

# Advance Programming Techniques (APT)

Lecture # 24

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# Keyboard Events

- Keyboard events allow your application to react when the user types or presses keys
- They are essential for:
  - Validating user input
  - Creating shortcuts (e.g., Ctrl + S)
  - Games (movement using arrows/WASD)
  - Text processing apps
  - Hotkeys and commands

# Keyboard Events

- In WinForms, there are **three primary keyboard events**:
  - KeyDown
  - KeyPress
  - KeyUp
- Each event fires at a different stage of the key press

# The Three Key Events

- KeyDown (Fires First)
  - Triggered when a key is *pressed down*
  - Provides full keyboard info (like Ctrl, Alt, Shift)
  - Good for hotkeys and shortcuts
- KeyPress (Fires Second)
  - Triggered when a *character* is typed
  - Works only with *printable characters* (letters, digits, symbols)
  - Does NOT detect keys like Shift, Ctrl, F1, Arrow keys
- KeyUp (Fires Last)
  - Triggered when the key is *released*
  - Good for actions that should happen after typing

# Order of Events

- When you press a key:
  - KeyDown fires first
  - KeyPress fires second (only for printable characters)
  - KeyUp fires last
- Example: We press "A"

KeyDown → KeyPress → KeyUp

# Practical Examples

- Restricting Input (Allow only numbers)
- Using Arrow Keys (KeyDown Example)
- Detecting Shortcut Keys (Ctrl + S)
- KeyPreview – Very Important!
- Handling Enter Key to Trigger a Button
- Complete KeyDown Example