



Ahsanullah University of Science & Technology

Electrical & Electronics Engineering

Project

Project Name: Water Level Indicator.

Course Number: EEE-2212

Course Name: Measurement and Instrumentation Lab

Submitted By:

Department: EEE

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Section: A (A2)

Group NO. : 05

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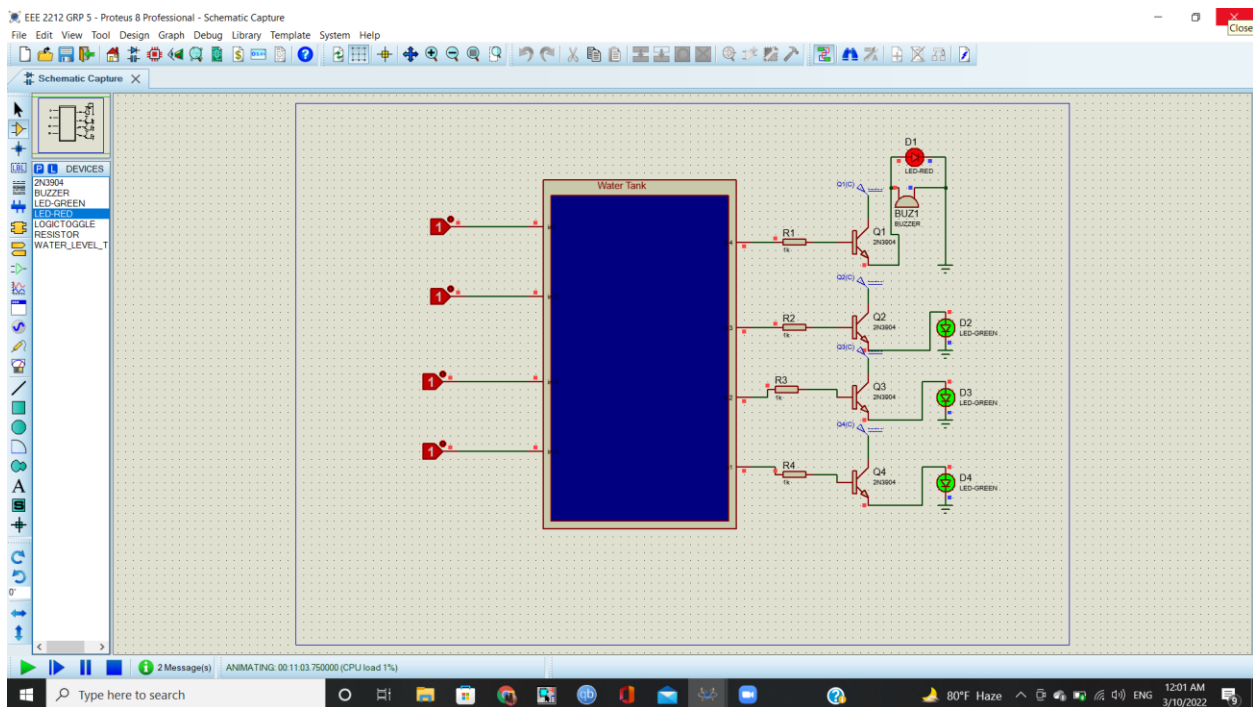
OBJECTIVE: This circuit is intended to measure the water level in a water tank.

