

DAM WATER LEVEL ALERT SYSTEM - PROJECT REPORT

Abstract

This project is aimed at developing a dam water level alert system using microcontroller-based sensing. It helps in real-time monitoring of water levels and gives alert signals to prevent overflow-related disasters.

Problem Statement

In flood-prone areas, overflow of dams can cause major damage. Manual monitoring is inefficient and lacks real-time alerts. A reliable automatic system is necessary to monitor dam water levels and trigger timely warnings.

Scope of the Project

The system is intended for use in dams, reservoirs, and large-scale water bodies. It enables local visual and audio alerts when water crosses critical levels. The system is scalable for IoT applications.

Components Required

- Arduino UNO
- Ultrasonic Sensor (HC-SR04)
- 16x2 I2C LCD
- Buzzer
- Red & Green LEDs
- Jumper Wires, Breadboard
- Arduino IDE, TinkerCAD, EasyEDA

Working Principle

The ultrasonic sensor measures the distance from the water surface to the sensor placed above. Based on the measured level, alerts are triggered through a buzzer and LEDs. The LCD displays real-time level.

Simulation

The circuit was simulated using TinkerCAD, ensuring proper connection and functionality of all components. The buzzer and red LED turn ON when the water level is below 30 cm (i.e., danger zone).

PCB Design

A compact PCB layout was created using EasyEDA. It supports inputs from the ultrasonic sensor and outputs to the LCD, buzzer, and LEDs. The Gerber files have been generated for fabrication.

Conclusion

The project successfully demonstrates a real-time dam water level monitoring and alert system using microcontrollers. It can be extended with GSM/IoT modules for remote alerting in the future.