



## Arduino Based Smart Water Management System

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October 20, 2021

# ARDUINO BASED SMART WATER MANAGEMENT SYSTEM

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**Abstract**—Water is an essential resource for all life on the planet. But the people who are privileged with fresh water either don't care about saving water or are not aware that where they are wasting water and it is a fact that by 2025, 2/3<sup>rd</sup> of world population will face water shortages therefore there is an urgent requirement for this water management system to be implemented in every household, dam and every other possible water resources in order to save the future of life on earth. Water is an essential resource for all life on the planet. Lots of people don't realize the true importance of drinking enough water every day. More water are wasted by many uncontrolled way. This problem is quietly related to poor water allocation, inefficient use, and lack of adequate and integrated water management. Therefore, efficient use and water monitoring are potential constraint for home or office.

**Keywords**—sensors, microcontrollers, IOT, Android, blockchain, cost-effective.

## I. INTRODUCTION

By using water monitoring system, we avoid the water wastage, power consumption and easily prevent the water for our generation. In this project Tank Water Level Monitoring, is used to avoid overflowing and intimate level of water in the tank. Water controlling system implementation makes potential significance in home applications. The existing automated method of level detection is described and that can be used to make a device on/off. Water pollution monitoring can help with water pollution detection, discharge of toxic chemicals and contamination in water. And also check the quality by using Temperature, pH and turbidity. Water pipelines leak detection, Pipeline systems are responsible for transporting vital materials such as water, oil and gas. Any leakage in the pipe can cause major financial losses and possible environmental damages.all these system will send data to an android application there there will be a live track of the data.

## II. LITERATURE SURVEY

[1]Ms T.Deepiga and Ms A.Sivasankar made use of wireless sensor technology to avoid the huge amount of water wasted in of large apartments/offices. The hardware used were microcontrollers and sensors whereas the software used was MATLAB.

[2]Prof Savita Lade et al made a water management system that could control the water wastage, if the water is filled by 100% value then system will stop automatically and if it is minimum then it will activate the motor pump. The hardware used in this project are Arduino, WiFi Module and ultrasonic sensor. The project was cost-effective.

[3]Ms. Reshma et al designed IOT based drinking water management system where pollution monitoring can detect toxic chemicals. The quality checks were done by different types of sensors like gas sensors, pH sensors, turbidity sensors etc. The software that was used was embedded C. The system also consisted of IOT cloud.

[4]Jemy Joseph et al designed Water management system using IOT where they used laser sensor for detecting water level. The transceivers were used to send the data and the data gets stored in Adafruit cloud platform.

[5]Adarsh Vernekar designed a blockchain based water management system using etherium. The API service used was REST. The blockchain technology had good security issues and it had many advantages like high reliability, traceability and immutability.

## III. METHODOLOGY

The project would be implemented using hardware and software. The hardware part will consist of sensors sub-system (Fig 2). The sensors sub-system consists of various sensors like turbidity, pH, ultrasonic sensor etc and various types of microcontrollers. pH sensor will be used to check the acidity/basicity of the water, turbidity sensor will be used to check the pollution level of water and ultrasonic sensor will be used to check the water level. Microcontrollers will be used to send the data to the application software so that user will be able to see the live data about their water. The reason for using sensor subsystem is that it is very important to check pollution level in water as this is also a part of water management (Fig 1). The platform that will be used is android application.

