IOT - WORKSHOP

DAY-1

ELECTRONIC COMMUNICATION ENGINEERING [ECE]

TEAM MEMBERS:-

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TEAM NAME:-SMART CREATORS

✧INTRODUCTION TO IOT:-

◆ IOT means the THINGS ARE COMMUNICATED BY THE INTERNET and REQIRED OPERATIONS ARE MADE.

◆ The internet of things(IOT) refers to a vast network of interconnected physical devices,object and systems that are embedded with sensors.

◆ IOT is a 4D technology. Then the 4D's are:
1. Data collection
2. Data storage
3. Data visualization
4. Data analysis

✧ TYPES OF MICROCONTROLLERS :-

Here are the some comparistion micro controller boards between ARDUNIO UNO, ESP32, ESP8266 and Raspberry pi

◆ ARDUINO UNO:-

- ✓ It does't have built -in Wifi module.
- ✓ Analog pin are from A0 to A5 in arduino uno.
- ✓ Digital pin are from 0 to 13 in arduino uno.
- ✓ The common terminals GND terminal is connected to GND and VCC teminal is connected to power are common.
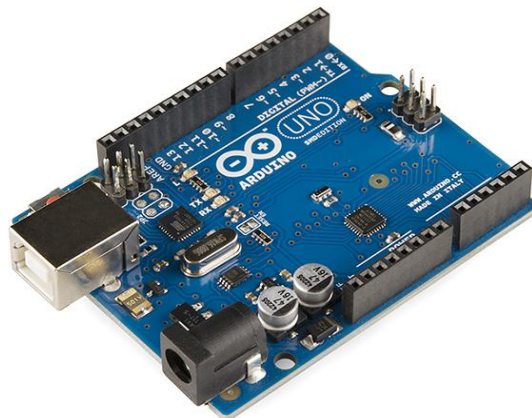

◆ ESP8266:-

- ✓ It have built - in Wifi module.
- ✓ In ESP8266 only one analog pin only that is, A0.
- ✓ In ESP8266 have digital pins from D0 to D8.
- ✓ In the common terminals VCC terminal is connected to power and GND terminal is connected to GND.
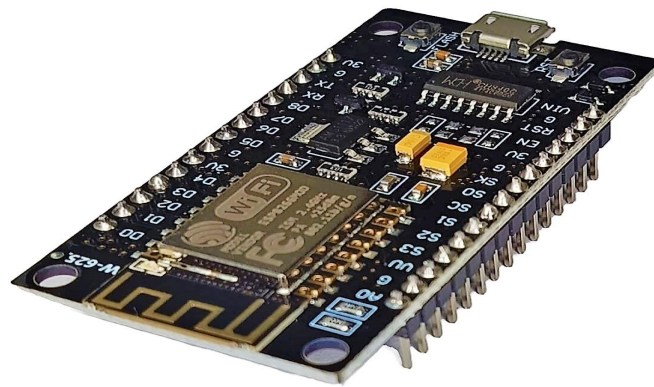
◆ **ESP32:-**

✓ It have both WIFI and BLUETOOTH IN-Built module.
✓ Analog pins are from above all the pins of PIN-32.
✓ Digital pin are from below all the pins of PIN-32.
✓ In the common terminals VCC terminal is connected to power and GND terminal is connected to GND.
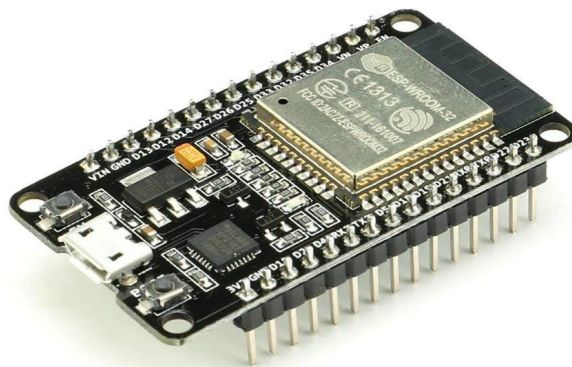
⬥ SENSORS:-

