

WATER LEVEL INDICATOR

MINI PROJECT REPORT

Submitted by

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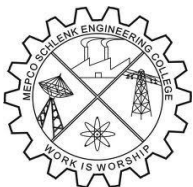
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BONAFIDE CERTIFICATE

Certified that this mini project report titled **WATER LEVEL INDICATOR** is the bonafide work of **MANOJ R(REG: 202104082) , MUTHU KUMARA SAMY S(REG: 202104088)** who carried out the mini project under our supervision in the **19CS451 Microprocessors and Microcontrollers Laboratory**.

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CHAPTER I

PROBLEM STATEMENT

The drinking water crisis in Asia is reaching alarming proportions. It might very soon attain the nature of global crisis. Hence, it is of utmost importance to preserve water for human beings. In many houses there is unnecessary wastage of water due to overflow in overhead tanks. Automatic Water Level Indicator and Controller can provide a solution to this problem. The operation of water level controller works upon the fact that water conducts electricity due to the presence of minerals within it. So water can be used to open or close a circuit. As the water level rises or falls, different circuits in the controller send different signals. Hence by using the water level indicator we can detect the water level and conserve the water resources.

CHAPTER II

INTRODUCTION

A water level indicator is a system that relays information back to a control panel to indicate whether a body of water has a high or low water level. Some water level indicators use a combination of probe sensors or float switches to sense water levels. It is used to show the level of water in an overhead tank, this keep the user informed about the water level at all the time and avoids the situation of water running out when it is most needed. Indicator circuit also has alarm feature. It not only indicate the amount of water present in overhead tank but also gives an alarm when the tank is full. The water level indicator System using Arduino is a proactive approach towards conservation of water and promoting efficient boarding processes.

CHAPTER III

SYSTEM REQUIREMENTS

Hardware Requirements:

- Arduino Uno R3
- LCD Display
- I2C Module
- Buzzer
- Water Sensor

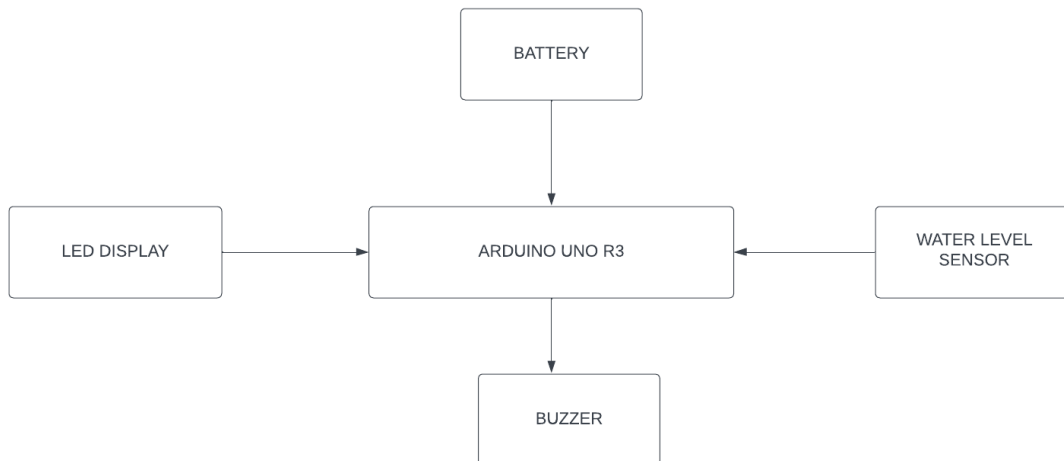
Software Requirements:

