EC-249 Mini Project 2

Prepared by:-
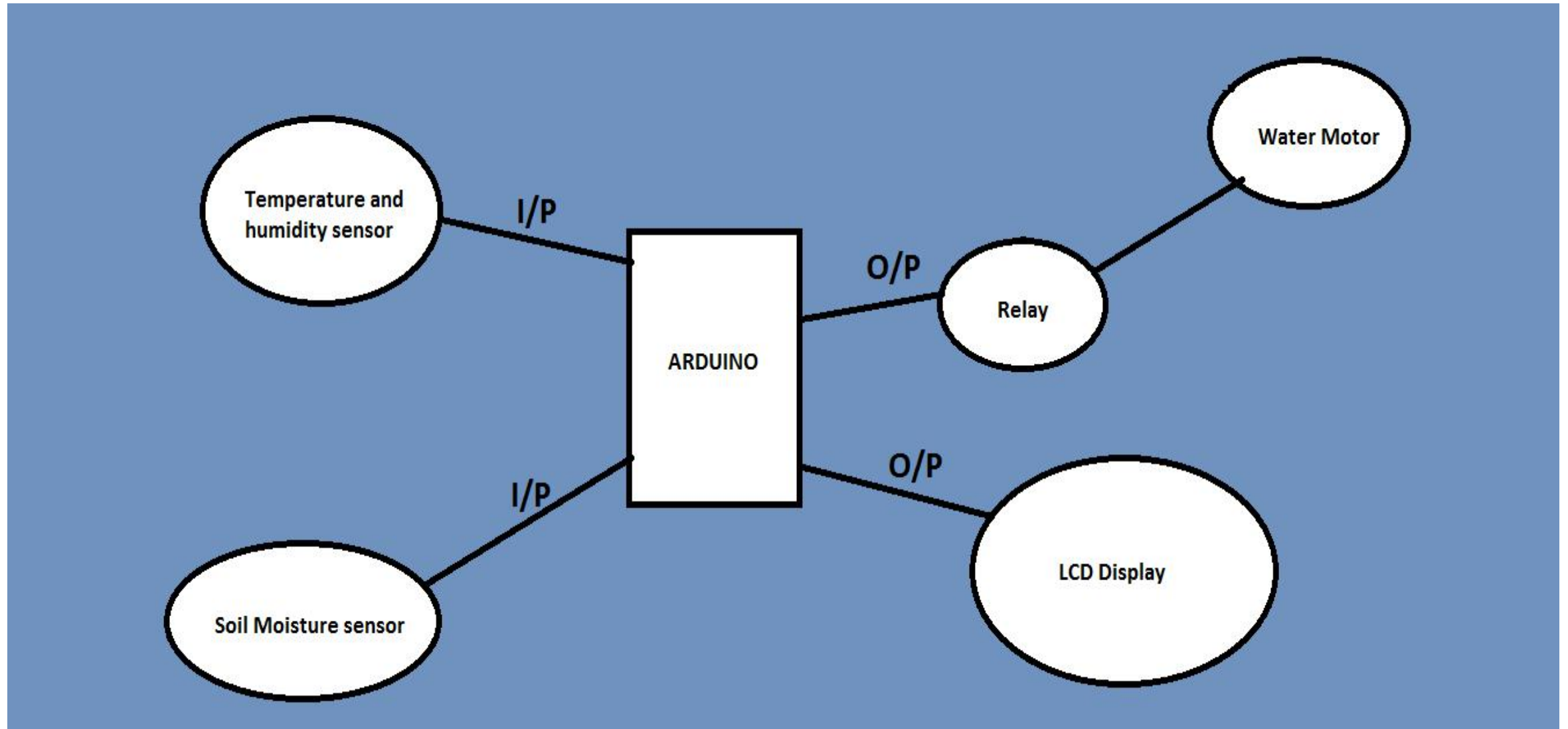
Soham Patel(16ec085)

Tej Patel(16ec086)

Project :-

Automatic plant watering system with weather tracking using Arduino

Block Diagram:-

Components required:-

- Arduino UNO (microcontroller)
- LCD (16x2)
- 5v Relay
- Temperature and Humidity sensor(DHT11)
- Soil Moisture sensor(YL-38)

Working:-

- Arduino gets input from temperature and humidity sensor and displays its values on LCD as output to keep track on weather.

- Arduino also gets input from soil moisture sensor kept inside soil and if the moisture is less than it sends signal via relay to ac motor for driving water to plants, again if water or moisture exceeds then it sends signal via relay to ac motor to stop watering plants.

Interfacing with 16x2 LCD:-

- We have a ready library file for arduino called "Liquid Crystal" which needs to be included in code for its interfacing.

