شركة تحالف الإمارات للحلول التقنية ذ.م.م.
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C# Programming Essential

Tahaluf Training Center 2021

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Day 1

1 **Overview of Visual Studio 2019**

2 Overview of C# language

3 Create Console App (.NET Framework) Project

4 WriteLine or Write

5 Declaring (Creating) Variables and Constants

6 Type Casting

Overview of Visual Studio 2019

The **Visual Studio** integrated development environment is a creative launching pad that you can use to edit, debug, and build code, and then publish an app.

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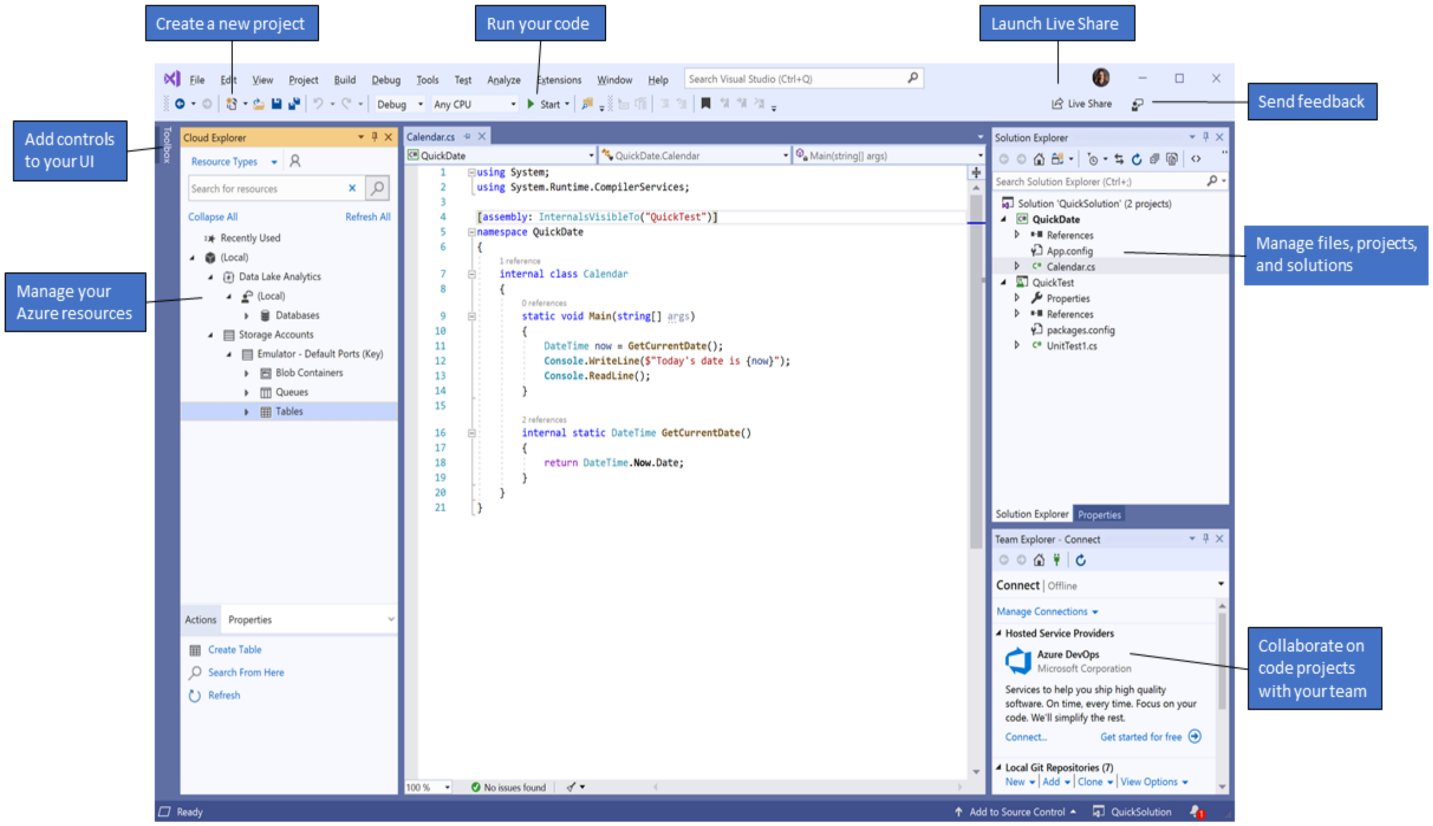
Overview of Visual Studio 2019



```
using System;
using System.Runtime.CompilerServices;

[assembly: InternalsVisibleTo("QuickTest")]
namespace QuickDate
{
    1 reference
    internal class Calendar
    {
        0 references
        static void Main(string[] args)
        {
            DateTime now = GetCurrentDate();
            Console.WriteLine($"Today's date is {now}");
            Console.ReadLine();
        }

        2 references
        internal static DateTime GetCurrentDate()
        {
            return DateTime.Now.Date;
        }
    }
}
```