- Arduino IDE

CHAPTER IV

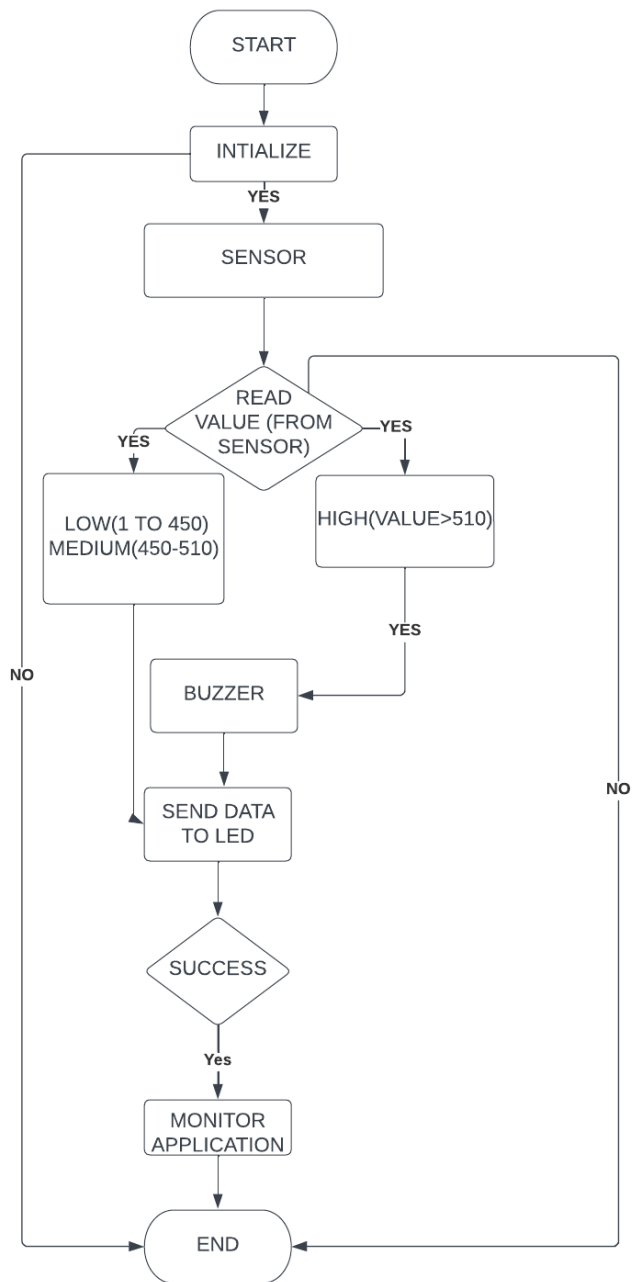
SYSTEM DESIGN

System Diagram:

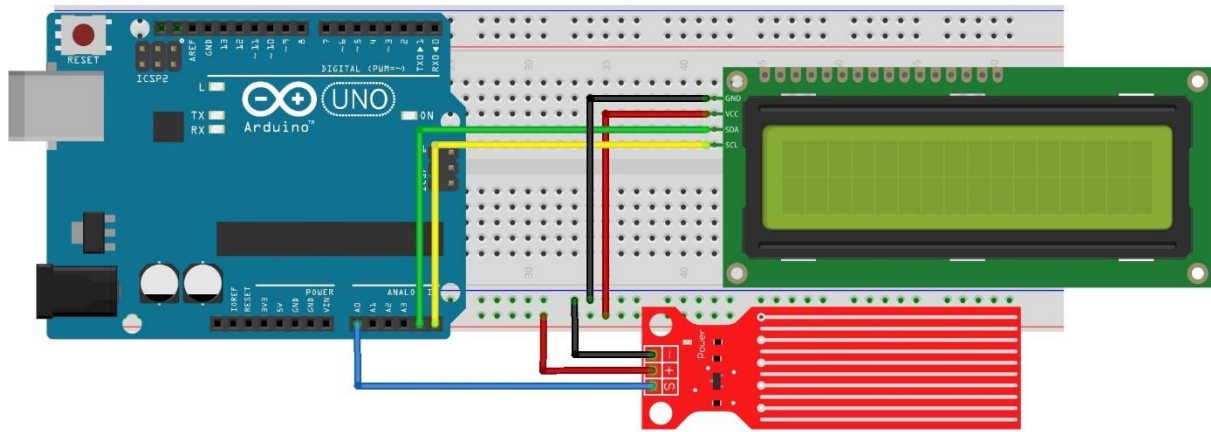


The system diagram for the Water level indicator System using Arduino consists of three main components: Arduino microcontroller, Water sensors, and an alarm module. The water sensors are connected to the Arduino, which processes the sensor data. If the water is detected within the specified range(level), the Arduino activates the alarm module, generating an audible and visible alert. This diagram illustrates the flow of information and control between the components, ensuring real-time monitoring and timely alarms to overcome the conservation of water resources.

