

# VISUAL PROGRAMMING

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## Introduction

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# Introduction

“The computer is incredibly fast, accurate, and stupid. Human is unbelievably slow, inaccurate, and brilliant. The combination of the two is a challenge and opportunity beyond imagination.”

Stuart G. Welsh

- Programming languages are artificial languages used to allow the combination of the two.
- There are many different programming languages, used to communicate with computers having different flavors and different paradigms

# Introduction to programming languages

- Used to develop system and application software
  - Set of instructions executed in proper order to accomplish a task
- Programming language is converted into machine language for execution with help of translators (i.e. compiler or interpreter)
- Categories
  - Low level
  - High level
- Types
  - Unstructured programming
  - Structured programming
  - Object Oriented programming
  - Visual programming

# Terminologies

- Compiler e.g. Visual C#, Turbo C/C++, g++ etc.
- IDE (Interactive Development Environment) e.g. Visual Studio.NET etc.
- Token
- Syntax
- Errors
  - Syntax
  - Logical
- Instructions
  - Declaration and/or Assignment
  - I/O
  - Arithmetic & logic
  - Control/conditional

# Course Outline

## Introduction

- Introduction
- WPF API
- WPF Layouts
- XAML
- Graphical objects and their properties
  - Button
  - Label
  - Text Box
  - Drop down menu
  - Radio button
  - etc.
- Controls and inputs
- Connecting desktop application with Database
- Graphics and Animation

## Books

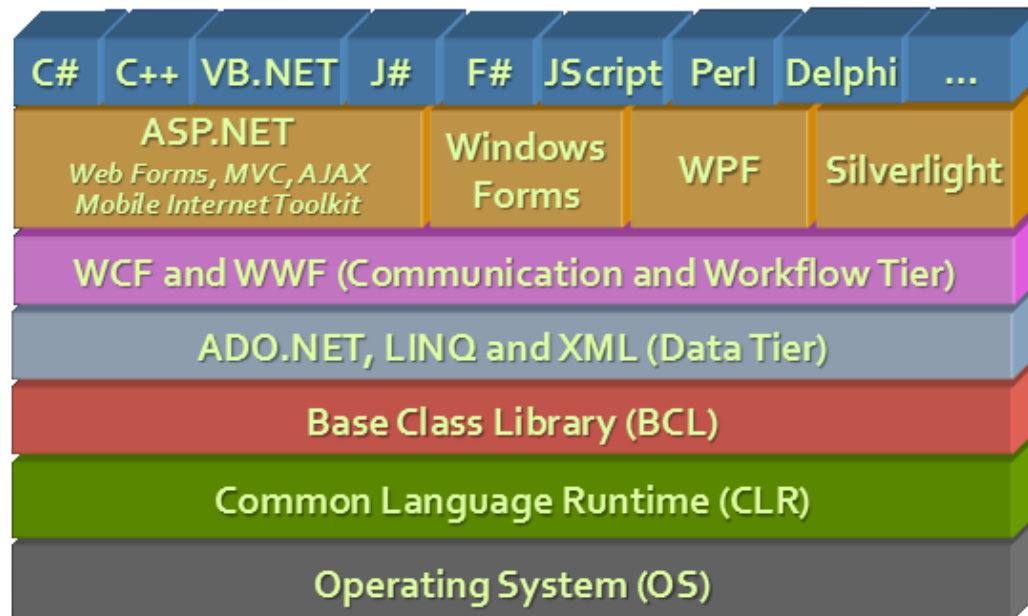
- WPF 4 unleashed by Adam Nathan
- Pro WPF 4.5 in C# by Mathew MacDonald
- Pro C# 7 with .NET and .NET core by Andrew Troelsen and Philip Japikse

## Software

- Microsoft Visual Studio.NET 2017

# Introduction to .NET framework

- .NET framework introduced by Microsoft written in C++ and C# in 2002
- Its stable release (.NET framework 4.7.2) is introduced in 2018
- .NET framework architecture



- Common Language Infrastructure
- Variety of libraries and services
- Rapid application development

# Introduction to Visual C#

- C# was introduced by Microsoft (Andres Hejlsberg & team) in 2000
  - # note from music language
- Belongs to C family (extension of C++)
- A multi-paradigm, procedural, task driven, reflective, concurrent, functional, generic, object oriented programming language
- Not pure Visual Programming, However.
- Versions
  - C# 1.0, C# 1.1, C# 1.2, C# 2.0, C# 3.0, C# 4.0, C# 5.0, C# 6.0, C# 7.0, C# 7.1, C# 7.2 & C# 7.3
- C# facilities
  - .NET supported language, thus has .NET services, libraries and frameworks
  - Integration with Microsoft Windows
  - Wide supportive libraries e.g. WPF (Windows Presentation Foundation), LINQ (Language Integration Query), and many more
  - Several supportive IDEs and tools
  - Visual and core programming
  - Rapid development

# Basic C# program

- Program.cs

```
library namespace
program class
{
    main function
    {
        instructions
    }
}
```

```
using System;
Class Program
{
    static void main()
    {
        Console.WriteLine("Hello World");
    }
}
```

- Program Structure:

- Using keyword to add library
- Object of Main class (name as name of program) contains main function.
  - Called for execution.
- Program should contain single main function hence should be static
- Sub-class of System library i.e. Console class is used for console operations
- Graphical applications can be developed using Windows Presentation Foundation (WPF)





# Questions

