Faculty of engineering

Software engineering Dep.

3rd Stage

Computer Graphics

Year program 2022/2023

Prepared by:
Akam H. Ahmed

Lecture content

- C# Tutorial
- C# - Environment
- Creating Hello World Program
- C# - Data Types
- C# - Type Conversion

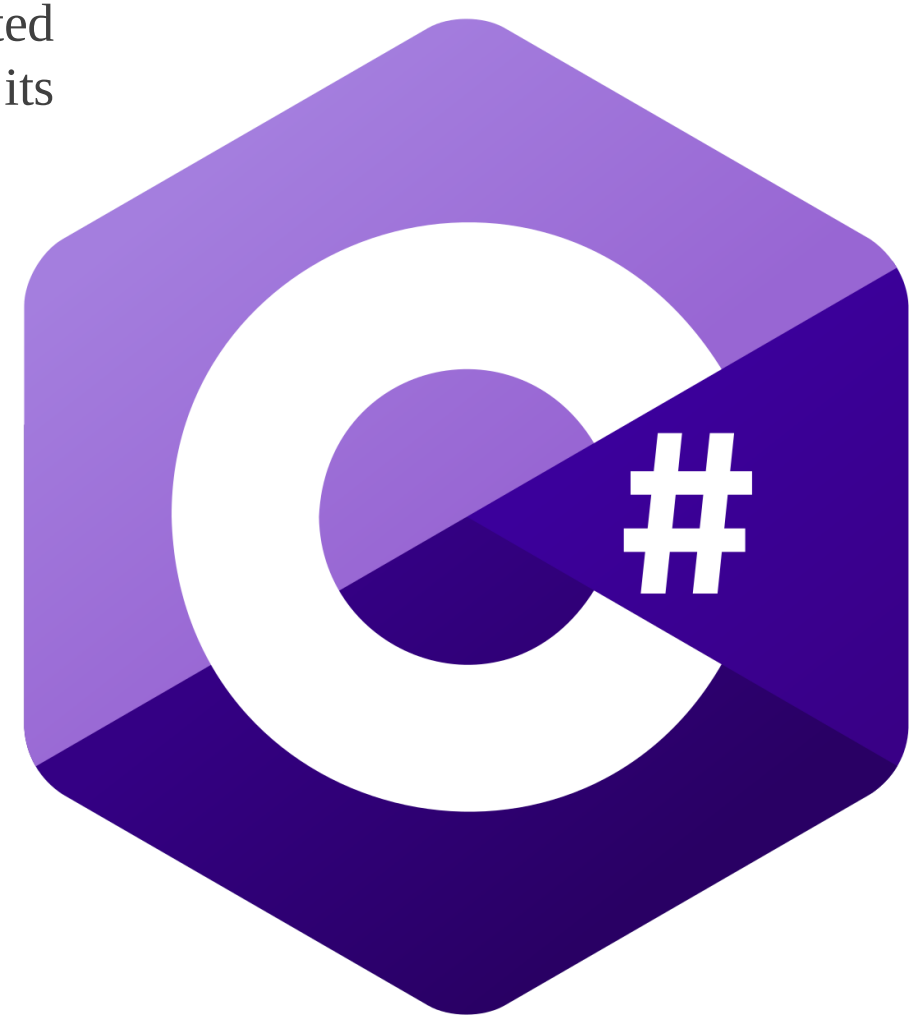
Lecture goals

At the end of this lecture you will be able to

- Understand C# basic components.
- Analyze Data Types.
- Apply Hello world program and Type Conversion.

C# programming language

- C# is a simple, modern, general-purpose, object-oriented programming language developed by Microsoft within its .NET initiative led by Anders Hejlsberg.
- It is a modern, general-purpose programming language
- It is object oriented.
- It is component oriented.
- It is easy to learn.
- It is a structured language.
- It produces efficient programs.
- It can be compiled on a variety of computer platforms.
- It is a part of .Net Framework.



C# - Environment

- ***The .Net Framework:*** The .Net framework is a revolutionary platform that helps you to write the following types of applications :

1. Windows applications
2. Web applications
3. Web services

- Integrated Development Environment (IDE) for C#:

1. Visual Studio (VS)
2. Visual C# Express (VCE)
3. Visual Web Developer

Hello World! program

- Create windows application project , then try this code:

```
// Hello World! program
namespace HelloWorld
{
    class Hello {
        static void Main(string[] args)
        {
            System.Console.WriteLine("Hello World!");
        }
    }
}
```

```
Hello World!
```

C# - Data Types

Type	Represents	Range	Default Value
bool	Boolean value	True or False	False
byte	8-bit unsigned integer	0 to 255	0
char	16-bit Unicode character	U +0000 to U +ffff	'\0'
decimal	128-bit precise decimal values with 28-29 significant digits	$(-7.9 \times 10^{28}$ to $7.9 \times 10^{28}) / 10^{0}$ to 28	0.0M
double	64-bit double-precision floating point type	$(+/-)5.0 \times 10^{-324}$ to $(+/-)1.7 \times 10^{308}$	0.0D
float	32-bit single-precision floating point type	-3.4×10^{38} to $+ 3.4 \times 10^{38}$	0.0F
int	32-bit signed integer type	-2,147,483,648 to 2,147,483,647	0

C# - Type Conversion

No.	Methods & Description
1	**ToBoolean** Converts a type to a Boolean value, where possible.
2	**ToByte** Converts a type to a byte.
3	**ToChar** Converts a type to a single Unicode character, where possible.
4	**ToDateTime** Converts a type (integer or string type) to date-time structures.
5	**ToDecimal** Converts a floating point or integer type to a decimal type.
6	**ToDouble** Converts a type to a double type.
7	**ToInt16** Converts a type to a 16-bit integer.
8	**ToInt32** Converts a type to a 32-bit integer.

C# - Type Conversion

9	**ToInt64** Converts a type to a 64-bit integer.
10	**ToSbyte** Converts a type to a signed byte type.
11	**ToSingle** Converts a type to a small floating point number.
12	**ToString** Converts a type to a string.
13	**ToType** Converts a type to a specified type.
14	**ToUInt16** Converts a type to an unsigned int type.
15	**ToUInt32** Converts a type to an unsigned long type.
16	**ToUInt64** Converts a type to an unsigned big integer.

C# - Type Conversion

```
using System;

namespace TypeConversionApplication {
   class StringConversion {
      static void Main(string[] args) {
         int i = 75;
         float f = 53.005f;
         double d = 2345.7652;
         bool b = true;

         Console.WriteLine(i.ToString());
         Console.WriteLine(f.ToString());
         Console.WriteLine(d.ToString());
         Console.WriteLine(b.ToString());
         Console.ReadKey();

      }
   }
}
```

References.

- Hughes, John F., van Dam, Andries, McGuire, Morgan, Sklar, David F., Foley, James D., Feiner, Steven and Akeley, Kurt. Computer Graphics: Principles and Practice. 3 Upper Saddle River, NJ: Addison-Wesley, 2013.
- Gambetta, G. (2021). Computer Graphics From Scratch: A programmer's introduction to 3D rendering.
- “Computer Graphics.” Tutorialspoint. Accessed October 20, 2022. https://www.tutorialspoint.com/computer_graphics/index.asp.

End

Thank you