Overview of C# Programming Language

C# is a modern, general-purpose, object-oriented programming language developed by Microsoft and approved by European Computer Manufacturers Association (ECMA) and International Standards Organization (ISO).

Programming Features of C#

Boolean Conditions	Automatic Garbage Collection	Standard Library	Assembly Versioning
Properties and Events	Delegates and Events Management	Easy-to-use Generics	Indexers
Conditional Compilation	Simple Multithreading	LINQ and Lambda Expressions	Integration with Windows

Environment

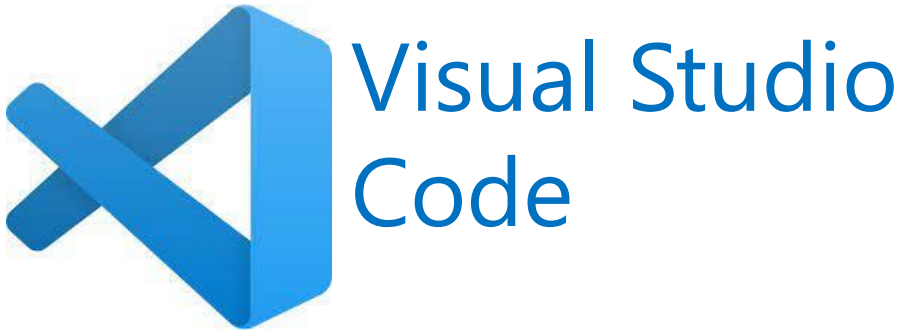
The .Net Framework

The .Net framework is a revolutionary platform that helps you to write the following types of application

The .Net framework consists of an enormous library of codes used by the client languages such as C#. Following are some of the components of the .Net framework

Common Language Runtime (CLR)	The .Net Framework Class Library	Common Language Specification	Common Type System
Metadata and Assemblies	Windows Forms	ASP.Net and ASP.Net AJAX	ADO.Net
Windows Workflow Foundation (WF)	Windows Presentation Foundation	Windows Communication Foundation (WCF)	LINQ

Integrated Development Environment (IDE) for C#



Microsoft Visual Studio is an integrated development environment from Microsoft. It is used to develop computer programs, as well as websites, web apps, web services and mobile apps

Visual Studio Code is a source-code editor made by Microsoft for Windows, Linux and macOS. Features include support for debugging, syntax highlighting, intelligent code completion, snippets, code

Creating Hello World Program

- Namespace declaration
- A class
- Class methods
- Class attributes
- A Main method
- Comments
- Statements and Expressions

```
using System;

namespace HelloWorldApplication {
   class HelloWorld {
      static void Main(string[] args) {
         /* my first program in C# */
         Console.WriteLine("Hello World");
         Console.ReadKey();
      }
   }
}
```

- ✓ C# is case sensitive.
- ✓ All statements and expression must end with a semicolon (;).
- ✓ The program execution starts at the Main method.
- ✓ Unlike Java, program file name could be different from the class name.

Member Variables

Variables are attributes or data members of a class, used for storing data. In the preceding program, the *Rectangle* class has two member variables named *length* and *width*.

Member Functions

Functions are set of statements that perform a specific task. The member functions of a class are declared within the class. Our sample class Rectangle contains three member functions: *AcceptDetails*, *GetArea* and *Display*.

Instantiating a Class

In the preceding program, the class *ExecuteRectangle* contains the *Main()* method and instantiates the *Rectangle* class.

Identifiers -a class, variable, function, or any other user-defined item.

- A name must begin with a letter that could be followed by a sequence of letters, digits (0 - 9) or underscore.
- The first character in an identifier cannot be a digit.
- It must not contain any embedded space or symbol such as? - + ! @ # % ^ & * ( ) [ ] { } . ; : " ' / and \.
- However, an underscore (_) can be used.
- It should not be a C# keyword.

C# Keywords

Reserved Keywords						
abstract	as	base	bool	break	byte	case
catch	char	checked	class	const	continue	decimal
default	delegate	do	double	else	enum	event
explicit	extern	false	finally	fixed	float	for
foreach	goto	if	implicit	in	in (generic modifier)	int
interface	internal	is	lock	long	namespace	new
null	object	operator	out	out (generic modifier)	override	params
private	protected	public	readonly	ref	return	sbyte
sealed	short	sizeof	stackalloc	static	string	struct
switch	this	throw	true	try	typeof	uint
ulong	unchecked	unsafe	ushort	using	virtual	void
volatile	while					