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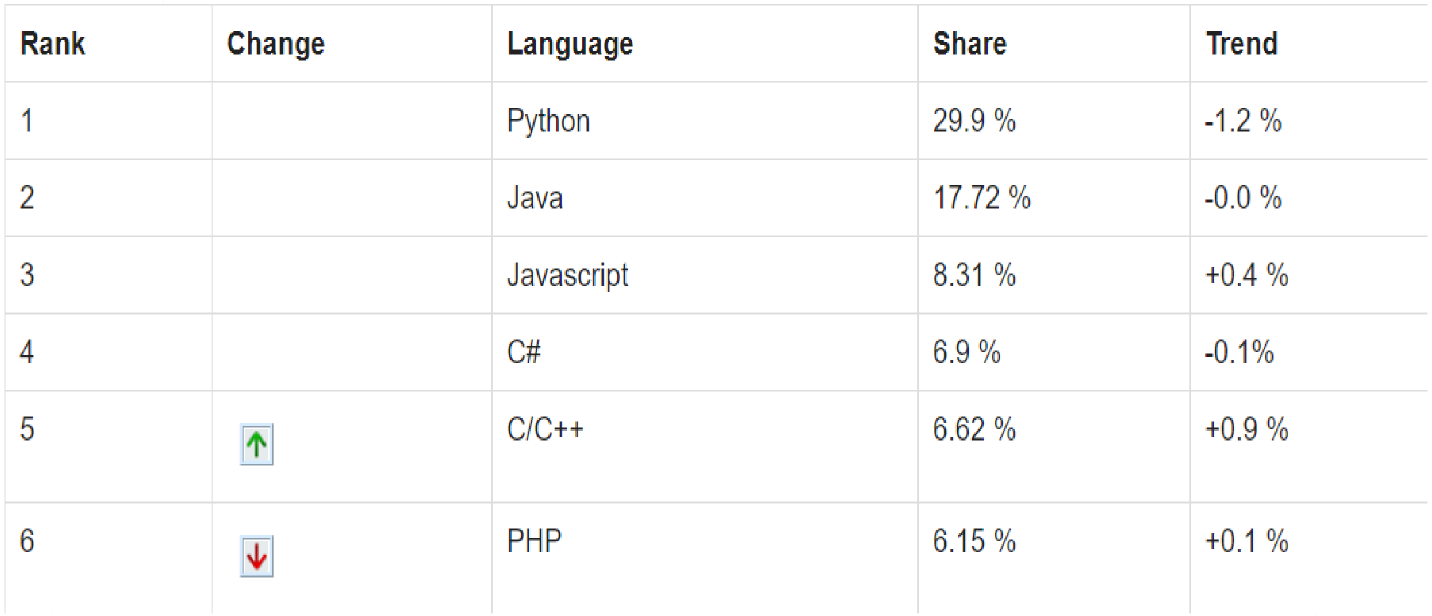
Overview of C# Language

C# is an elegant and type-safe object-oriented language that enables developers to build a variety of secure and robust applications that run on the .NET Framework.

You can use **C#** to create Windows client applications, XML Web services, distributed components, client-server applications, database applications, and much more.

Overview of C# Language

Popularity of Programming Language Worldwide, May 2021 compared to a year ago:



Rank	Change	Language	Share	Trend
1		Python	29.9 %	-1.2 %
2		Java	17.72 %	-0.0 %
3		Javascript	8.31 %	+0.4 %
4		C#	6.9 %	-0.1%
5	↑	C/C++	6.62 %	+0.9 %
6	↓	PHP	6.15 %	+0.1 %

