

**Aim:**

To implement an efficient iot model for drip irrigation system

**Description:**

Saving water is one of the most important responsibility of today's citizens. Soil moisture sensors measure the volumetric water content in soil. Since the direct gravimetric measurement of free soil moisture requires removing, drying, and weighting of a sample, soil moisture sensors measure the volumetric water content indirectly by using some other property of the soil, such as electrical resistance, dielectric constant, or interaction with neutrons, as a proxy for the moisture content.

**Hardware requirements:**

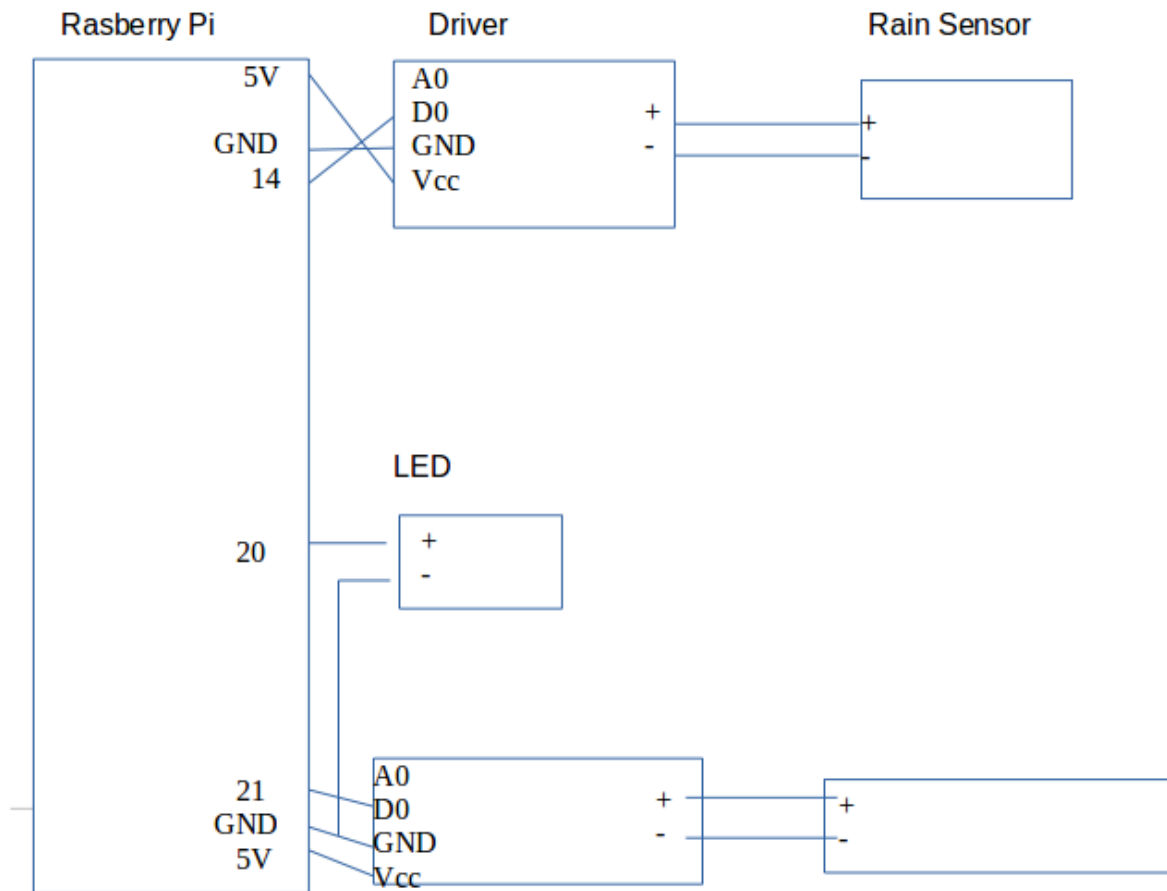
- 1) Soil moisture sensor
- 2) Raspberry pi
- 3) jumper wires
- 4) driver
- 5) Rain sensor
- 6) LED

**Working Principle:**

Our project is intended to implement automated drip irrigation system . The soil moisture sensor is used to monitor the levels of water in soil. If the moisture content is less, rain is to be checked. If there's no rain alert is to be given .