◆ Sensor is a electronic device which is used to sence the data in environment and stores the data

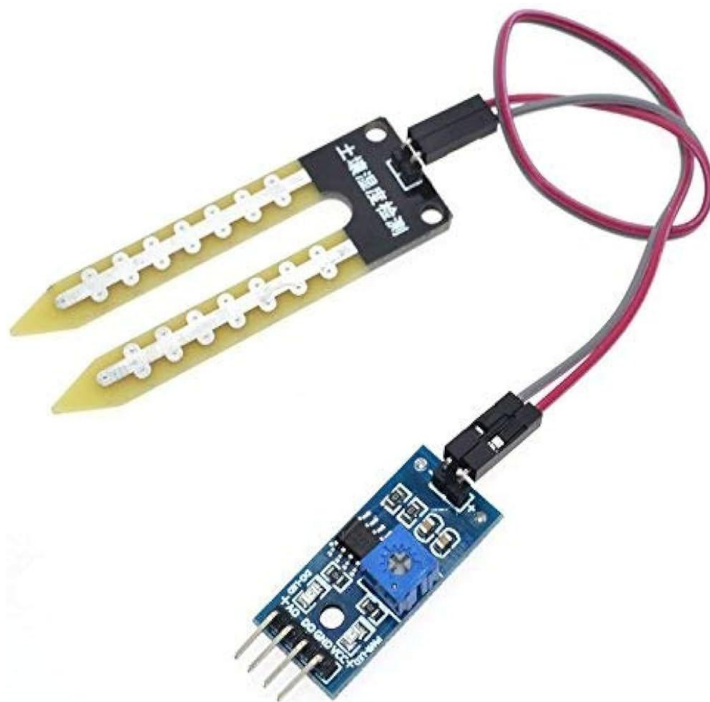◆ There are so many sensor here we are discussing some of them.

1. SOIL MOISTURE SENSOR:-

✓ It detects the level of moisture present is the soil.
✓ Moisture sensor is analog sensor.
✓ It has three pins I.e,

AO   GND   VCC

◆ CONNECTIONS:-
✓ Ao PIN is connected to the any analog pin.
✓ GND PIN is connected to the GND.
✓ VCC PIN is connected to the power

2. ULTRA SONIC SENSOR:-

- ✓ It detects the distance of the object.
- ✓ The ultra sonic sensor is a DIGITAL sensor.
- ✓ It has four pins I.e,

        TIRG   ECHO   GND   VCC

◆ CONNECTIONS:-
- ✓ Trig PIN is an input pin and it is connected to any DIGITAL PIN.
- ✓ ECHO PIN is an output pin and it is connected to any DIGITAL pin.
- ✓ GND PIN is connected to GND.
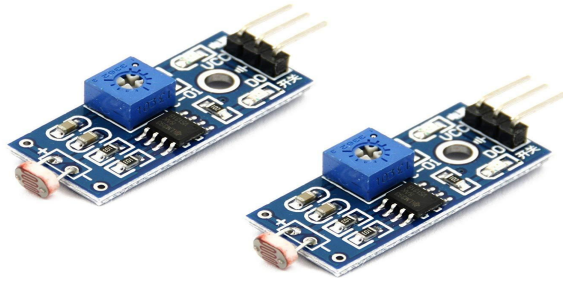- ✓ VCC PIN is connected to the POWER SUPPLY.

3. LDR (LIGHT DEPENDENT RESISTOR) SENSOR:-

- ✓ it measures the intensity or presence of light.
- ✓ LDR sensor is a DIGITAL SENSOR.
- ✓ It has four pins I.e,

        D0   GND   VCC

◆ CONNECTIONS:-
- ✓ DO PIN is connected to the any DIGITAL PIN.
- ✓ GND PIN is connected to the GND.
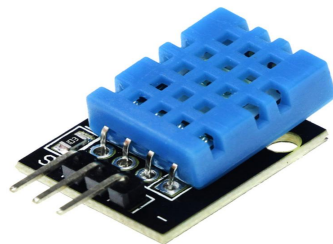- ✓ VCC PIN is connected to the POWER SUPPLY.

