

Day 3: External LED + Push Button

Step 1: Connect an External LED

Components Needed:

- 1x LED
- Jumper wires
- Breadboard

Connections:

- LED **Anode (+)** → **D2** pin (GPIO 4)
 - LED **Cathode (-)** → **GND**
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Step 2: Blink the External LED using Arduino Code

Code:

```
void setup() {  
    pinMode(D2, OUTPUT); // Set pin D2 as output  
}  
  
void loop() {  
    digitalWrite(D2, HIGH); // Turn LED ON  
    delay(500);             // Wait for 0.5 second  
    digitalWrite(D2, LOW);  // Turn LED OFF  
    delay(500);             // Wait for 0.5 second  
}
```

Upload the code, and you'll see your **external LED blinking** every second.

Step 3: Add a Push Button

Components Needed:

- 1x Push button
- Jumper wires

Connections:

- One leg of the button → **D1** (GPIO 5)
 - Other leg → **GND**
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Step 4: Read Push Button Input and Print to Serial Monitor

Code:

```
void setup() {
  pinMode(D1, INPUT_PULLUP); // Button input with internal pull-up
  Serial.begin(115200);      // Start serial monitor
}

void loop() {
  int buttonState = digitalRead(D1);
  Serial.println(buttonState); // Print 0 when pressed, 1 when not
  delay(200); // Debounce delay
}
```

Open Serial Monitor (115200 baud) and press the button.

- When **pressed** → output: 0
 - When **not pressed** → output: 1
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Step 5: Combine Both – Toggle LED with Button Press

Now let's make the **button control the LED**.

Final Code:

```
const int ledPin = D2; // GPIO 4
const int buttonPin = D1; // GPIO 5

bool ledState = false;
bool lastButtonState = HIGH;

void setup() {
  pinMode(ledPin, OUTPUT);
  pinMode(buttonPin, INPUT_PULLUP);
  Serial.begin(115200);
}
```

```
}

void loop() {
    bool currentButtonState = digitalRead(buttonPin);

    if (lastButtonState == HIGH && currentButtonState == LOW) {
        ledState = !ledState;
        digitalWrite(ledPin, ledState ? HIGH : LOW);
        Serial.println("Button Pressed - LED Toggled");
        delay(200); // debounce
    }

    lastButtonState = currentButtonState;
}
```