Robotics

Task 3: Push Button Controlled LED on ESP32

I. Components Used

- ESP32
- LED
- 330-ohm resistor
- Breadboard
- Jumper wires
- Push button
- 10k-ohm resistor

II. Circuit Setup

- The anode (longer leg) of the LED was connected to a GPIO pin on the ESP32.
- The cathode (shorter leg) of the LED was connected to one end of the 330-ohm resistor.
- The other end of the resistor was connected to the ground (GND) of the ESP32.
- One leg of the push button was connected to an input GPIO pin of the ESP32.

- The other leg of the push button was connected to GND.
- A 10k-ohm pull-up resistor was connected between the GPIO pin and 3.3V to ensure proper signal reading.

III. Implementation

- Configuring the push button as an input with a pull-up resistor.
- Writing logic to detect button presses and toggle the LED state accordingly.
- Using debounce techniques to prevent multiple triggers from a single press.

IV. Testing and Results

- After uploading the code to the ESP32: The push button was able to reliably toggle the LED on and off, demonstrating correct digital input handling and debouncing.