4. HUMIDITY SENSOR (DH11) :-

- ✓ Measures the moisture content and humidity and also temperature in the air.
- ✓ The HUMIDITY SENSOR is a DIGITAL SENSOR.
- ✓ It has three PINS I.e,

                     D0   GND   VCC

- ◆ CONNECTIONS:-
- ✓ The D0 PIN Is connected to the any DIGITAL PIN.
- ✓ The GND PIN is connected to the GND.
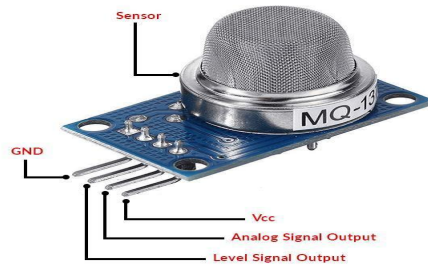- ✓ The VCC PIN is connected to the POWER SUPPLY.

5. GAS SENSOR:-

- ✓ It detects and measures the concentration of harmfull gasses.
- ✓ The GAS SENSOR is an ANALOG SENSOR.
- ✓ It has three pins I.e,

<div align="center">A0   GND   VCC</div>

◆ CONNECTIONS:-
- ✓ The A0 PIN is connected to the any ANALOG PIN.
- ✓ The GND PIN is connected to the GND.
- ✓ The VCC PIN is connected to the POWER SUPPLY.

6. ALCOHOL SENSOR:-

- ✓ it is designed to detect and measure the presence of alcohol concentration.
- ✓ The ALCOHOL SENSOR is a ANALOG SENSOR.
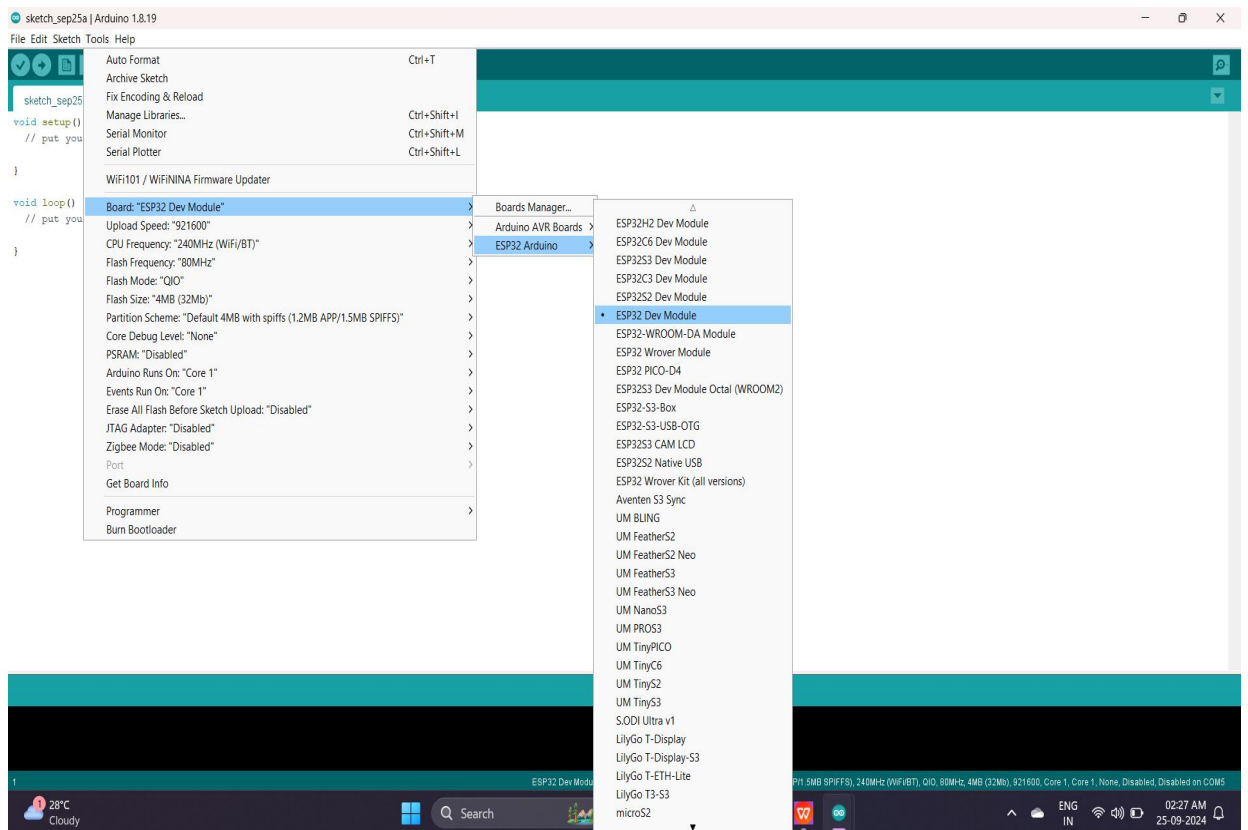- ✓ It has three pins I.e,