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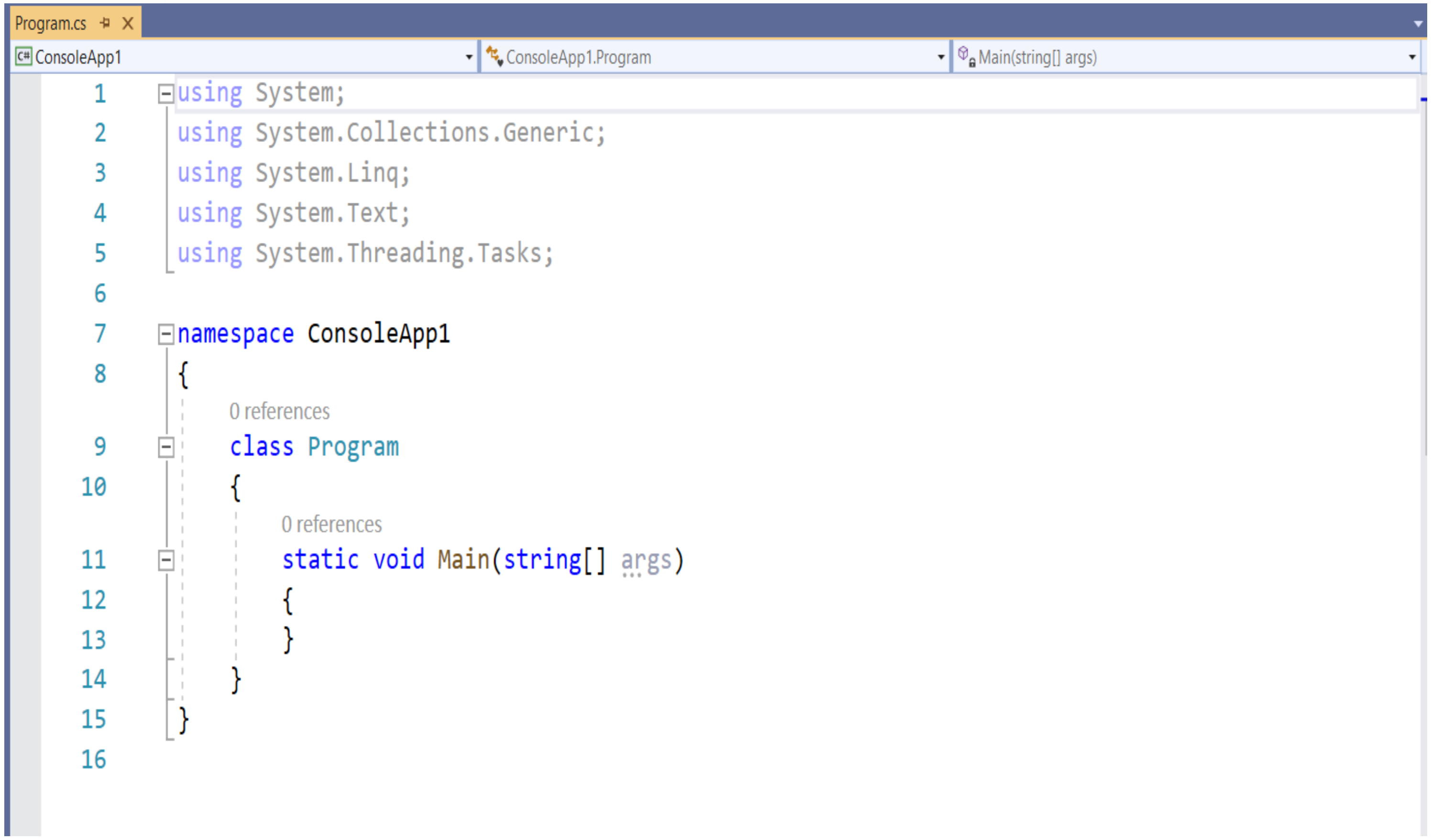
Create Console App (.NET Framework) Project

Open Visual Studio 2019 => Select Create a new project => Select Console App (.NET Framework) (C#, Windows, Console) => Enter Project Name => Click on create.

Create Console App (.NET Framework) Project



```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;
using System.Threading.Tasks;

namespace ConsoleApp1
{
    0 references
    class Program
    {
        0 references
        static void Main(string[] args)
        {
        }
    }
}

```

Create Console App (.NET Framework) Project

- ✓ Using System means that we can use classes from the System namespace.

- ✓ Namespace is a used to organize your code, and it is a container for classes and other namespaces.

- ✓ The curly braces {} marks the beginning and the end of a block of code.

Create Console App (.NET Framework) Project

- ✓ Class is a container for data and methods, which brings functionality to your program. Every line of code that runs in C# must be inside a class. In our example, we named the class Program.

