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PART - B

1. C# is a programming language which is used by many developers globally. This C# language was developed by Microsoft in the year of 2000. This language has many features. Those features are -

i) It is a Object Oriented Programming Language.

ii) The programs written in C# language can be run in any computer.

iii) It is a platform independent language.

iv) It is also a open source language. Means the source code of the language is available in the internet. So anyone can change or modify the source code and can make their own programming language.

2) In one line delegate is a type safe function pointer. It holds the reference of a method or a function. Through delegate we can create objects and pass the method address. It is also type safe because the signature of the method the delegate pointing to must match the signature of the delegate.

Syntax :-

<AccessModifier> delegate <ReturnType> (Name) (Parms)

There are usually two types of delegates.

i) Single cast delegate :- The delegate holds the reference of a single method is known as single cast delegate.

ii> Multicast Delegate:- The delegate which holds the references of more than one method is known as multicast delegate. We usually use '+' operator to add methods and '-' operator to remove methods.

3> Access specifiers are used to grant permission to a class or a method inside the class. There are several types of access specifiers.

i> Internal:- The class can be accessed by any class within the current assembly.

ii> Protected:- The class can be accessed by its derieved class only.

iii> Internal Protected:- The class can be accessed outside the assembly by its derieved classes.

iii> public:- The class can be accessed from anywhere

iv> private:- The members can be accessed by the class only.

4> Strings are usually array of characters In c# strings can be defined in many ways.

i> A string can be defined by using 'string' keyword.

ii> A string can be defined using the 'String' class also.

Example:-

```
string s= "Parthib"; // using string keyword
System.String s1="Sarkar" // using String class
```

5) Implicit conversion is the conversion in which a derived class is converted into a base class. Explicit conversion is the opposite of implicit conversion. Here the base class is converted into derived class. It may cause data loss.

6) Namespace is used to group similar types of classes. In C# namespace can be:
i) predefined ii) Userdefined
For userdefined namespace we have to use the namespace keyword. To access the class inside namespace we use dot operator.

Example:-

```
namespace namespaceA {
    class Parthib {
        public void fun
            Console.WriteLine("NamespaceA");
    }
}
namespace namespaceB {
    class Parthib {
        publi void fun {
            console.Writeline("NamespaceB");
        }
    }
}
class Program {
    Static void Main() {
        namespaceB.Parthib obj1 = new namespaceB.Parthib();
        namespaceA.Parthib obj2 = new namespaceA.Parthib();
        obj1.fun();
        obj2.fun();
    }
}
```

7) An assembly is nothing but a block of complied code. It is the smallest unit for any .NET project. It contains the .NET code in MSIL (Microsoft Intermediate Language) that will be compiled to native code.

8) i) Open Visual Studio
ii) Create New Project
iii) Configure the project by giving the name and selecting .NET framework.
iv) Then we have to create the console app.

9) There are mainly two types of error.
i) Compile Time Error:- This type error occured when we make syntaxical error while writing the code. These errors are making mistake in semicolone, or brackets.
ii) Runtime Error:- Runtime error is nothing but exception. Divide by zero error is an runtime error. The Exception class available in C#. We can derive the Exception class to deal with exceptions. We also use try, catch, finally to deal with exception.

10) For the foreach loop there is no need to define the limit. Foreach loop executes for each element present in array.
In the case of for loop it runs until the given condition is false.

PART-C

1) Exception is nothing but runtime error. Exception object can be inherited from System.Exception class. The block of code which has the exception or runtime error is known throws exception. Exception can be handled by using try, catch, finally block. Try block is used for the statements which cause runtime error.
Catch block is used to execute only in the time of runtime error.
Finally block is used to execute the mandatory part or statements.
Throw block is used to create custom errors only.

2) There are several things available in collection.

ArrayList:- ArrayList is the modified version of array. In array if we declare one size in future we will not be able to increase the size of the array. But in the case of ArrayList the size is dynamic. We don't have to declare the size in the time of declaration

Stack:- Stack works in Last in First out manner. There is peek() method to get the topmost element.

Queue:- It follows the First in First out manner. There is Enqueue method to add elements and Dequeue method to delete element from the queue.

HashMap:- It is used to store the frequency of some elements. It works in key-value pair method. key is the elements whose frequency has to be counted and value is the frequency of that key.

PART-A

1. .NET CLR
2. Main()
3. .NET class libraries
4. Just in time
5. ~~Type object~~ Reference type
6. Overloading method.
7. Lamda
8. String mutable StringBuilder immutable.
9. Collections.
10. System.Text.RegularExpression.