<div align="center">A0   GND   VCC</div>

◆ CONNECTIONS:-
- ✓ The A0 PIN is connected to the any ANALOG PIN.
- ✓ The GND PIN is connected to the GND.
- ✓ The VCC PIN is connected to the POWER SUPPLY.

✧ ACTIVITY:1

✓ **INSTALL THE ARDUINO SOFTWARE AND ALSO INSTAL**

   ESP32 BOARD ON ARDUINO SOFTWARE

✓ After the installation of ESP32 board we have select the ESP32 Dev Module shown on above picture.

ACTIVITY :2

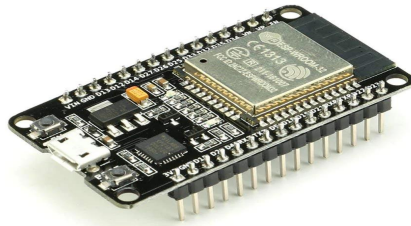◆ **Print your team members names on serial monitor:**

❖ **COMPONENTS REQUIRED:**

✓ ESP32
✓ USB CABLE

- ESP32:
- ✓ It have both WIFI and BLUETOOTH IN-Built module.
- ✓ Analog pins are from above all the pins of PIN-32.
- ✓ Digital pin are from below all the pins of PIN-32.

    In the common terminals VCC terminal is connected to power and GND terminal is connected to GND.

- **USB CABLE:**

- ✓ usb cable is used to connect ESP32 to LAPTOP.

❖ CODE:

```
void setup() {
 Serial.begin(9600);
 // put your setup code here, to run once:

}
```

```
void loop() {
  Serial.println("Alekhya");
  Serial.println("Hima bindu");
  Serial.println("Priya");
  Serial.println("trisha");
  Serial.println("siva parvathi");
  // put your main code here, to run repeatedly:

}
```

- ✓ After writing the code we have to complie the code.
- ✓ After that connect usb cable laptop to esp32 we have to dump the code into ESP32.
- ✓ Check the output across serial monitor as shown below:

❖ **OUTPUT:**
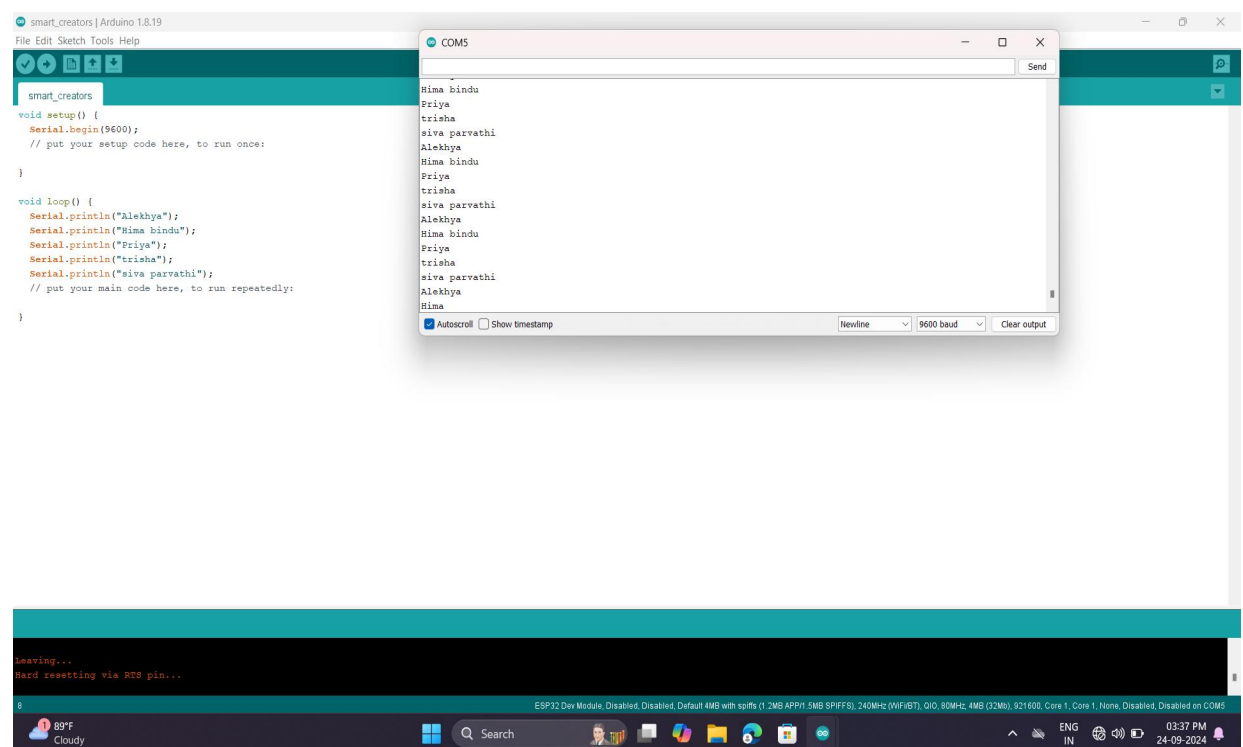
✧ ACTIVITY:3

◆ **PRINT LDR SENSOR MONITOR OR SERIAL MONITOR**

❖ **COMPONENTS REQUIRED:-**
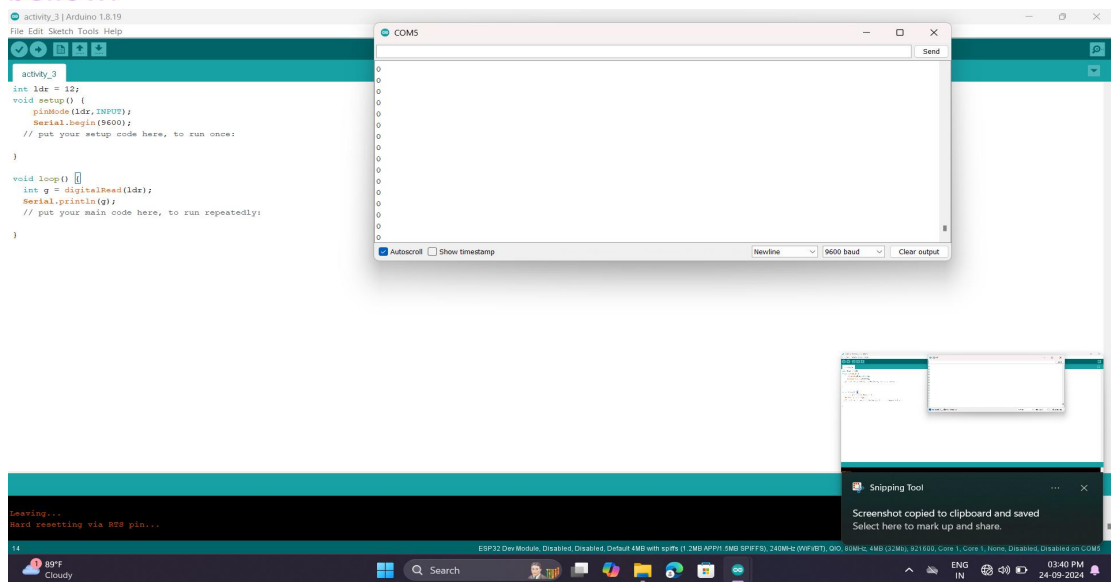
✓ ESP32
✓ USB CABLE
✓ LDR SENSOR

