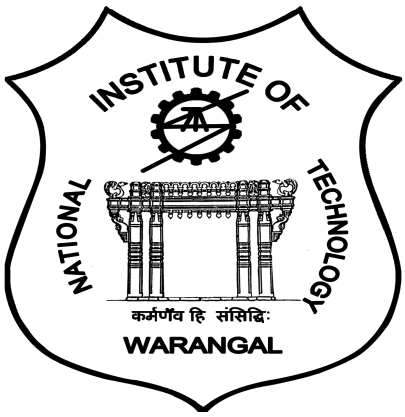

NATIONAL INSTITUTE OF TECHNOLOGY,WARANGAL 506004.
ELECTRONICS AND COMMUNICATION ENGINEERING
INTEGRATED CIRCUITS APPLICATIONS LAB

AUTOMATIC PLANT IRRIGATION SYSTEM

Submitted By:

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Guided By:
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Department Of Electronics And Communication Engineering

This is to certify that undersigned students of III/IV B.Tech , Section-B Electronics and Communications Engineering Branch, have completed their mini project entitled “Automatic Plant Irrigation System “ for the partial fulfilment of Integrated circuit Applications laboratory.

Name	Roll No	Signature
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Signature of the Faculty

CONTENT :-

Abstract:

Here is a simple project more useful in watering plants automatically without any human interference. We may call it as Automatic plant irrigation system. We know that people do not pour the water on to the plants in their gardens when they go to vacation or often forget to water plants. As a result, there is a chance to get the plants damaged. This project is an excellent solution for such kind of problems.

Introduction:

With the development of technology in water saving and irrigation, Automatic irrigation is more popular in farms, gardens, parks etc. Most of the technology and device comes from other countries. They are too expensive. Our project is based on less cost and simple operations.This circuit utilizes four LEDs to indicate the level of moisture in the soil. An increase in the number of LED’s on indicates an increase in the amount of moisture present.

Instruments:

Hex Inverter 7404

Capacitor (47u, 0.01u, 100u, 10u (16V))

Resistor (4.7k, 8.2k, 1000k, 27k, 100, 10k, 680, 100k)

Transistors (SK100, BC547, BC548).

Diode (1N4148, 1N4007)

Relay (6V)

NE555 timer IC

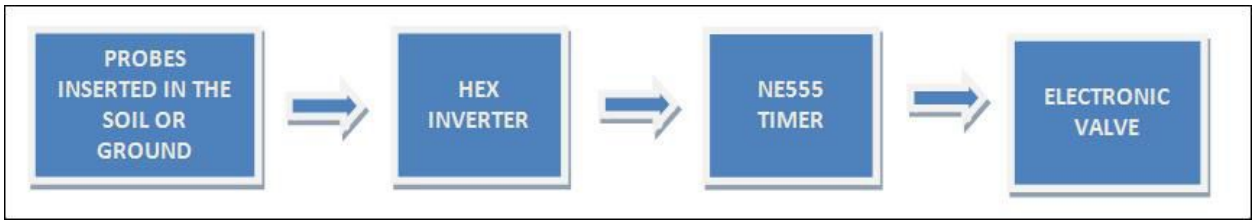
Zener Diode (3.3V)

