

# Lab5 (Computer Organization)

## Members

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## Lab Objective

This program latches (toggles) the built-in LED every time the button changes state

meaning whenever the button is pressed or released, not just pressed.

It also prints the new LED state and increments a variable each time the button changes.

## Code Explanation

- Uses a button with internal pull-up.
- Detects **any change** in button state (press OR release).
- Toggles the built-in LED on every state change.
- Prints the LED state to the serial monitor.
- Increments variable  $x$  each time the button changes.

## code

```
int x;
const int button = 2;
const int led = LED_BUILTIN;

bool latched = false;
bool laststate = HIGH;

// the setup function runs once when you press reset or power the board
void setup() {
    x = 20;
    pinMode(button, INPUT_PULLUP);
    pinMode(led, OUTPUT);
    Serial.begin(115200);
}

// the loop function runs over and over again until power down or reset
void loop() {
    bool currentstate = digitalRead(button);
    if (currentstate != laststate) {
        latched = !latched;
        digitalWrite(led, latched);

        Serial.print("Button changed → LED state: ");
        Serial.println(latched ? "ON" : "OFF");

        x++;
    }

    laststate = currentstate;
}
```