- A register select (RS) pin that controls where in the LCD's memory you're writing data to. You can select either the data register, which holds what goes on the screen, or an instruction register, which is where the LCD's controller looks for instructions on what to do next.

- A Read/Write (R/W) pin that selects reading mode or writing mode

- An Enable pin that enables writing to the registers

- 8 data pins (D0 -D7). The states of these pins (high or low) are the bits that you're writing to a register when you write, or the values you're reading when you read.

- There's also a display constrast pin (Vo), power supply pins (+5V and Gnd) and LED Backlight (Bklt+ and BKlt-) pins that you can use to power the LCD, control the display contrast, and turn on and off the LED backlight, respectively.

Diagram:-
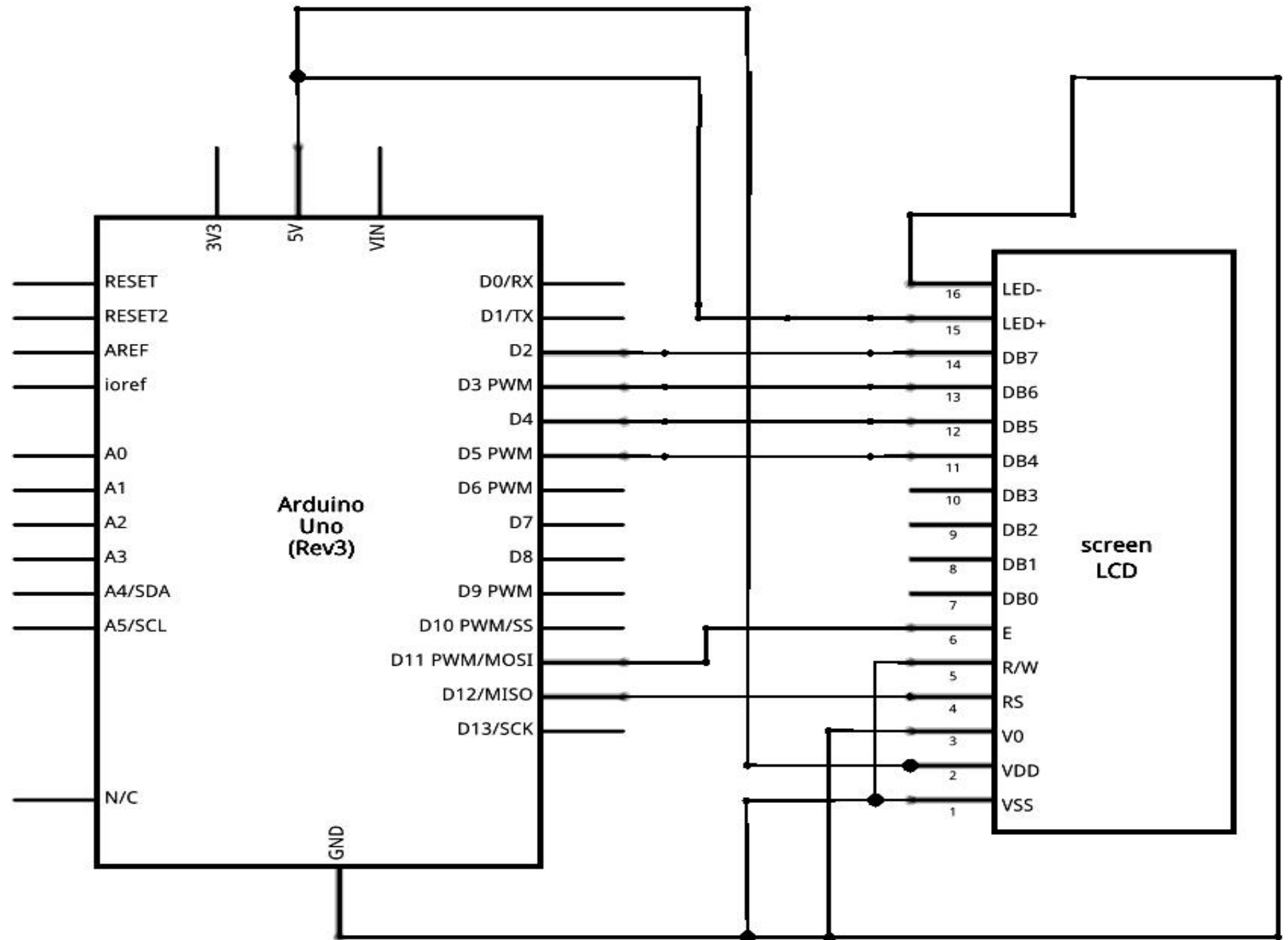
Interfacing DHT11:

- We have a library file available for arduino called "dht" after including it we can directly get values of temperature in celcuis and humidity in percentage by simply making object.

