Analysing Water Quality of an Area - II

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***Abstract*—Water quality is an important issue in everyday life.Motive of this project is to understand the importance of water and use it carefully by using Internet of Things (IoT).The main inspects of this system is to understand and apply some techniques to ensure and investigate the quality of water. Our main aim is to build an economically low cost and user friendly system.**

Keywords—pH sensor, water level sensor, turbidity sensor, oxygen level sensor, power supply, Arduino Uno ATmega2560, google analytics, google cloud, web server, ESP8266 Wi-Fi module.

I. INTRODUCTION

As we know water is an important part of life for an healthy living being so we have came across certain issues that causes water pollution that are flooding in rainy season bad water quality from municipal bodies are such reason. To overcome we have developed a model that will help to get real time data according to sensor sensing the water. After getting the data we will create a data set that will to visualize the data in the form of graphs. The main objective of this project is get data of pH, turbidity, water level, temperature and dissolved oxygen present in the water. With the help of the model this will be an easy task for the users to get the data . The data will be stored in tha cloud named ThingSpeak, all this will make the model more compact.

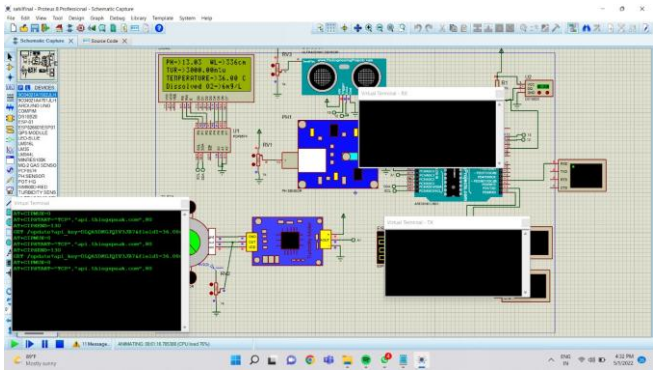
Parameter	Range
pH	6.5 - 8.5
Turbidity of water	>1 NTU
Oxygen level	6.5 – 8.0 mg/L

II. THE USE OF PROTEUS IN OUR PROJECT

Proteus is a software to develop, design electronic components into a circuit. With the help of proteus we can make same hardware connections into simulation. This is a software for making an initial start of the project. Here we can build our own library with the help of some codes. This software was developed by lab centers electronics and is used by electrical engineers and can make 2D as well as 3D circuits.

A. *Components Used*

- Arduino Uno Board
- ESP8266
- pH Sensor
- Turbidity Sensor
- Water level sensor



III. CIRCUIT DIAGRAM

We have connected four sensors and one esp8266 with Arduino board. We have also connected LCD to get the results, this sensors will help to get data in a real time basis.

The pH sensor need analog connection which is connected to the analog part of the Arduino .It has one input and three output window where one is given to vcc and one to the gnd and the last pin is connected to the Arduino board. The turbidity sensor is also connected in the same way which helps to get real time data of the dissolved impurities in the water. We have connected ultrasonic sensor , the trigger and the echo pin with the digital part of the arduino and the digital temperature is also connected to the dq pin of the arduino . we have connected the esp with the arduino for the data transmission where we can get the virtual terminal.

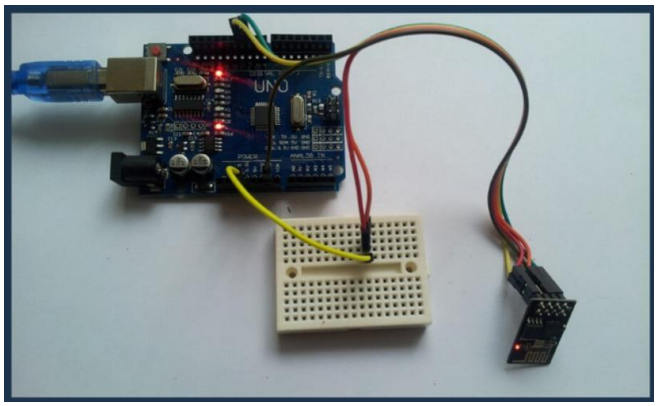
This virtual terminal will help to get the data visualization part for the data plotting.

A. *Virtual terminal in proteus*

Virtual Terminal is a Proteus utility that may be used to read and transfer data to Serial Port (DB9). Hyper Terminal, a built-in utility in Windows XP, is a useful tool. As previously stated, Proteus' Virtual Terminal is utilized to send and receive data to and from a serial port. A serial port is a 9-pin connection that is commonly seen on computers and is used for data exchange in embedded system projects. Data is normally delivered from hardware to computer through serial port in student projects, and then the user creates an application on their computer to see the data in some representable form.

