

# 01 What is C sharp

C# (pronounced as "C sharp") is a modern, object-oriented programming language developed by Microsoft as part of its .NET initiative. It is widely used for building a variety of applications, ranging from desktop software, web applications, mobile apps, cloud services, to games and IoT devices. In the context of .NET Core, C# is one of the primary programming languages supported for building cross-platform applications.

## Key Features of C#:

1. **Simple and Easy to Learn:** C# is designed to be simple and easy to learn, especially for developers familiar with C, C++, or Java.
2. **Object-Oriented Programming:** C# supports the principles of object-oriented programming (OOP), including encapsulation, inheritance, and polymorphism.
3. **Type Safety:** C# is a statically-typed language, which means that type checking is performed at compile time, reducing the likelihood of runtime errors.
4. **Memory Management:** C# includes automatic memory management through garbage collection, allowing developers to focus on application logic rather than memory management.
5. **Platform Independence:** With .NET Core, C# can run on multiple platforms, including Windows, macOS, and Linux, making it a cross-platform language.
6. **Rich Standard Library:** C# comes with a rich standard library (Base Class Library or BCL) that provides built-in support for common programming tasks such as file I/O, networking, data manipulation, and more.
7. **Language Integrated Query (LINQ):** C# supports LINQ, a powerful feature that enables querying and manipulating data using a unified syntax, regardless of the data source (e.g., collections, databases).
8. **Asynchronous Programming:** C# provides language-level support for asynchronous programming through the `async` and `await` keywords, facilitating the development of responsive and scalable applications.
9. **Modern Language Constructs:** C# continues to evolve with new language features and enhancements, such as pattern matching, tuples, local functions, and more, introduced in newer versions of the language.

## Example of C# Code:

```
using System;

class Program
{
    static void Main(string[] args)
    {
        Console.WriteLine("Hello, World!");
    }
}
```

In this simple example, a C# console application is written to print "Hello, World!" to the console. The `Main` method serves as the entry point of the program, and the `Console.WriteLine` method is used to display the message.

Overall, C# is a versatile and powerful programming language that is well-suited for a wide range of development tasks, making it a popular choice among developers building .NET Core applications.