Assignment
Recap
IOT internship

Team Members: -

TL: Mahmoud Essam Fathy: 20221460231
Ziad Ashraf Hafez Gaber: 20221374025
Ziad Ashraf Ibrahim Taher: 20221369225

Description Of the code

This project is a **security system** that uses an **ESP32** microcontroller.

It has a **keypad** for password input, a **servo motor** for a door lock, an **LCD** display, an **LDR** for light sensing, and an **IR** sensor for object detection.

Authorized users can enter a password to unlock the door, and the system displays sensor readings inside.

Keypad: Four row pins (13, 12, 14, 27) and four column pins (26, 25, 33, 32) connect the keypad to the ESP32.

Servo Motor: The servo motor connects to pin 23 of the ESP32 to control the door lock.

LCD Display: The LCD display uses pins RS (22), E (21), D4 (19), D5 (18), D6 (5), and D7 (4) to connect to the ESP32.

LDR (Light Dependent Resistor): The LDR connects to pin 34 of the ESP32 to measure ambient light levels.

IR (Infrared) Sensor: The IR sensor connects to pin 35 of the ESP32 to detect objects in front of it.

ESP32 Microcontroller: Main control unit that handles input, controls the servo motor, reads sensor values, and displays information.
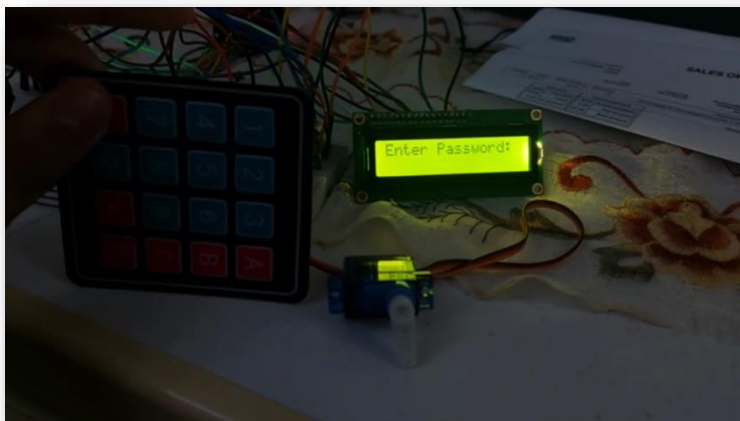
Keypad: Enables users to enter the password for unlocking the door.

Servo Motor: Controls the door lock by opening and closing the door.

LCD Display: Shows messages and sensor readings for user feedback.

LDR (Light Dependent Resistor): Measures ambient light levels for adjusting lighting conditions.

IR (Infrared) Sensor: Detects objects in front of it, helping to ensure security and trigger actions.

Mahmoud Essam, Ziad Ashraf, Ziad Ashraf
Supervised by: Eng. Muhammed Hatem

Description Of the code

The code controls various components using an ESP32 microcontroller. It reads values from an IR sensor and an LDR, displays information on an LCD, controls a servo motor, and activates an LED and a buzzer based on certain conditions.

Components used:
LiquidCrystal: Controls the LCD for displaying information.
ESP32Servo: Controls the servo motor.
IR sensor: Detects infrared signals or objects.
LDR: Measures ambient light intensity.
Push-button: Triggers specific actions when pressed.
LED: Indicates a condition.
Buzzer: Generates sound.
Connections:
IR sensor connected to Pin 34.
LDR connected to Pin 35.
Push-button connected to Pin 22.
LED connected to Pin 23.
Buzzer connected to Pin 25.
Servo motor connected to Pin 21.
Functionality:

Reads IR sensor and LDR values.
Displays values on the LCD when the button is pressed.
Rotates the servo motor from 0 to 180 degrees and then back to 0 while displaying the angle on the LCD.
Turns on the LED and activates the buzzer when the IR sensor value is below 5, and turns them off otherwise.

Mahmoud Essam, Ziad Ashraf, Ziad Ashraf
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Assignment – Recap – Problem 3 Bonus (everything)

Description Of the code

This code is for an **ESP32-based project** that uses various components to achieve different functions:

Components and Functions:

LCD Display: Shows information on a screen.

Buzzer: Can make sounds.

IR Sensor: Detects objects/movement.

LED: Lights up based on light levels.

Button: Used to choose different functions.

Photoresistor: Measures light.

Servo Motor: Moves back and forth.

Keypad: Used for input.

Modes and What They Do

Read and Display Sensors: Shows IR and light readings on the LCD. Turns on the LED in low light.

Servo Scanning: Moves the servo motor back and forth, showing the angle on the LCD.

Password Entry: Lets you type a 4-digit password on the keypad. Displays * for each digit. Unlocks servo if password is right.

Smart Door: Uses IR sensor to open the servo motor and unlock the door if something is close. Locks if nothing's detected.

The program keeps checking for input and performs actions based on the selected mode. It helps navigate using the keypad and displays feedback on the LCD. The code might need adjustments for practical us

"Video and Real life And Breadboard supported in folder"

Mahmoud Essam, Ziad Ashraf, Ziad Ashraf
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