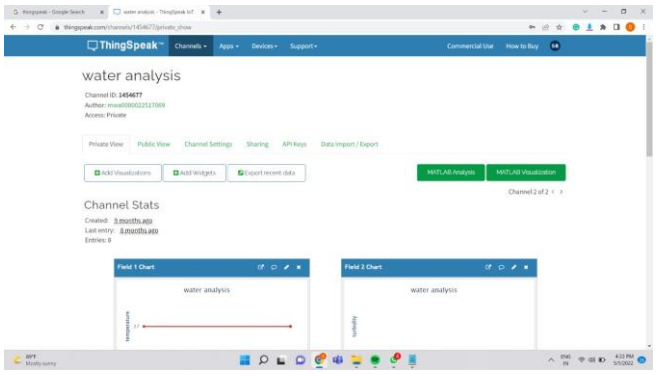
B. *Connection of Arduino with ESP*

We have connected esp with arduino to upload the code to get connection with the thingspeak. The AT commands are used by the ESP8266. If all goes well and we send AT to the ESP, the ESP responds positively. The OK response when we transmit AT is only a test that my ESP8266 is correctly connected, receiving and processing commands. Because every AT command must be terminated by (CR and LF) special characters, testing ESP8266 with Arduino is a little problematic.



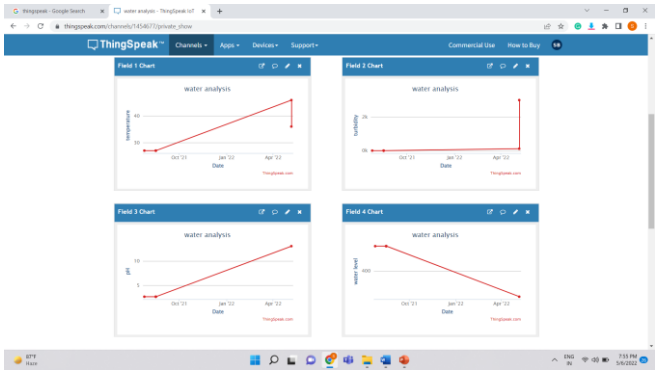
IV. THINGSPEAK CONNECTION

After doing all the connection with the proteus and arduino and esp we to make an account in thingspeak where data analytics will happen. To perform this we have create an account in thingspeak and we have add channels. We have to add information of the project where we will add all the sensor details. This all we give an API where we have add this on the code in arduino IDE.After making all the setup we will see the graphs as per the sensor senses the data.



V. RESULTS

This all connection and setup will help to get the final output. Due to thingspeak we can visualize and analyze the data and we can see the graph according to that. All the data are stored in a csv supported file. As we know thingspeak is a cloud platform all the data will be stored lifetime and can be accessed from any and everywhere. The following are the outputs shown below:-



VI. COCLUSION AND FUTURE SCOPES

In future we will try to upgrade our machine that will help us to purify the water. If the parameter will match the requirement the motor will pump up the water in the tanks that will reduce the man cost and man power as well. Water quality is one of people's most fundamental and essential needs. As a result, society requires water quality monitoring and purification. This project will ensure water quality monitoring. Water is used for application and industrial purposes in a fundamental manner. Water quality is monitored, and sequential follow-up is done. It is possible to achieve water pollution in isolated regions.

REFERENCES

1. Arnav Arvind, Rajtirtha Paul, Paurush Bhulania "Implementation of Water Quality Sensing System using Internet of Things"
2. Vaishnavi V. Daigavane and Dr. M.A Gaikwad "Water Quality Monitoring System Based on IOT"
3. Sathish Pasika, Sai Teja Gandla "Smart water quality monitoring system with cost-effective using IoT"
4. Kaushik Gupta, Mandar Kulkarni, Manas Magdum, Yash Baldawa, Prof. Shivprasad Patil "Smart Water Management in Housing Societies using IoT"
5. Sujay Dandekar, Shashank S Kadam, Ria N Choudhary, Sarthak S Vaidya, Vipul S Rajderkar "IOT based Real Time Water Grade Tracking System using Solar Energy"
6. Abdul Rauf Memon, Saadia Kulsoom Memon, Abdul Aziz Memon, Tayab Din Memon "IoT Based Water Quality Monitoring System for Safe Drinking Water in Pakistan"
7. Rekha P, Sumathi K, Samyuktha S, Saranya A, Tharunya G, Prabha R "Sensor Based Waste Water Monitoring for Agriculture using IoT"
8. Jemy Joseph, Manju K M, Sajith M R, Sujith Nair, Vishnu P Viay, Sithara Krishnan "Water Management System Using IoT"
9. Ms. A. Madhuraveni, G. Athithan, S. Thilagavathi, R. Vignesh "Smart Water Management using Iot Environment"