Bread Board

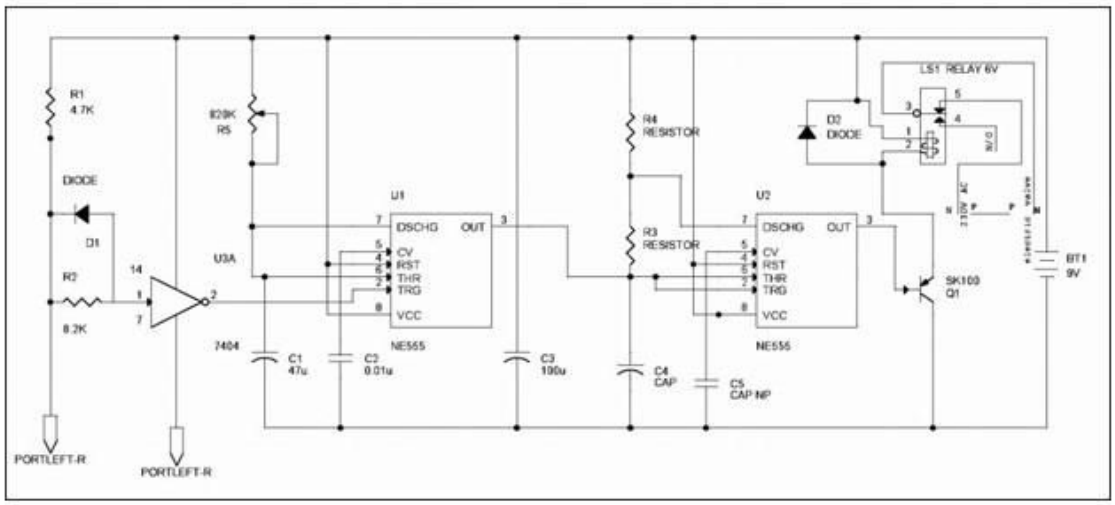
LED

4.Automatic Plant Irrigation:

4.1 BLOCK DIAGRAM:



CIRCUIT DIAGRAM:



4.2 OPERATING PRINCIPLE:

->We use the basic concept in this project that soil has high resistance when it is dry and has very low resistance when it is wet.

->By using this concept we will make the system work. We insert two probes in the soil in such a way that that they will conduct when the soil is wet and they will not conduct when the soil is dry. So, when the probes do

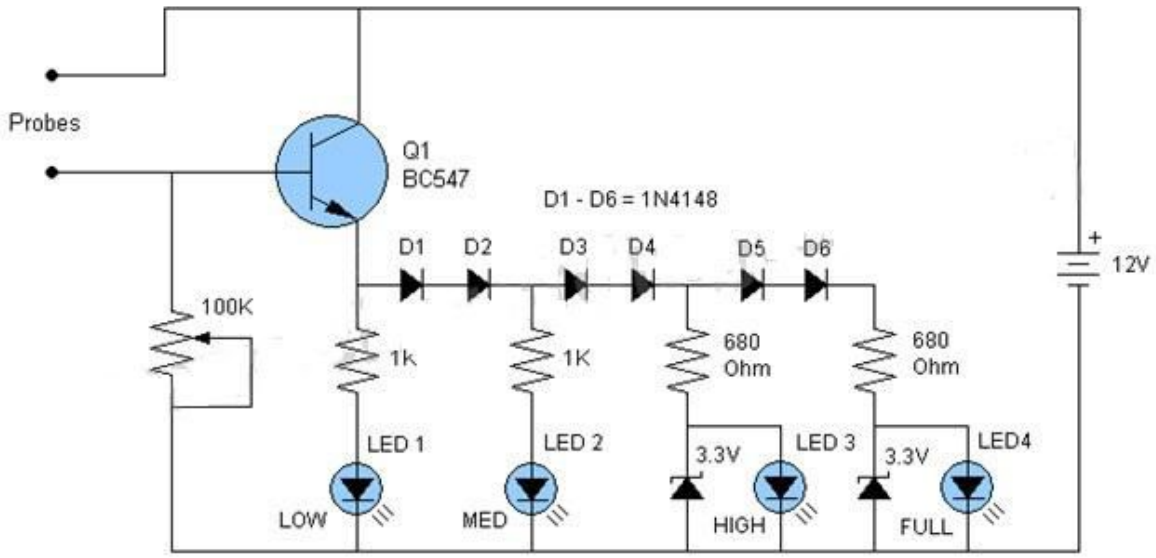
not conduct, system will automatically detect this condition with the help of HEX inverter which will become high when the input is low.

->HEX inverter will trigger the NE555 Timer and this NE555 timer will trigger another NE555 which is connected to the output of first NE555. Now the second NE555 which is configured as astable multivibrator will help to switch on the Electric valve and as result, it will allow the water to flow to the soil.

->When the water wet the soil, probes will again conduct and make the output of 7404 low which will make the first NE555 to low and also drive remaining circuit to low. So, automatically it will switch off the relay and closes valve.

