

C# - PROGRAM STRUCTURE

Before we study basic building blocks of the C# programming language, let us look at a bare minimum C# program structure so that we can take it as a reference in upcoming chapters.

Creating Hello World Program

A C# program consists of the following parts:

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

Let us look at a simple code that prints the words "Hello World":

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

When this code is compiled and executed, it produces the following result:

```
Hello World
```

Let us look at the various parts of the given program:

- The first line of the program **using System**; - the **using** keyword is used to include the **System** namespace in the program. A program generally has multiple **using** statements.
- The next line has the **namespace** declaration. A **namespace** is a collection of classes. The *HelloWorldApplication* namespace contains the class *HelloWorld*.
- The next line has a **class** declaration, the class *HelloWorld* contains the data and method definitions that your program uses. Classes generally contain multiple methods. Methods define the behavior of the class. However, the *HelloWorld* class has only one method **Main**.
- The next line defines the **Main** method, which is the **entry point** for all C# programs. The **Main** method states what the class does when executed.
- The next line /*...*/ is ignored by the compiler and it is put to add **comments** in the program.
- The Main method specifies its behavior with the statement **Console.WriteLine "HelloWorld"** ;

WriteLine is a method of the *Console* class defined in the *System* namespace. This statement

causes the message "Hello, World!" to be displayed on the screen.

- The last line **Console.ReadKey();** is for the VS.NET Users. This makes the program wait for a key press and it prevents the screen from running and closing quickly when the program is launched from Visual Studio .NET.

It is worth to note the following points:

- 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.

Compiling and Executing the Program

If you are using Visual Studio.Net for compiling and executing C# programs, take the following steps:

- Start Visual Studio.
- On the menu bar, choose File -> New -> Project.
- Choose Visual C# from templates, and then choose Windows.
- Choose Console Application.
- Specify a name for your project and click OK button.
- This creates a new project in Solution Explorer.
- Write code in the Code Editor.
- Click the Run button or press F5 key to execute the project. A Command Prompt window appears that contains the line Hello World.

You can compile a C# program by using the command-line instead of the Visual Studio IDE:

- Open a text editor and add the above-mentioned code.
- Save the file as **helloworld.cs**
- Open the command prompt tool and go to the directory where you saved the file.
- Type **csc helloworld.cs** and press enter to compile your code.
- If there are no errors in your code, the command prompt takes you to the next line and generates **helloworld.exe** executable file.
- Type **helloworld** to execute your program.

• You can see the output Hello World printed on the screen.

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