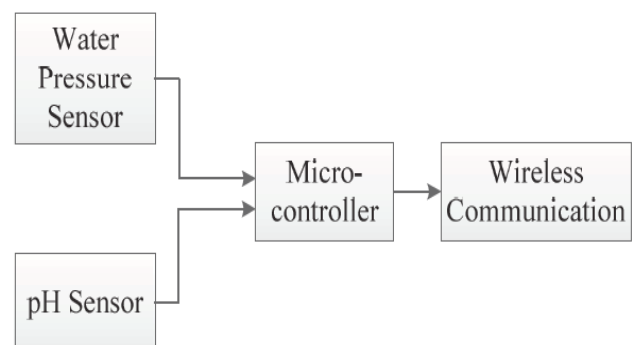


Fig 1: Block Diagram Of Water Management System

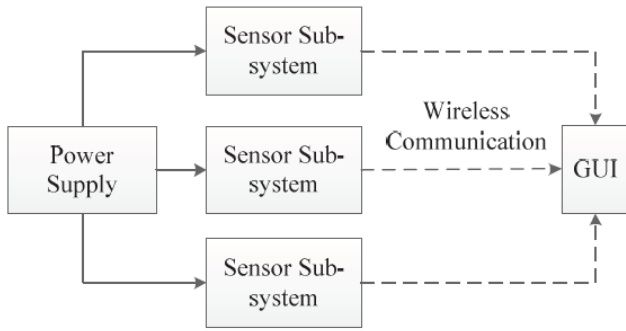


Fig 2: Sensor Sub-system

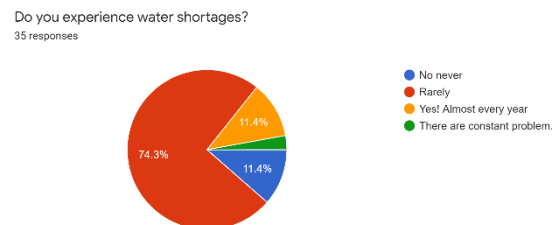
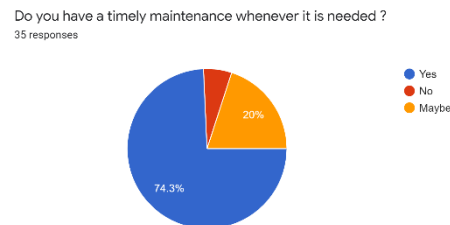
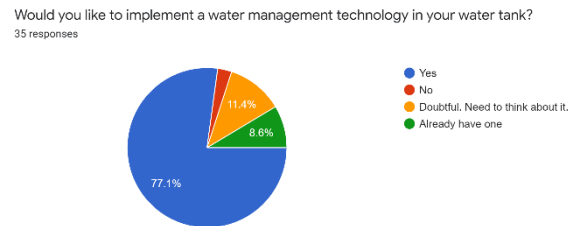
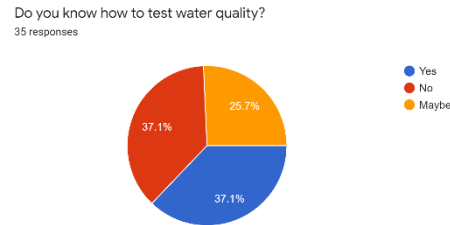
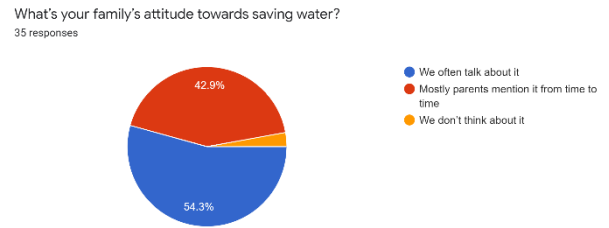
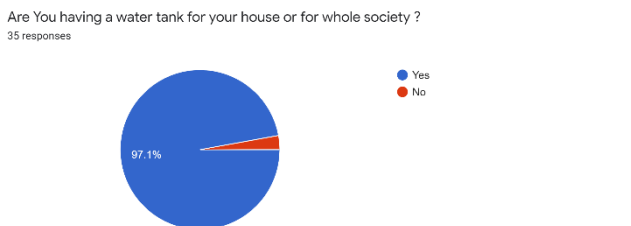
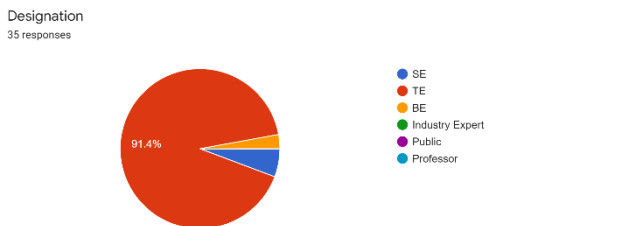
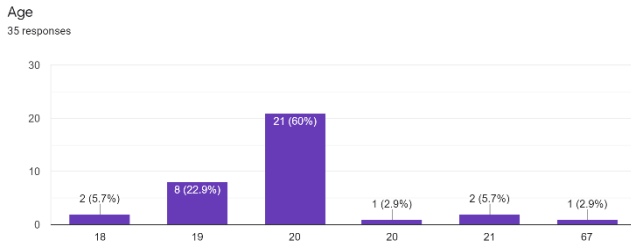
The reason for using android programming is that it is very easy to adopt, The codes are easily integrated and it is open source.