❖ **CONNECTIONS:-**

✓ The D0 PIN of the LDR sensor is connected to the 12 PIN of the ESP32.
✓ The VCC pin of the LDR sensor is connected to the VIN of the ESP32.
✓ The GND PIN of the LDR sensor is connected to the GND of the ESP32.
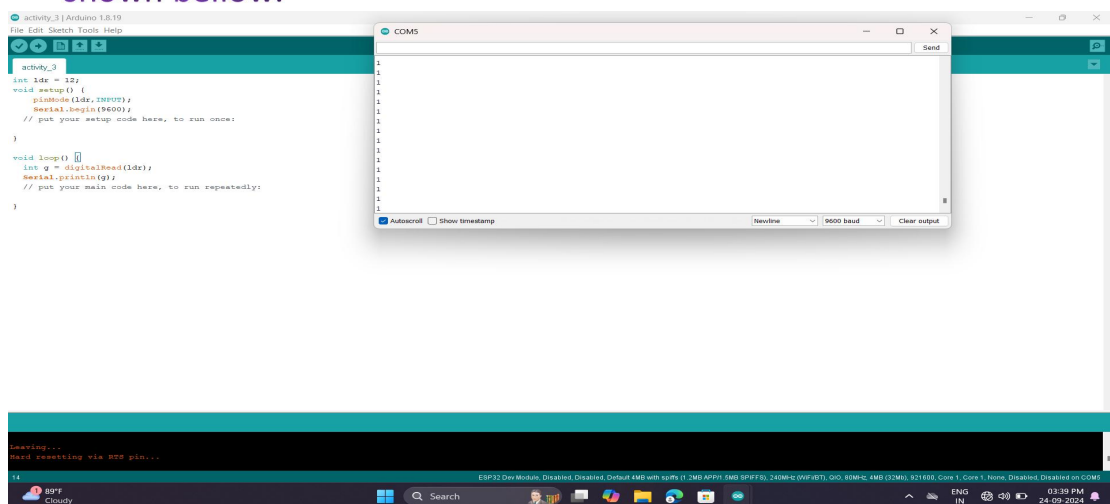✓ Before the connections we have to dump the code ESP32.

❖ **CODE:-**

✓ int ldr = 12;
✓ void setup() {
✓ pinMode(ldr,INPUT);
✓ Serial.begin(9600);
✓ // put your setup code here, to run once:

✓ }

✓ void loop() {
✓ int g = digitalRead(ldr);
✓ Serial.println(g);
✓ // put your main code here, to run repeatedly:

✓ }

❖ OUTPUT:-

- ✓ After writing the code we have to complie the code.
- ✓ After that connect usb cable laptop to esp32 we have to dump the code into ESP32 with out any connections.
- ✓ After that dumping the code we have to connect the connections.
- ✓ After that we have connect usb cable again to the laptop to ESP32.
- ✓ Check output on serial moniter the output is 0 when LDR sensor detects the light the output is shown bellow.

- ✓ The output is 1 when the LDR not detects the light and the output is shown bellow.