5.Moisture Level Indicator:

5.1 CIRCUIT DIAGRAM:



5.2 OPERATING PRINCIPLE:

The moisture level indicator will work as a LED meter which will indicate the moisture level from low to full.Current through power supply enters the soil and received at transistor when probes are inserted into the soil. Emitter and collector current of transistor display results through a series of 4 LED's. The greater the moisture the more voltage will pass through transistor and more LED 's will be lit. If there is low moisture, little or no current will pass through transistor and few or none of the LED's will be on.

6.Further Extension:

We can also use a water level indicator which will indicate the water level on the tank, when the water level is low it will start a dc motor and when the water level is high it will switch off the motor.

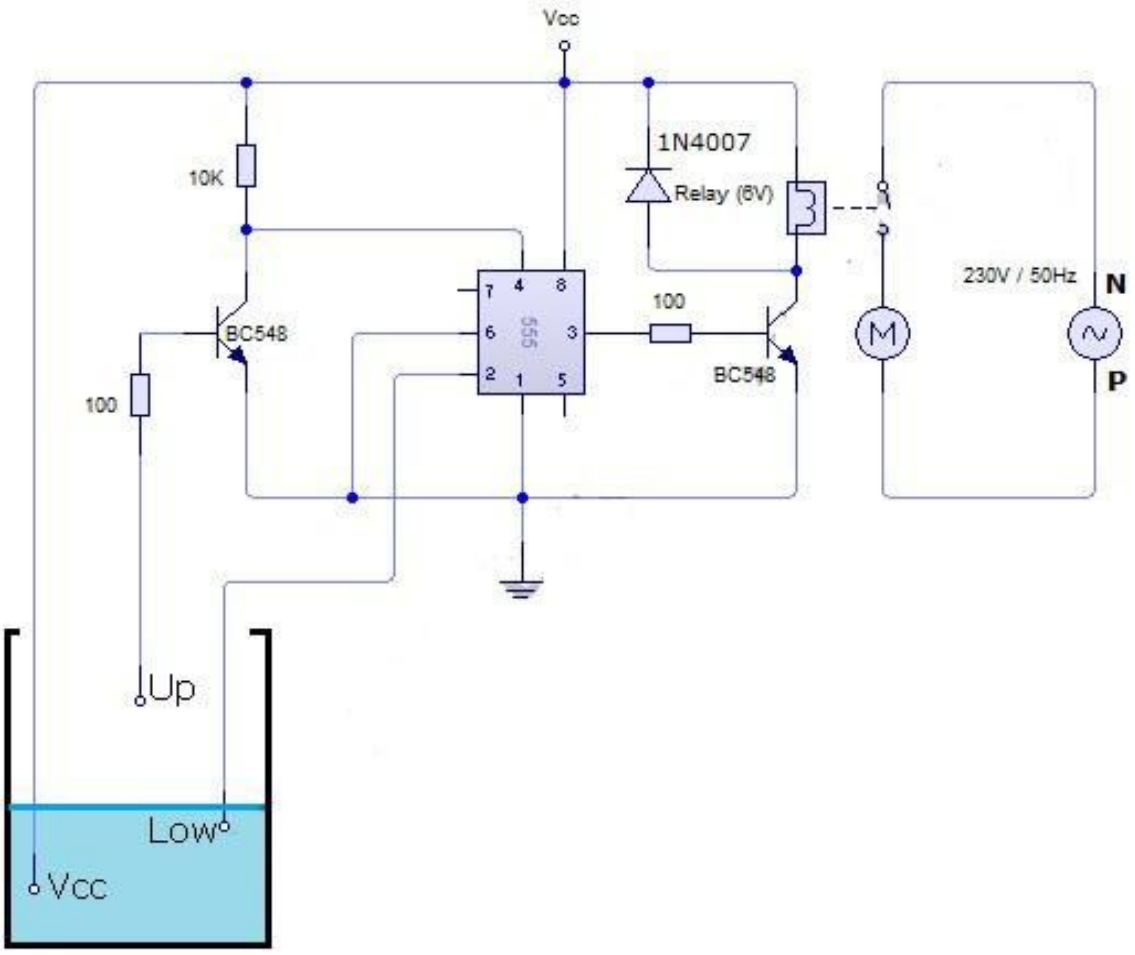


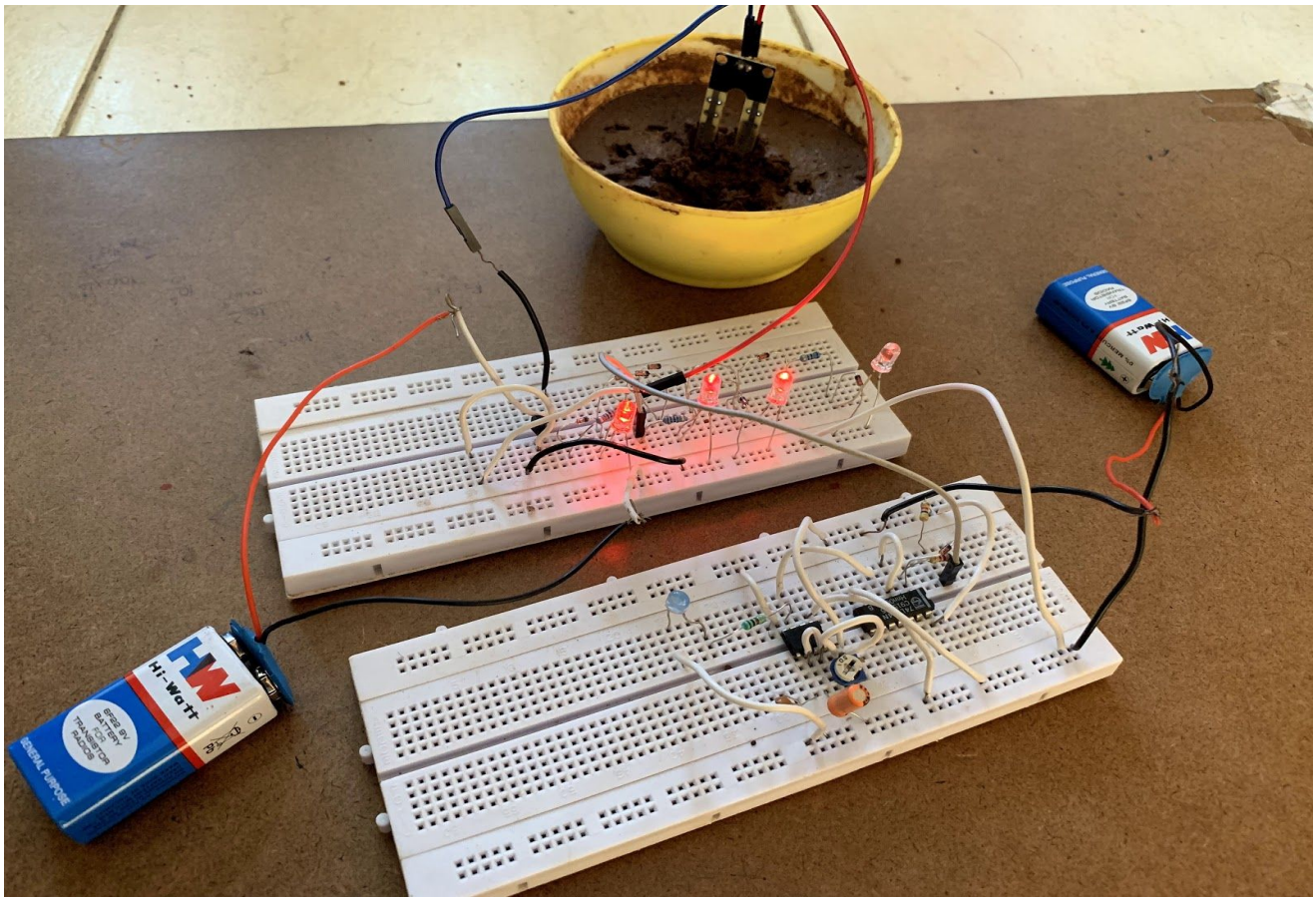
fig.Water Level Indicator

7.Applications:

1. We can use this project to water our plants automatically without any human interference.
2. It can also be used as a moisture level indicator.
3. It can also be used in the cultivation of field crops.

