

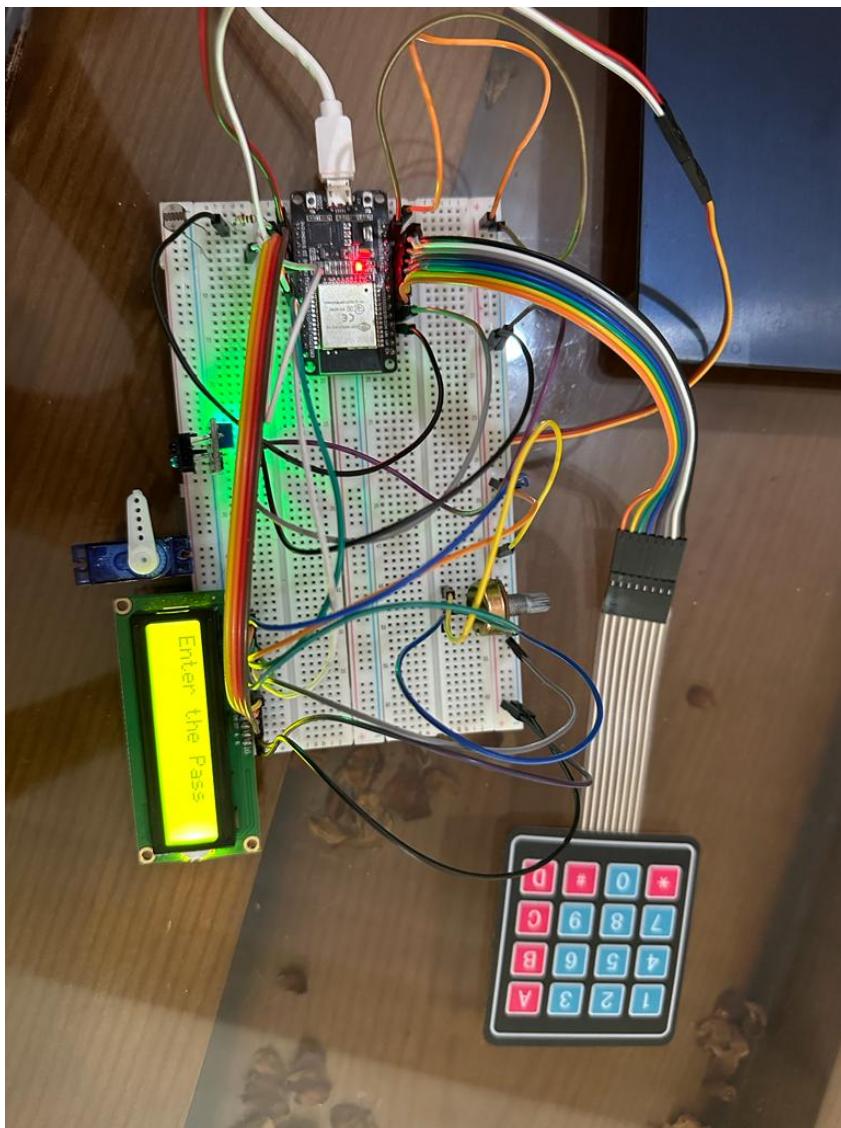
# Report

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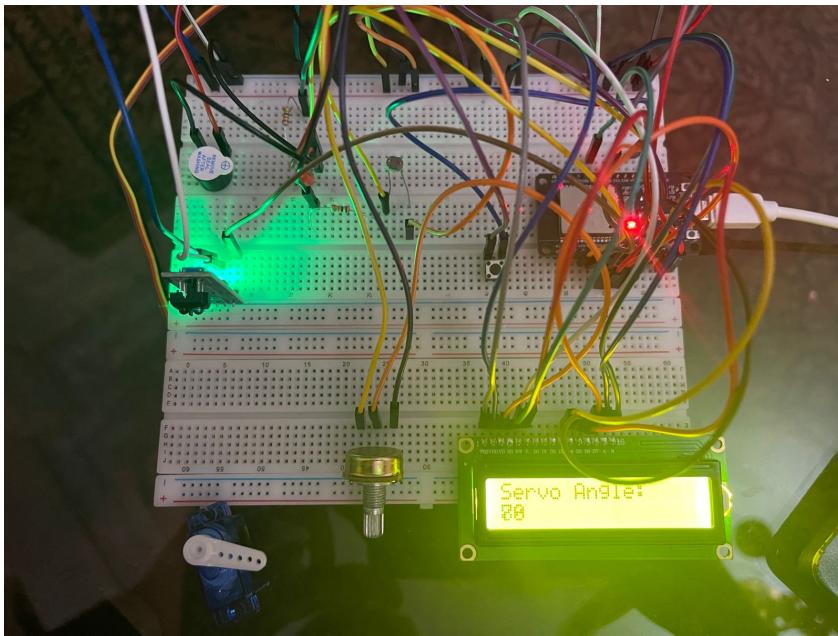
## Question 1