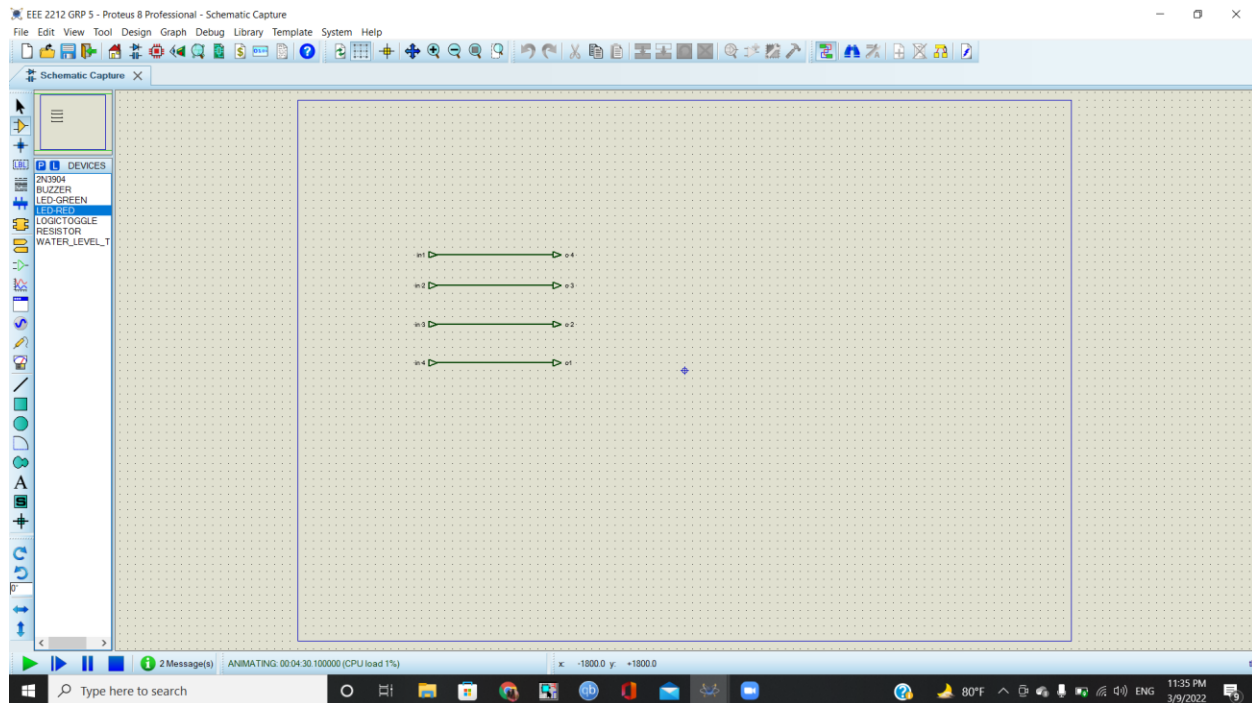
- As the water level rises from the tank's base, the number of glowing LEDs increases with it.
- It is simple to calculate the amount of water in a water tank.

Equipment:

- Transistor.
- 1 k ohm Resistor.
- Sound Buzzer.
- LEDs.

Circuit Diagram:





Working of Circuit Components:

Transistor:

The circuit's most important component. It functions as a switch. This transistor's most essential attribute is that it only produces an output from the collector when its base voltage, V_b is greater than its emitter voltage, V_e ($V_b > V_e$).

1k ohm Resistors:

1kOhm resistance is used for device safety in this experiment. Every transistor has a fixed voltage rating, if high voltage passes through any transistor the device will be damaged and we won't get any warning or indication if the water level has risen.

Another purpose of adding 1kohm resistance is that we can use it by PNP transistors as well. So it is beneficial for us as we can use it in 2 different transistor configurations without changing internal parameters, we do it only by swapping the NPN transistors with PNP transistors.

LEDs:

Light Emitting Diodes (LEDs) are used in the circuit to display the water level in the tank. These diodes work at 1.5 volts.

Working Principle:

- When a wire is submerged in water and connected to a BJT through a 1kOhm resistor, a voltage across the transistor's base is produced. The current in the collector begins to flow. This is how LEDs will be flashed.
- After consecutive connections of wires with BJT, corresponding LEDs will illuminate, and when the wire on the top-level is linked to the BJT with a Buzzer connection, there will be a sound alarming when the water level has exceeded its maximum level, and water will flow over.

Applications of Circuit:

- Can be used to measure underground storage of water.
- Water level Indicator works to maintain a constant water level.
- It aids in preventing overflow and water waste.
- It can also be used to calculate incoming and outgoing water in large reservoirs.
- Can be used in seas to know about tidal heights, ebb and flow. By this, we can evacuate coastal people before any major calamity.
- We can predict the arrival of floods using this.
- We can understand what portion of a reservoir/tank is filled by the LED lights. Thus we can fill the reservoir/tank before it is vacant.
- We can turn on/off pumps automatically.
- It's possible to utilize it in an irrigation system.