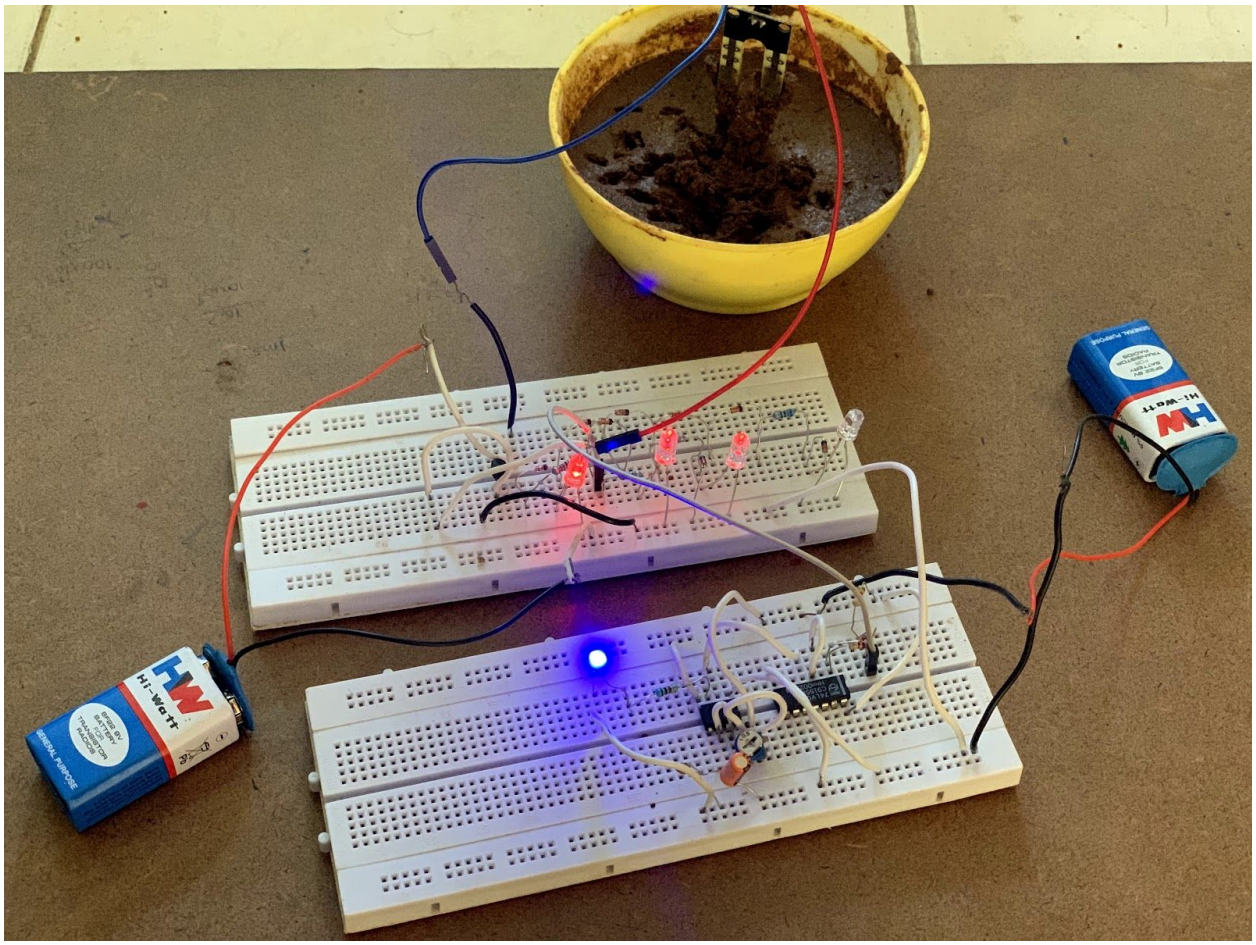
8.Project Images:

1)



***When the soil moisture level is in between preset values.

2)



***When the soil moisture level is not in between the preset values.

9.Conclusion:

Mainly we selected this project for our city dwellers. Living in this big city people still can’t forget their root. Even though they are busy, they want to plant trees in small pots or even making a garden in their roof. To make their work easy this project can be handy.