- ✓ Another thing that always appear in a C# program, is the Main method. Any code inside its curly brackets {} will be executed. You don't have to understand the keywords before and after Main. You will get to know them bit by bit while reading this tutorial.

Create Console App (.NET Framework) Project

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- ✓ Console is a class of the System namespace, which has a WriteLine() method that is used to output/print text. In our example it will output "Hello World!".

- ✓ If you omit the using System line, you would have to write System.Console.WriteLine() to print/output text.

Note: Every C# statement ends with a semicolon ;.

Note: C# is case-sensitive: "MyClass" and "myclass" has different meaning.

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WriteLine or Write

The difference is that WriteLine() prints the output on a new line each time, while Write() prints on the same line.

```
Console.WriteLine("Welcome Tahaluf");
Console.WriteLine("This is C# Progamming Essential Course.");

Console.Write("Welcome Tahaluf");
Console.Write("This is C# Progamming Essential Course.");
```

WriteLine or Write (exercise)

Write a C# Sharp program to print Hello and your name in a separate line.

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Declaring (Creating) Variables and Constants

In C#, there are different types of variables (defined with different keywords), for example:

1. Int: stores integers (whole numbers), without decimals, such as 123 or -123.
2. Double: stores floating point numbers, with decimals, such as 19.99 or -19.99.
3. Char: stores single characters, such as 'a' or 'B'. Char values are surrounded by single quotes.
4. String: stores text, such as "Hello World". String values are surrounded by double quotes.
5. Bool: stores values with two states: true or false.

Declaring (Creating) Variables and Constants

To create a variable, you must specify the type and assign it a value:

```
type variableName = value;
```

Declaring (Creating) Variables and Constants

```
string Name = "Tahaluf";
Console.WriteLine(Name);


int Year = 2021;
Console.WriteLine(Year);
```

Declaring (Creating) Variables and Constants (exercise)

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Print your name and age in a separate line, then print line of * using comment and print it in the same line.

Declaring (Creating) Variables and Constants (exercise)

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Print your name, age, phone number, email, university appreciation (character), specialization and country in a separate line as follows:

Name: Ahmad
Age: 20

Declaring (Creating) Variables and Constants

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exercise: Store your first and last name in a variable then print a full name.

Declaring (Creating) Variables and Constants

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Exercise: Search on the internet about the differences between double and float data type for 5 minutes.

Declaring (Creating) Variables and Constants

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constant means unchangeable and read-only.

```
const int Num = 5;
Num = 50; => not correct.
```

How to print Pi value?

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Type Casting

In C#, there are two types of casting:

- Implicit Casting (automatically): converting a smaller type to a larger type size char -> int -> long -> float -> double.

- Explicit Casting (manually): converting a larger type to a smaller size type double -> float -> long -> int -> char.

Type Casting

Implicit Casting:

```
int IntNum = 7;
double DoubleNum = IntNum;

Console.WriteLine(IntNum);
Console.WriteLine(DoubleNum);
```

Type Casting

Implicit Casting:

```
int IntNum = 7;
double DoubleNum = IntNum;

Console.WriteLine(IntNum);
Console.WriteLine(DoubleNum);
```

Type Casting (exercise)

Print ASCII value for A character using implicit casting.

Type Casting (exercise)

Is it possible, depending on the value, that attempting to change the value's data type would throw an exception at run time?

Type Casting

Explicit casting must be done manually by placing the type in parentheses in front of the value:

```
double DoubleNum = 12.70;
int IntNum = (int)DoubleNum;

Console.WriteLine(DoubleNum);
Console.WriteLine(IntNum);
```

Type Casting

Type Conversion Methods:

- ✓ `Convert.ToBoolean`
- ✓ `Convert.ToDouble`
- ✓ `Convert.ToString`
- ✓ `Convert.ToInt32`
- ✓ `Convert.ToInt64`

Type Casting

```
int IntNum = 10;
double DoubleNum = 5.25;
bool BoolNum = true;

Console.WriteLine(Convert.ToString(IntNum));
Console.WriteLine(Convert.ToDouble(IntNum));
Console.WriteLine(Convert.ToInt32(DoubleNum));
Console.WriteLine(Convert.ToString(BoolNum));
```

Type Casting (exercise)

Write a code to print your name in separate characters, ASCII value for each character, your name using concatenation and the sum of the ASCII values.

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Any Question?