

# Advance Programming Techniques (APT)

Lecture # 12

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# Graphical User Interface (GUI)

- A GUI allows a user to interact visually with a program.
- A GUI (pronounced "GOO-ee") gives a program a distinctive "look"
- Originally part of the .NET Framework, it is now supported in .NET Core, .NET5+, .NET8 (LTS) and .NET 9
- Main purpose is to develop applications for desktop, tablet and PC
- GUIs are event driven
- Create first WinForms application

# Interface of Visual Studio

- Editor Window (Main Window)
  - Here we'll work with forms and code editing.
  - Double click the form and code window will open
- Solution Explorer
  - File manager for our project. We can navigate between forms, resources and settings
- Properties Windows
  - Allows us to modify UI elements such as color, text alignment, visibility etc
- Toolbox
  - Provides drag-and-drop controls like buttons, text boxes, and labels to design the UI

# Some Basic GUI Controls

Control	Description
Label	Displays images or uneditable text
Textbox	Enables the user to enter data via the keyboard
Button	Triggers an event when clicked with the mouse
CheckBox	Specifies an option that can be selected (checked) or unselected (not checked)
ComboBox	Provides a drop-down list of items
ListBox	Provides a list of items from which the user can make a selection by clicking or or more items
Panel	A container in which controls can be placed and organized
NumericUpDown	Enables the user to select from a range of numeric input values

# Event Handling

- When user interacts with a GUI component, the interaction is known as **event**
- Event drives the program to perform a task
- Common events
  - Clicking a Button
  - Typing in TextBox
  - Selecting an item from DropBox
  - Closing a Window
  - Moving the mouse

# Event Handling

- All GUI controls have **events** associated with them
- A method that performs a task in response to an event is called an **event handler**
- The overall process of responding to events is known as **event handling**
- Demonstrate simple event handling by clicking of a button using **MessageBox** class
- Demonstrates two ways to create events