✦ ACTIVITY:4

❖ COMPONENTS REQUIRED:-

- ✓ ESP32
- ✓ USB CABLE
- ✓ LDR SENSOR

❖ CONNECTIONS:-

- ✓ The D0 PIN of the LDR sensor is connected to the 12 PIN of the ESP32.
- ✓ The VCC pin of the LDR sensor is connected to the VIN of the ESP32.
- ✓ The GND PIN of the LDR sensor is connected to the GND of the ESP32.
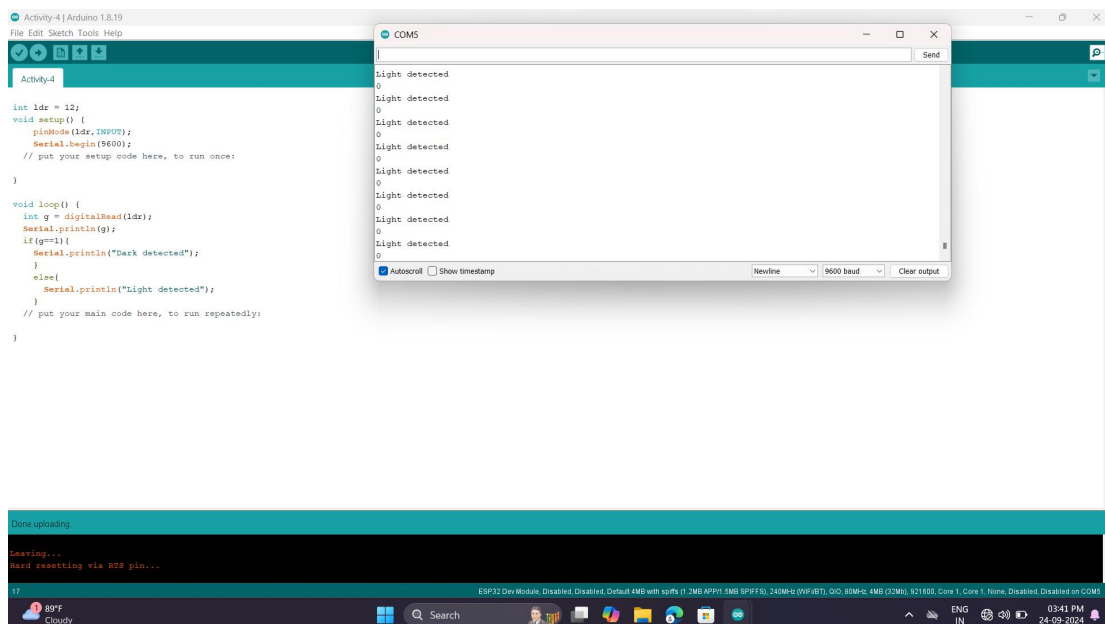- ✓ Before the connections we have to dump the code ESP32.

❖ CODE:-

```
int ldr = 12;
void setup() {
pinMode(ldr,INPUT);
Serial.begin(9600);
// put your setup code here, to run once:

}

void loop() {
int g = digitalRead(ldr);
Serial.println(g);
if(g==1){
Serial.println("Dark detected");
}
else{
Serial.println("Light detected");
}
// put your main code here, to run repeatedly:
```

✓ }

❖ **OUTPUT:-**

✓ After writing the code we have to complie the code.
✓ After that connect usb cable laptop to esp32 we have to dump the code into ESP32 with out any connections.
✓ After that dumping the code we have to connect the connections.
✓ After that we have connect usb cable again to the laptop to ESP32.
✓ Check output on serial moniter the output is 0 and print the statement' LIGHT DETECTED' when LDR sensor detects the light the output is shown bellow.

✓ The output is 1 and prints the statement' Dark Detected 'when the LDR not detects the light and the output is shown bellow.
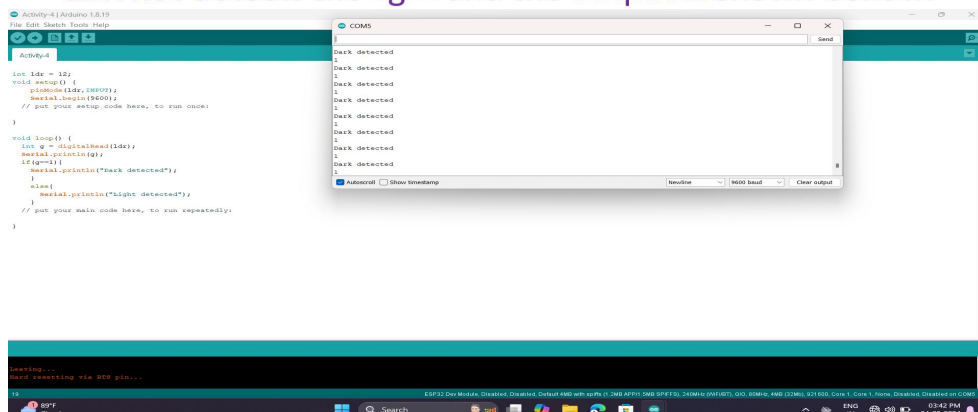
◈ ACTIVITY:5