**Steps:**

- 1) Connect LAN, HDMI , power supply, input devices of the raspberry pi as per required
- 2) Connect the soil moisture sensor driver as follows:
  - i) D0 - gpio 21
  - ii) GND- GND
  - iii) Vcc-5V
- 3) connect the rain sensor as follows:
  - i) D0 - gpio 14
  - ii) gnd- gnd
  - iii) Vcc-5V
- 4) A LED is used to connected just as to alert (if moisture content is less) == glow
- 5) Execute the following .py script in the python shell

**Circuit Diagram:****Code:**

```
#!/usr/bin/python
import RPi.GPIO as GPIO
from gpiozero import InputDevice,Buzzer
import time
```

```
#GPIO SETUP
no_rain = InputDevice(14)
channel = 21
GPIO.setmode(GPIO.BCM)
GPIO.setup(channel, GPIO.IN)
led=Buzzer(20)
```

```
while True:
```

```
    if GPIO.input(channel):
        print("No Moisture Detected!")
```

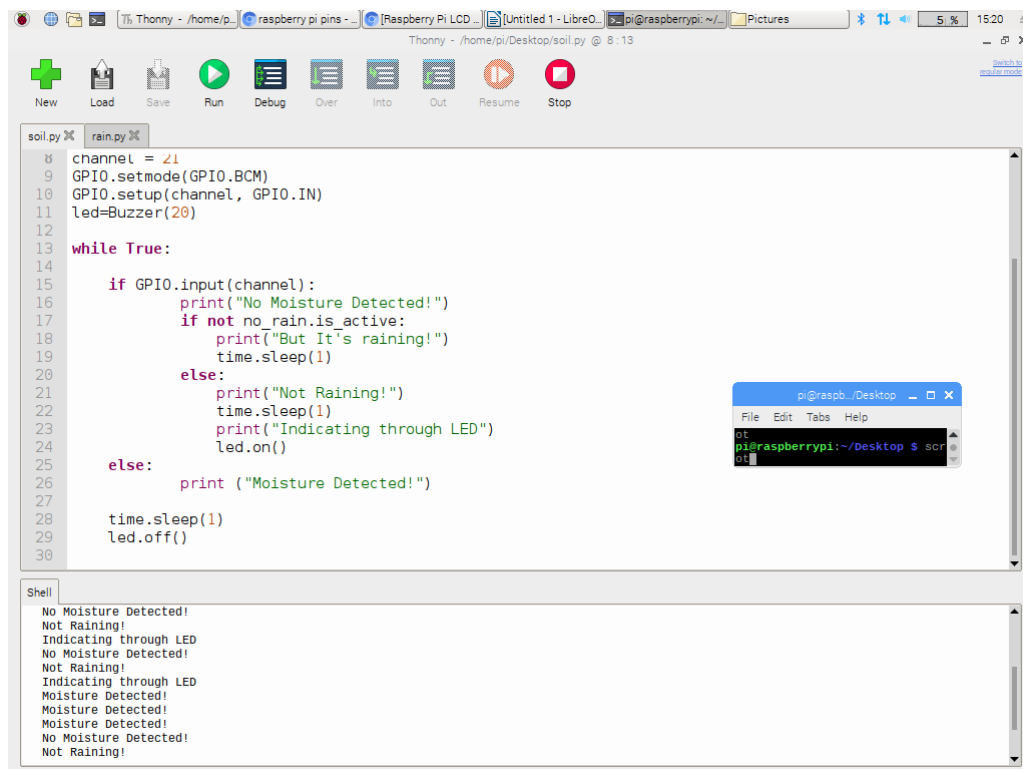
```

if not no_rain.is_active:
    print("But It's raining!")
    time.sleep(1)
else:
    print("Not Raining!")
    time.sleep(1)
    print("Indicating through LED")
    led.on()
else:
    print ("Moisture Detected!")

time.sleep(1)
led.off()