- EX:

  #include<dht.h>
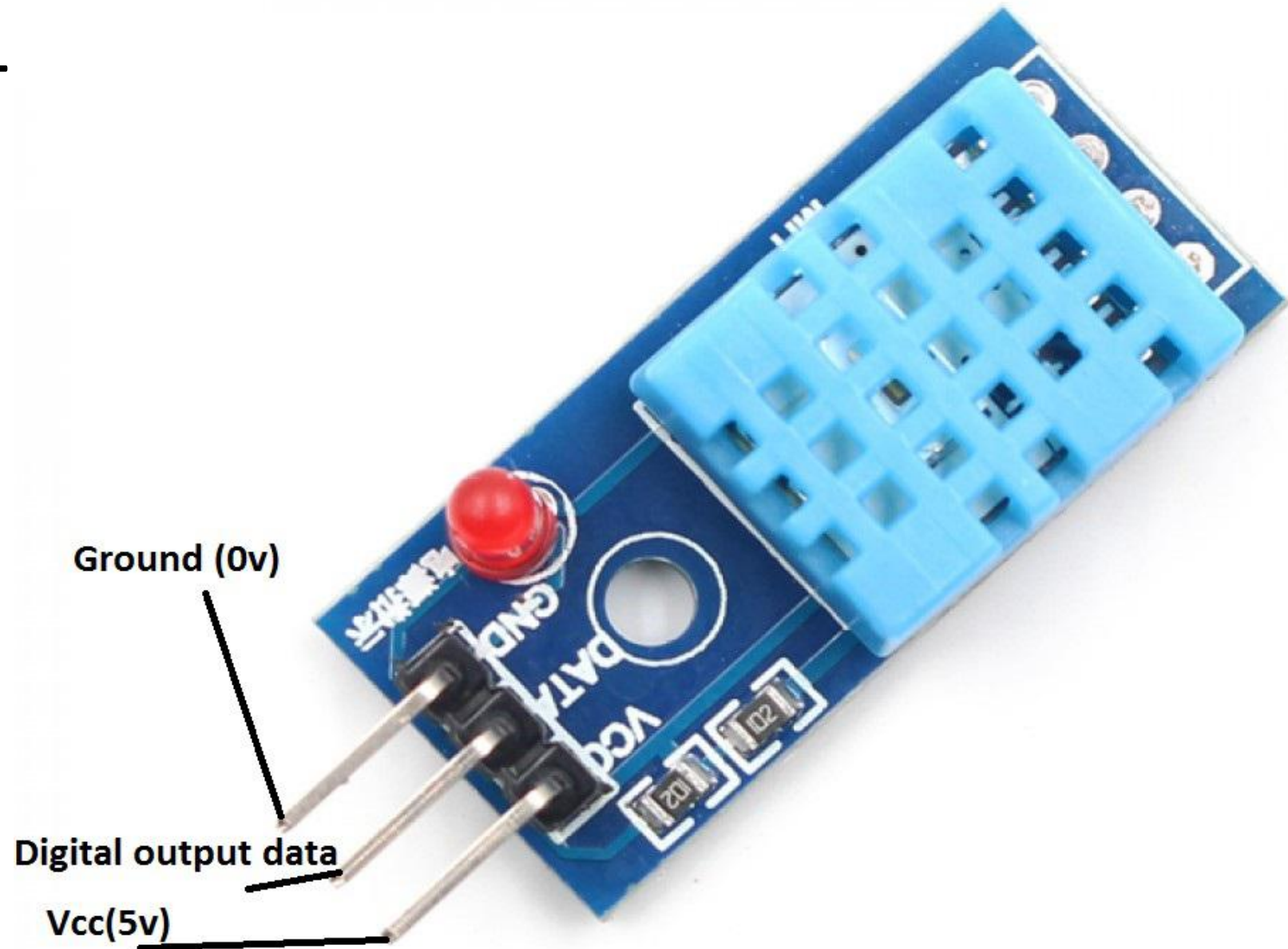
  dht DHT;

  Int t=DHT.temperature;

  Int h=DHT.humidity;

(Where DHT is object, t and h stores values of temperature and humidity)

Diagram:-

Ground (0v)

Digital output data

Vcc(5v)

Interfacing with YL-38

- Its soil moisture sensor which works on the principle of resistance while passing current through two outlets kept in medium(soil).

- If the soil contains more water then more current passes so resistance is low so it detects that moisture is more.

- If soil contains less water then less current passes so resistance is very high so it detects that moisture is less.

- This is analog output varies according to values of resistance.

- It also has facility for digital output.

Diagram:-

LM293 Comparator

Output LED

GND
D0
A0
VCC

Power LED

Potentiometer

Probes