We connected Keypad , servo, and LCD to detect the password if it's right then the servo goes 180 if it's not then it won't open we use this method with both Keypad and keyboard



## Question 2

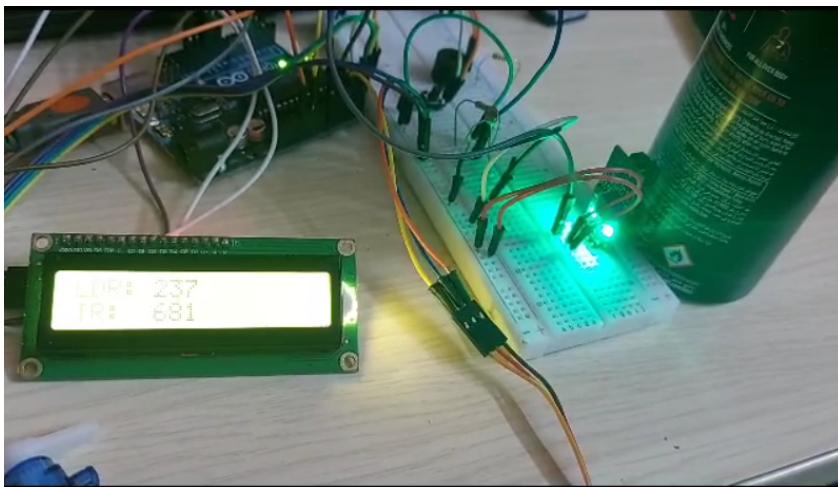
In this question the lcd reads the servo angles and would give warning on LCD and buzzer and led will light up if the ldr is less than threshold and if the push button is pressed it would calculate distance of IR and IR brightness.

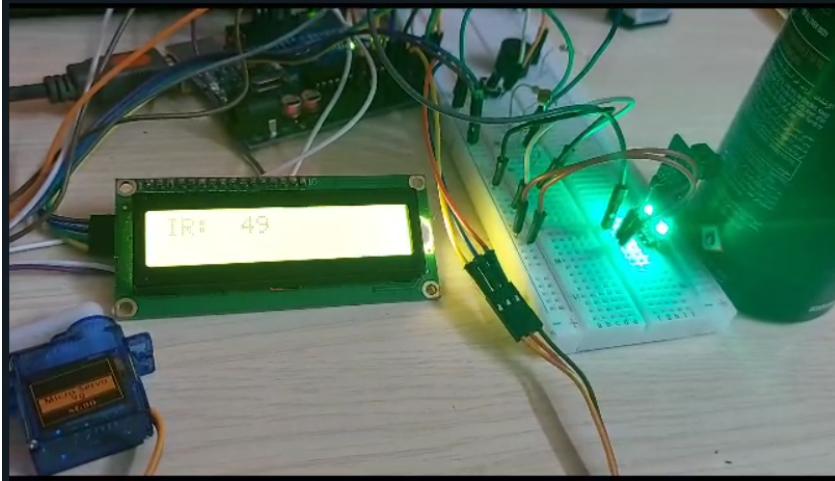
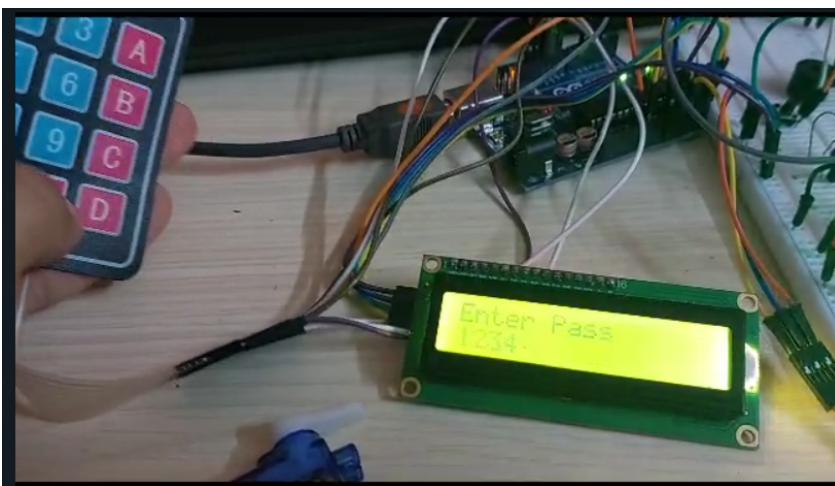


