type of application provides a rich graphical user interface that supports keyboard and mouse input. You can install Windows Forms applications on users' desktops.

You should not create an ASP.NET application. ASP.NET applications run on Web servers. Users access ASP.NET applications from their Web browsers.

You should not create a console application. Console applications do not provide a rich graphical user interface. They use a standard input stream, standard output stream, and standard error stream. They typically run from the command line.

You should not create a Web service. A Web service exposes functionality to users and applications over the Internet. It supports standard Web protocols such as Hypertext Transfer Protocol (HTTP) and Simple Object Access Protocol (SOAP). HTTP is a communication protocol that describes how packets are sent over the Internet. SOAP is a communication protocol that describes how Web service messages are exchanged. A Web service does not provide a rich graphical user interface.

Exam Objective:
Understanding Desktop Applications

Exam SubObjective(s):
Understand Windows Forms applications

? You need to declare a Button control on an ASP.NET page and have it execute on the Web server before it is sent to the browser.

How should you declare the Button control?

○   <asp:Button runat="WebServer"/>

○   <asp:Button runat="server"/>

○   <asp:Button compile="server"/>

○   <asp:Button compile="WebServer"/>

Explanation:

You should declare the Button control as follows: <asp:Button runat="server"/> The runat attribute marks a control as one that must be processed on the server. The control then participates in the full life cycle before it is rendered and sent back to the browser. The only valid value for the runat attribute is server.

You should not declare the Button control as follows: <asp:Button runat="WebServer"/> The only valid value for the runat attribute is server.

You should not declare the Button control as follows: <asp:Button compile="server"/> The ASP.NET infrastructure does not evaluate an attribute named compile. You must use the runat attribute to specify that a control should be processed on the server.

You should not declare the Button control as follows: <asp:Button compile="WebServer"/> The ASP.NET infrastructure does not evaluate an attribute named compile. You must use the runat attribute to specify that a control should be processed on the server.

Exam Objective:
Understanding Web Applications

Exam SubObjective(s):
Understand Microsoft ASP.NET Web application development

MEASUREUP

? Which tool should you use to install a Windows service application in the Service Control Manager (SCM)?

○   Global Assembly Cache Tool (Gacutil.exe)

○   Assembly Registration Tool (Regasm.exe)

○   .NET Services Installation Tool (Regsvcs.exe)

○   Installer Tool (InstallUtil.exe)

Explanation:

You should use the Installer Tool (InstallUtil.exe). This tool allows you to execute installers that are defined in an assembly. With Windows services, you must add installers to your project to install the services. When you run the InstallUtil.exe tool, it locates all the installers in the assembly and executes them. It is the installer's responsibility to install and configure the service.

You should not use the Assembly Registration Tool (Regasm.exe). This tool registers an assembly with the Windows Registry for use by COM clients.

You should not use the Global Assembly Cache (GAC) Tool (Gacutil.exe). This tool installs an assembly into the GAC.

You should not use the .NET Services Installation Tool (Regsvcs.exe). This tool registers managed types with Component Services.

Exam Objective:
Understanding Desktop Applications

Exam SubObjective(s):
Understand Windows Services