❖ COMPONENTS REQUIRED:-

- ✓ ESP32
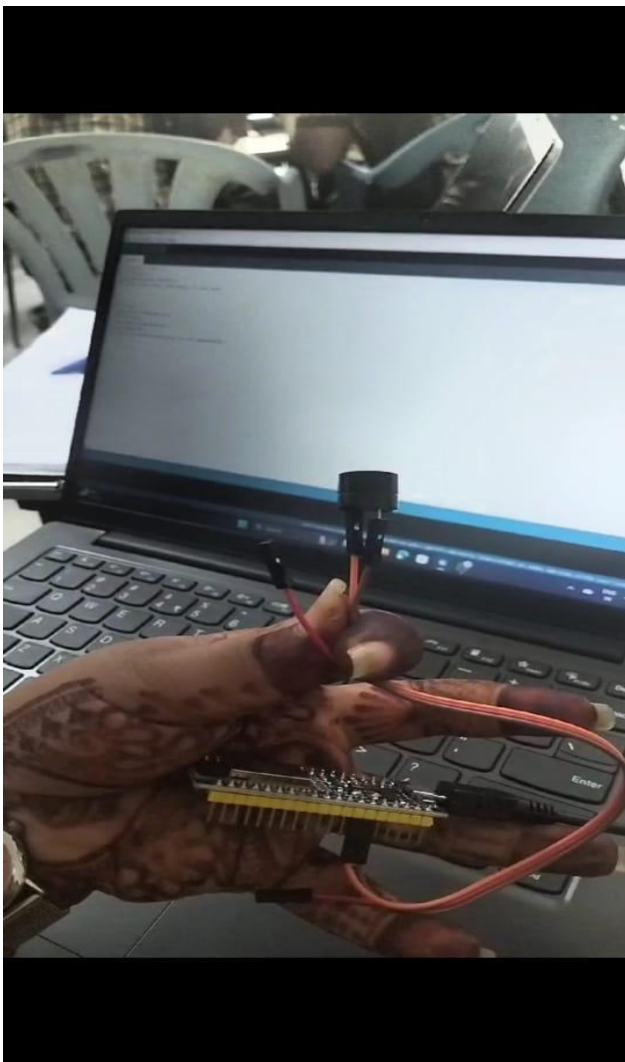- ✓ USB CABLE
- ✓ BUZZER

❖ CONNECTIONS:-

- ✓ The + PIN of the buzzer is connected to the 12 PIN of the ESP32.
- ✓ The - PIN of the buzzer is connected to the GND of the ESP32.
- ✓ Before the connections we have to dump the code ESP32.

❖ CODE:-

```
int buzzer = 12;
void setup() {
pinMode(buzzer,OUTPUT);
// put your setup code here, to run once:

}

void loop() {
digitalWrite(buzzer,1);
delay(5000);
digitalWrite(buzzer,0);
delay(5000);
// put your main code here, to run repeatedly:
}
```

❖ OUTPUT:-

- ✓ After writing the code we have to complie the code.
- ✓ After that connect usb cable laptop to esp32 we have to dump the code into ESP32 with out any connections.
- ✓ After that dumping the code we have to connect the connections.
- ✓ After that we have connect usb cable again to the laptop to ESP32 the buzzer is on 5 seconds and buzzer is of for 5 seconds.

✓

THANK YOU