Introduction

The Smart Irrigation System using IoT is designed to monitor and manage water distribution for crops in real-time. By employing a network of sensors, the system collects data on soil moisture levels, temperature, humidity, and other environmental factors. This data is then transmitted to a central server or cloud platform, where it is analyzed to determine the optimal irrigation schedule.

Purpose and need of Project:

- Optimize Water Usage
- Enhance Crop Yield
- Reduce Labor Costs
- Sustainable Agriculture

Objectives

- To optimize water usage in agricultural helds by leveraging real-time data from various sensors.

- To improve crop health and yield by maintaining optimal soil moisture levels.

Methodology

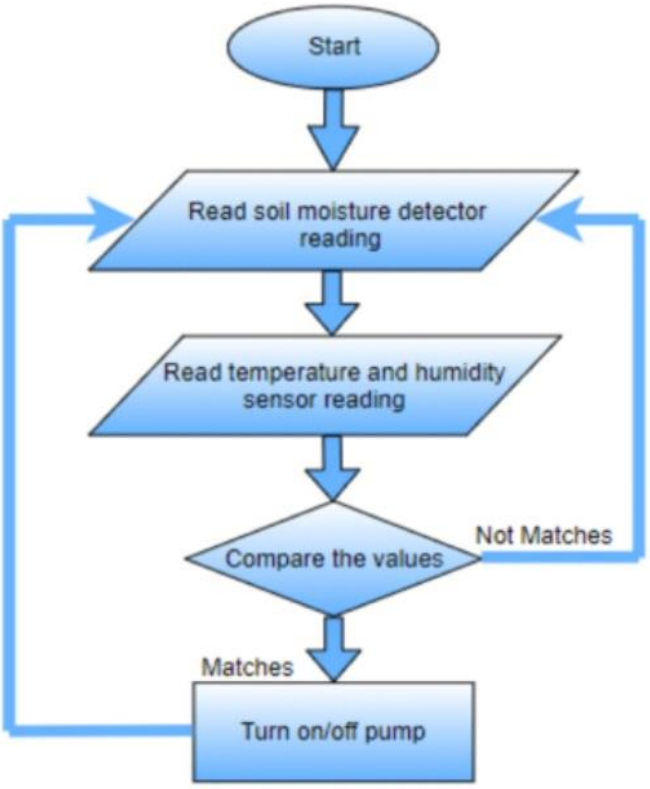

Fig:1.1 Methodology

Implementation:

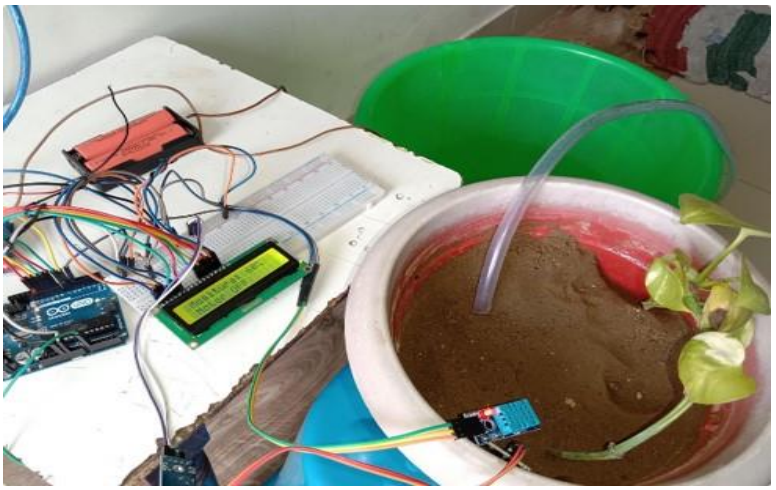

Fig:1.2 Implementation

Technologies used

Hardware:

- Sensors: Soil Moisture Sensors, Temperature Sensors, Humidity Sensors.
- ESP32
- Actuators: Solenoid valves, motorized ball valves, and pumps for controlling water flow and distribution.
- IoT Gateway: Devices to collect data from sensors and transmit it to the cloud.

Bibliography:

[1] Random nerd tutorials [Online]. Available: https://randomnerdtutorials.com/esp32-Firebase realtime-database.