Robotics

Task 1: Blinking LED on ESP32

I. Components Used

- ESP32 Development Board
- LED
- 330-ohm Resistor
- Breadboard
- Jumper Wires
- Computer with PlatformIO installed

II. Circuit Setup

- The anode (long leg) of the LED was connected to GPIO on the ESP32.
- The cathode (short leg) of the LED was connected to the ground (GND) of the ESP32 through a 330-ohm resistor.
- The ESP32 was powered via USB connection.

III. Development Environment

- Installed Visual Studio Code (VS Code) with PlatformIO extension.
- Created a new PlatformIO project and selected ESP32 as the target board.
- Configured platformio.ini to define the ESP32 board and framework.

IV. Execution and Testing

- The code was compiled and uploaded to the ESP32 using PlatformIO.
- The ESP32 was monitored via the serial output to verify execution.
- The LED successfully blinked at one-second intervals, confirming the correct implementation.

I. Code Overview

- The LDR continuously measures ambient light intensity.
- If the measured value falls below a set threshold, indicating darkness, the LED turns on.
- If the light level is above the threshold, the LED remains off.

II. Testing and Results

- After uploading the code to the ESP32: The LED correctly responded to changes in light intensity, turning on in low-light conditions and off in bright conditions and the LDR sensor effectively detected ambient light levels, demonstrating the proper functioning of the voltage divider circuit.