### Question 3

In this question we have 4 modes.

1. IR distance and LDR brightness if the brightness less than threshold then it will buzzer and led will be on
2. Turn servo to 180 then back to 0
3. Password which have if it's incorrect the servo will still be zero , there's option to clear what you wrote ,and if it's correct then the servo goes 180
4. Calculate the distance in IR and if it's less than threshold then it'll turn to 180 ,and there's push button which if it's pressed it'll freeze and stop calculate distance nor change the angle of servo





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double bonus 1

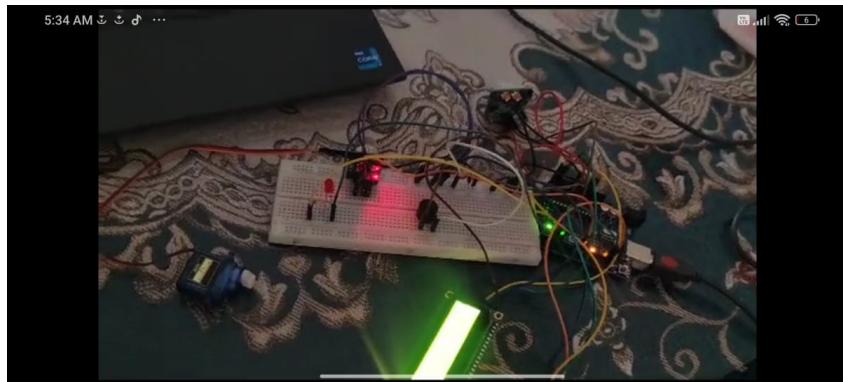
MQ4 Gas Sensor: attached with A0 (analog) pin in arduino uno as input with threshold = 150

if reading exceed this value buzzer and led will be high and print on lcd a warning message

Digital Temperature and Humidity Sensor: we used Adafruit\_AHTX0 as a library for the AHT10 , ATH20 temperature and humidity sensor and make sure in setup if sensor connected and functioning or not

We attached sensor use The I2C protocol that using two lines to send and receive data: a serial clock pin (**SCL**) that the Arduino Controller board pulses at a regular interval, and a serial data pin (**SDA**) over which data is sent between the two devices. As the clock line changes from low to high and vcc pin with 5V and pin ground with GND and

We print temperature and humidity value in lcd screen and print a warning message if temperature exceed 32.5 degrees and turn on buzzer and led



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double bonus 2

Motion Sensor : PIR sensor attached with digital input pin (4) and checked if motion detected buzzer and led will turn on and a message would be printed on lcd and servo motor as a smart door would be open to 160 angle with delay time 3 seconds to be closed again (0 angle ) and will be always closed if there is no motion

Servo motor : we used servo library and attach servo with digital output pin 9 and vcc 5V and GND

response to motion sensor inputs and return it to its initial position (0 angle as closed door) after a specified time

buzzer : attached with output pin 3 acts as alarm with sensors

LED : attached with output pin 2 acts as warning led

LCD : we used I2C protocol to minimize no. of pins attached with Arduino , We used LiquidCrystal\_I2C library and attached SCL pin with A5 and SDA with pin A4

Flame Sensor : attached with digital input pin 13 and if any fire detected buzzer and led will turn on and a warning message will be printed on lcd

Ultrasonic Sensor : attached vcc 5V an GND and the triger with digital output 8 (sending a pulse to the sensor to emit a ultrasound rays ) and echo pin with digital input (to receive the rayes and sending rerun time with pulseIn function )

If an object detected on distance less than 10cm buzzer and led will be return on

a message printed on lcd with detected object's length

servo motor's movement based on the Ultrasonic sensor's distance measurements with map function from (3 to 40 cm ) to (0 to 180 angle)