Flowchart:



Circuit Diagram:



Hardware Specifications:

Arduino Uno:



Dimension: 45.72mm x 66.04mm

Processor: ATmega328

Memory:

- Flash Memory: 32KB

- SRAM:2KB
- EEPROM:1KB

Processor: ATMega16U2

Memory:

- Flash memory:16KB
- EEPROM:512B
- SRAM:512B

Power:2.5 – 5.5V

Operating Temperature: -40-85°C

Buzzer:



Supply voltage:115VAC/230VAC

Supply voltage:24vdc

Tones: continuous

Sound level SPL:85db

Current consumption:25mA

Weight:0.08kgs

WATER SENSOR:



Connecting a water sensor to an Arduino is a great way to detect a leak, spill, flood, rain, etc. It can be used to detect the presence, the level, the volume and/or the absence of water. While this could be used to remind you to water your plants, there is a better Grove sensor for that. The sensor has an array of exposed traces, which read LOW when water is detected. we will connect the water sensor to Digital Pin 8 on Arduino, and will enlist the very handy LED to help identify when the water sensor comes into contact with a source of water.

WIRES:



Jumper wires are simply wires that have connector pins at each end, allowing them to be used to connect two points to each other without soldering. Jumper wires are typically used with breadboards and other prototyping tools in order to make it easy to change a circuit as needed

CHAPTER V

IMPLEMENTATION

```
#include <LiquidCrystal_I2C.h>
LiquidCrystal_I2C lcd(0x27, 16, 2);
int buzzerPin = 9; // Assuming the buzzer is connected to pin 9
void setup() {
    Serial.begin(9600);
    lcd.init();
    lcd.backlight();
    pinMode(buzzerPin, OUTPUT);
}
void loop() {
    int value = analogRead(A0);
    lcd.setCursor(0, 0);
    lcd.print("Value :");
    lcd.print(value);
    lcd.print(" ");
    Serial.println(value);
    lcd.setCursor(0, 1);
    lcd.print("W Level :");
    if (value == 0) {
        lcd.print("Empty ");
        noTone(buzzerPin); // Turn off the buzzer
    } else if (value > 1 && value < 350) {
        lcd.print("LOW ");
        noTone(buzzerPin); // Turn off the buzzer
    } else if (value > 350 && value < 510) {
        lcd.print("Medium");
        noTone(buzzerPin); // Turn off the buzzer
    } else if (value > 510) {
        lcd.print("HIGH ");
        tone(buzzerPin, 1000); // Turn on the buzzer at a frequency of 1000 Hz
    }
}
```

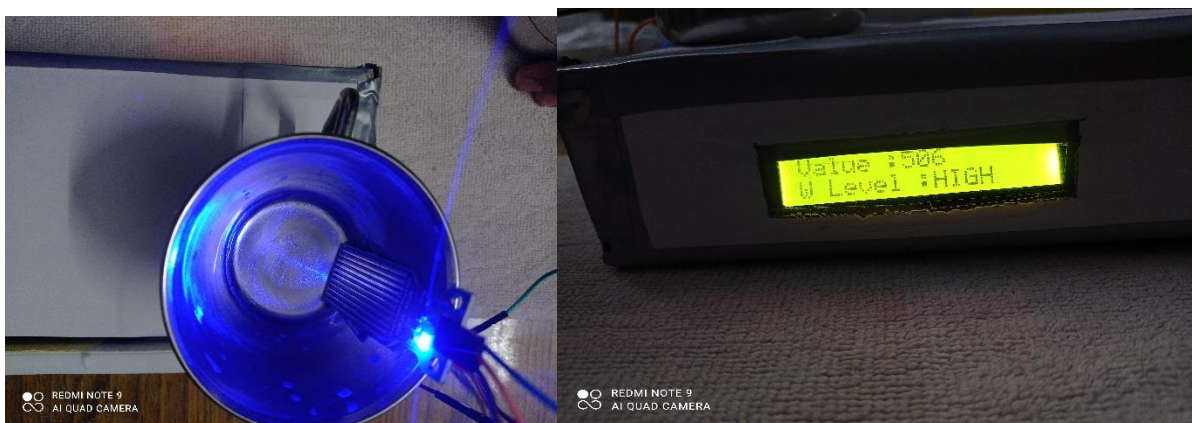
CHAPTER VI

RESULT

When the water is in empty level:



When the water is high:



CHAPTER VII

CONCLUSION

This project was intended to design a simple and low cost water level indicator. This is not only for water tank but also used for oil level and chemical lab. To design this system, we used transistor as a platform and local materials for low cost. We tried to design a system in such a way that its components will be able to prevent the wastage of water. The whole system operates automatically. So it does not need any expert person to operate it. It is not so expensive. This design has much more scope for future research and development. Though it is a project, we hope some modification in this project will lead to a reasonable diversity of usage.

CHAPTER VIII

REFERENCES

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