#### IV. RESULT

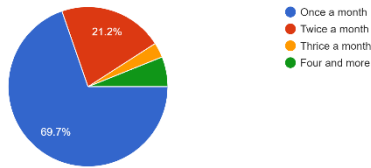
In future scarcity of water is going to become a major problem to mankind therefore there is an urgent requirement of a system for the management of fresh water. Further providing live track of data and warning the user through android application whenever there is a wastage of water will be a good solution to the problem. In future we look for better improved methodologies, more automation and more user-friendly application on this system and we hope that this system will be applied to dams, farms and every other possible water resources.

#### V. SURVEY

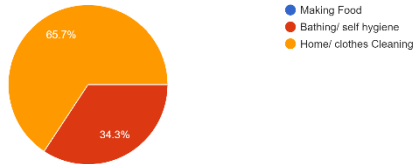
The following survey was conducted for our project:



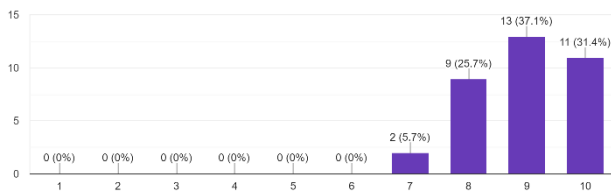
How Often is the water meter read?  
33 responses



In your house according to you what is more water consuming?  
35 responses



How much would you like to rate project idea?  
35 responses



Suggestions if any  
4 responses

No!
Great ideal
Include rain water harvesting
Na

## VI. CONCLUSION & FUTURE SCOPE

This project will make aware about the water wastage. It will be user friendly software. Every single human being that is

privileged with the fresh water should have this Water management system is in order to detect and stop the wastage of water. It can be used in places like dams/reservoirs, farms and every other possible resource. The proposed system that will be designed will be a cost-effective system.

## REFERENCES

- [1] Ms Deepiga and Ms A.Sivasankar, "Smart Water Monitoring System Using Wireless Sensor Network at Home/Office", IRJET, Volume 2, Issue 4, pp- July 2015.
- [2] Prof. Savita Lade et al, "Water Management System Using IoT with WSN", IRJET, Volume 5 issue 3, pp- March 2018.
- [3] Ms Reshma et al, "IOT BASED DRINKING WATER MANAGEMENT SYSTEM", IRJET, Volume 6, Issue 3, pp-March 2019.
- [4] Jemy Joseph et al, "Water Management System Using IoT", IRJET, Volume 5, Issue 4, pp- April 2018.
- [5] Adarsh Gurudas Vernekar, "Blockchain Based Water Management System", IRJET, Volume 7, Issue 5, May 2020.
- [6] Muhammad Azwan Nasirudin et al, "Fresh Water Real-Time Monitoring System Based on Wireless Sensor Network and GSM", IEEE, Date of Conference: 25-28 Sept. 2011, Date Added to IEEE Xplore: 15 November 2011
- [7] Mr. Kuldip Singh et al, "REAL TIME BASED WATER SUPPLY MANAGEMENT SYSTEM", Date of Conference: 23-24 Aug. 2013, Date Added to IEEE Xplore: 15 October 2013.
- [8] F Ntambi et al, "Design of a Water Management System", Date of Conference: 14-17 Sept. 2015, Date Added to IEEE Xplore: 19 November 2015
- [9] K. Mohammed Shahanas and P. Bagavathi Sivakumar, "Framework for a smart water management system in the context of smart city initiatives in India", Procedia Computer Science, pp- December 2016.
- [10] Rosiberto S. Gonçalves et al, "REFlex Water – A Tool for Smart Water Management", Volume 5, Issue 9, pp- September 2018