Introduction to C#

[C#](https://www.geeksforgeeks.org/csharp-programming-language/)is a general-purpose, modern and object-oriented programming language pronounced as **“C sharp”**. It was developed by Microsoft led by **Anders Hejlsberg** and his team within the .Net initiative and was approved by European Computer Manufacturers Association (ECMA) and International Standards Organization (ISO). C# is among the languages for [Common Language Infrastructure](https://en.wikipedia.org/wiki/Common_Language_Infrastructure) and the current version of C# is version 7.2. C# is a lot similar to Java syntactically and is easy for the users who have knowledge of C, C++ or Java.

**A bit about .Net Framework**  
.Net applications are multi-platform applications and framework can be used from languages like C++, C#, Visual Basic, COBOL etc. It is designed in a manner so that other languages can use it.  
know more about [.Net Framework](https://en.wikipedia.org/wiki/.NET_Framework)

**Why C#?**  
C# has many other reasons for being popular and in demand. Few of the reasons are mentioned below:

1. **Easy to start:** C# is a high level language so it is closer to other popular programming languages like C, C++, and Java and thus becomes easy to learn for anyone.
2. **Widely used for developing Desktop and Web Application:**  
   C# is widely used for developing web applications and Desktop applications. It is one of the most popular languages that is used in professional desktop. If anyone want to create Microsoft apps, C# is the go to language.
3. **Community:** The larger the community the better it is as new tools and softwares will be developing to make it better. C# has a large community so the developments are done to make it exist in system and not become extinct.
4. **Game Development:**  
   C# is widely used in game development and will continue to dominate. C# integrate with Microsoft and thus has a large target audience. The C# features such as Automatic Garbage Collection, interfaces, object oriented etc. makes C# a popular game developing language.

**Beginning with C# programming:**  
**Finding a Compiler:**  
There are various online IDEs such as [GeeksforGeeks ide](https://ide.geeksforgeeks.org/" \t "https://ide.geeksforgeeks.org/), [CodeChef ide](https://www.codechef.com/ide" \t "https://www.codechef.com/ide) etc. which can be used to run C# programs without installing.

**Windows:** Since the C# is developed within .Net framework initiative by Microsoft, it provide various IDEs to run C# programs: [Microsoft Visual Studio](https://www.visualstudio.com/),[Visual Studio Express](https://www.visualstudio.com/vs/express/), [Visual Web Developer](https://msdn.microsoft.com/en-us/library/ee410104(v=vs.100).aspx)

// C# program to print Hello Geeks

using System;

namespace HelloGeeksApp

{

class HelloGeeks

{

// Main function

static void Main(string[] args)

{

// Printing Hello Geeks

Console.WriteLine("Hello Geeks");

Console.ReadKey();

}

}

}

**Explanation:**  
**1. Comments:** Comments are used for explaining code and are used in similar manner as in Java or C or C++. Compilers ignore the comment entries and does not execute them. Comments can be of single line or multiple lines.

**Single line Comments:**  
**Syntax:**

// Single line comment

**Multi line comments:**  
**Syntax:**

/\* Multi line comments\*/

**2. using System:** **using** keyword is used to include the System namespace in the program.  
**namespace declaration:** A namespace is a collection of classes. The HelloGeeksApp namespace contains the class HelloGeeks.  
**3. class:** The class contains the data and methods to be used in the program. Methods define the behavior of the class. Class **HelloGeeks** has only one method Main similar to JAVA.

**4. static void Main():** **static** keyword tells us that this method is accessible without instantiating the class.

**5. void** keywords tells that this method will not return anything/ returns Nothing.

**Main()** method is the **entry-point of our application.** In our program, Main() method specifies its behavior with the statement Console.WriteLine(“Hello Geeks”); .

**6. Console.WriteLine():** WriteLine() is a method of the Console class defined in the System namespace.  
**7. Console.ReadKey():** This is for the VS.NET Users. This makes the program wait for a key press and prevents the screen from running and closing quickly.  
**Note:** C# is case sensitive and all statements and expressions must end with semicolon (;).

**Advantages of C#:**

* C# is very efficient in managing the system. All the garbage is automatically collected in C#.
* There is no problem of memory leak in C# because of its high memory backup.
* Cost of maintenance is less and is safer to run as compared to other languages.
* C# code is compiled to a intermediate language (Common (.Net) Intermediate Language) which is a standard language, independently irrespective of the target operating system and architecture.

**Disadvantages of C#:**

* C# is less flexible as it depends a lot on .Net framework.
* C# runs slowly and program needs to be compiled each time when any changes are made.

**Applications:**

* C# is widely used for developing desktop applications, web applications and web services.
* It is used in creating applications of Microsoft at a large scale.
* C# is also used in game development in [Unity](https://en.wikipedia.org/wiki/Unity_(game_engine)).

**PREREQUISITE : INTRODUCTION TO C#**

C# is a general-purpose, modern and object-oriented programming language pronounced as “C sharp”. It was developed by Microsoft led by Anders Hejlsberg and his team within the .Net initiative and was approved by European Computer Manufacturers Association (ECMA) and International Standards Organization (ISO). C# is among the languages for Common Language Infrastructure and the current version of C# is version 7.2. C# is a lot similar to Java syntactically and is easy for the users who have knowledge of C, C++ or Java.

**BASIC COMPONENTS INVOLVED IN PROCESS OF SETTING UP THE ENVIRONMENT IN C#**

**.Net Framework**

The .NET Framework is a platform for building, deploying, and running Web Services and applications. To run C# applications or any program, it requires installing a .NET Framework component on the system. .NET also supports a lot of programming languages like Visual Basic, Visual C++ etc. And C# is one of the common languages which is included in the .NET Framework. It is consist of two basic components:

**Common Language Runtime (CLR)**: The .NET Framework contains a run-time environment known as CLR which runs the codes. It provides services to make the development process easy.

**Framework Class Library(FCL):** It is a library of classes, value types, interfaces that provide access to system functionality.

In Windows Operating System, .NET Framework is installed by default. To know more about .NET Framework versions, click on .NET Framework Versions. of Microsoft Document.

1. **Visual Studio IDE**  
   Microsoft has provided an IDE(Integrated Development Environment) tool named Visual Studio to develop applications using different programming languages such as C#, VB(Visual Basic) etc. To install and use Visual Studio for the commercial purpose it must buy a license from the Microsoft. For learning (non-commercial) purpose, Microsoft provided a free Visual Studio Community Version.