```

### Output:



The screenshot shows the Thonny IDE interface. The main editor window displays a Python script named `rain.py` with the following code:

```

1 channel = 21
2 GPIO.setmode(GPIO.BCM)
3 GPIO.setup(channel, GPIO.IN)
4 led=Buzzer(20)
5
6 while True:
7     if GPIO.input(channel):
8         print("No Moisture Detected!")
9         if not no_rain.is_active:
10            print("But It's raining!")
11            time.sleep(1)
12        else:
13            print("Not Raining!")
14            time.sleep(1)
15            print("Indicating through LED")
16            led.on()
17
18    else:
19        print ("Moisture Detected!")
20
21    time.sleep(1)
22    led.off()
23
24
25
26
27
28
29
30

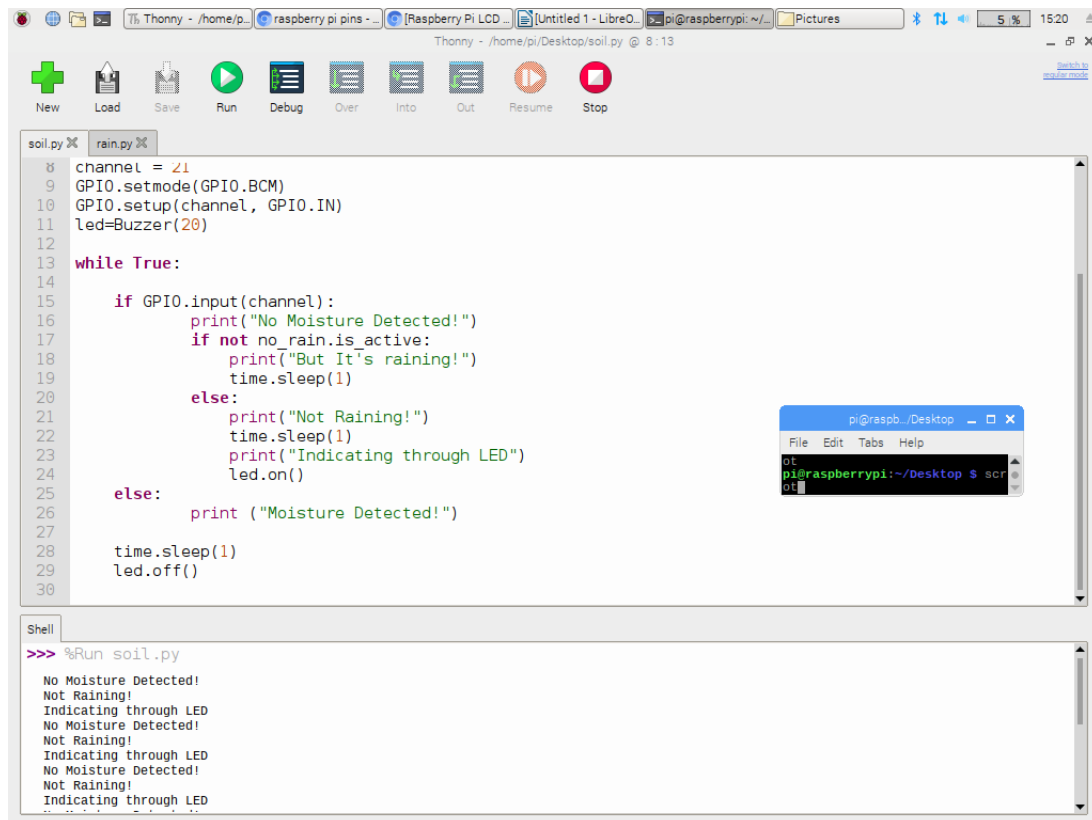
```

The output window at the bottom shows the execution results:

```

No Moisture Detected!
Not Raining!
Indicating through LED
No Moisture Detected!
Not Raining!
Indicating through LED
Moisture Detected!
Moisture Detected!
Moisture Detected!
No Moisture Detected!
Not Raining!

```



```
8 channel = 21
9 GPIO.setmode(GPIO.BCM)
10 GPIO.setup(channel, GPIO.IN)
11 led=Buzzer(20)
12
13 while True:
14
15     if GPIO.input(channel):
16         print("No Moisture Detected!")
17         if not no_rain.is_active:
18             print("But It's raining!")
19             time.sleep(1)
20         else:
21             print("Not Raining!")
22             time.sleep(1)
23             print("Indicating through LED")
24             led.on()
25     else:
26         print ("Moisture Detected!")
27
28     time.sleep(1)
29     led.off()
30
```

```
>>> %Run soil.py
No Moisture Detected!
Not Raining!
Indicating through LED
No Moisture Detected!
Not Raining!
Indicating through LED
No Moisture Detected!
Not Raining!
Indicating through LED
```

