International Journal of Advances in Engineering and Management (IJAEM)
Volume 2, Issue 11, pp: 469-473 www.ijaem.net ISSN: 2395-5252

Water Quality Monitoring System Using IoT

Prof. Tejaswini S. Bhoye, Ms. Simran R. Sharma, Mr. Vaibhav S. Mahajan, Mr. Vishvesh S. Raipatrewar, Mr. Avinash D. Jambhale

Dept. of Computer Engineering,MMIT institute of technology , Pune, India.
Dept. of Computer Engineering,MMIT institute of technology , Pune, India.
Dept. of Computer Engineering,MMIT institute of technology , Pune, India.
Dept. of Computer Engineering,MMIT institute of technology , Pune, India.
Dept. of Computer Engineering,MMIT institute of technology , Pune, India.

Date of Submission: 15-12-2020 Date of Acceptance: 30-12-2020

ABSTRACT: The water quality monitoring system is a dangerous implementation for the subject of pollution of water, with rise in the extension lead of technology and improvement in the actual time environment, the actual time water quality monitoring system is remotely observed by the means of storing the data, transmission and processing. This contribute a smart water quality monitoring with sensor interface device with quality observation in actual time. The smart water quality system comprises of design board, sensors, Wi-Fi module and personal computer. It is automated in the description language of the high speed joint circuit hardware and embedded in the pro gramming language for c.The proposed system gather s the four water factors such as water pH, water level, water conductivity and water temperature with high s peed from different sensors using speaking stuff. If the sensors do not work or get into irregular conditions, then a buzzer will be ON.

Keywords : Water parameters, Internet of things (IoT), WI-FI, Thing Speak.

I. INTRODUCTION

Water is used in various activities, like feasting, agriculture and travel, which may affect water quality. Therefore, the water quality monitoring is needed which includes numerous chemical parameters some of these are pH, redox potential, conductivity, and liquefied oxygen, ammonium and chloride ion amount. The Plan gives the diffuse Nitrogen and Phosphorous load of each surface water body recognizing the load from agricultural waste water body recognizing the load from agricultural, waste water treatment plan, city and other areas to the water form. There is need to advance present system for observing water bodies, given that laboratory methods are too slow to develop an active response and does not provide a level of public health safety in real time. Improve and extend monitoring and assessment tools to ensure a statistically robust and comprehensive picture of the status of the aquatic environment for the purpose of further planning.

II. LITERATURE REVIEW

Wireless sensor networks are also known as “wireless sensor and actuator network (WSAN)” that is a network covering" distributed sensors" to observe the environmental or physical states like pressure, sound, high temperature, etc. This system covers a gateway, which suggestions connectivity to the used world and distributed nodes, which can transmission the information through the network to main position. The current networks are bidirectional in nature and allow the sensor activity. This research guarantees a safe supply of drinking water. This system consists of different water limits. The microcontroller processes the data. At last data from the sensors is viewed on the web server.

III. EXISTING SYSTEM

This journal uses dual-blind review process, which means that both the reviewer (s) and author (s) identities hidden from the reviewers, and vice versa, through the review process. All submitted documents are reviewed by three reviewer one from India and rest two from foreign. There should be proper commentaries of the reviewers for the purpose of approval/ refusal. There should be minimum 01 to 02 week time frame for it..

IV. PROPOSED SYSTEM

The WSN in IOT projects enables the information and communication systems invisibly embedded in the environment since the sensor network enables people to interact with the real world remotely. Recently, an environmental observing system based on WSN system using unlike wireless communication standards has attracted concentrated interest. The PC

International Journal of Advances in Engineering and Management (IJAEM)
Volume 2, Issue 11, pp: 465-468 www.ijaem.net ISSN: 2395-5252

executive software is established using Arduino software platform. we have planned a project of water quality monitoring system by means of microcontroller, for Mobile communications mixed water quality monitoring sensors, Analogue to Digital Converter (ADC).Since microcontrollers have more difficult architecture, the development time and cost increase due to the complexity of the project designs and architectures. In the planned smart water quality monitoring system, a reconfigurable smart water sensor interface device that incorporates data storage, data processing, and wireless transmission is designed. The hardware trial set-up of smart water quality monitoring system is shown in Fig.1.

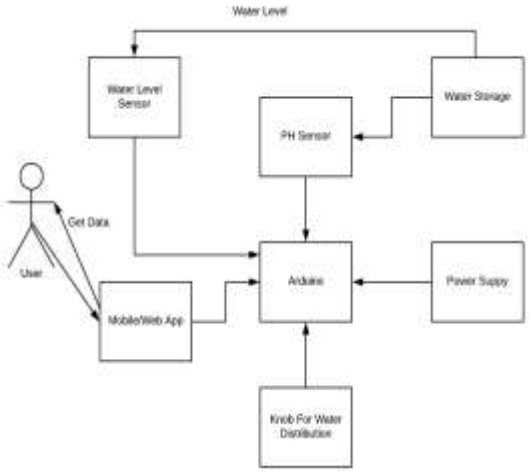

Figure 1 System Architecture

V. COMPONENTS IN SYSTEM ARCHITECTURE

WATER LEVEL SENSOR

"Water level sensor" is planned for sensing the water level in the reservoir and above containers. This is generally exploited in detecting the water leakage, water level, and the rainfall. It consists of mainly three parts: 1MΩ resistor, an automated brick connector and several lines of bare conducting wires. It works by taking a series of "exposed traces" that are related to ground. This is also interlaced between "grounded traces and the sunstrokes". A weak pull-up resistor of 1MΩ is present. 1MΩ resistor pulls up the sensor rate till a fall of water shorts the sensor trace to the grounded trace. This can measure the water drop/water size by using a series of "open parallel wires". The characteristics are it has high sensitivity and low power consumption.

Figure 2 Water Level Sonsor

A. pH Sensor

A pH is an electronic device which is used for gauging the pH level in the water. It consists of three types of investigations (i) Glass electrode (ii) Reference electrode (iii) combination of gel electrode. pH is labeled as the "negative logarithm" of hydrogen ion concentration in water.

pH=-log[H+]

- A pH meter consists of special probes which are connected to an electronic meter that would display the analysis. If the pH level is greater than 7 then it is alkaline in nature, if the pH level is less than 7 then it is acidic in nature, and generally the range of pH is 0-14pH.

Figure 3 pH Sensor

B. Water Storage

Water Storage is used to store the Water in the storage tanks. Various storage tanks used for various purpose. All the storage tanks are filled after the all task performed on the water and water is sent in the respective tanks for respective purpose. And the water in that tanks are used for their respective purpose.

C. Arduino

Arduino is a pattern platform (open-source) built on an easy-to-use hardware and software. It contains of a path panel, which can be encoded

International Journal of Advances in Engineering and Management (IJAEM)
Volume 2, Issue 11, pp: 469-473 www.ijaem.net ISSN: 2395-5252

(discussed to as a microcontroller) and a organized software called Arduino IDE (Integrated Development Environment), which is used to inscribe and upload the computer code to the physical board.
The key features are:
 Arduino boards arecapable to read analog or digital input signals from dissimilar sensors and fit it into an output such as triggering a motor, turning LED on/off, connect to the cloud and many other activities.
 You canregulate your board utilities by transfer a set of instructions to the microcontroller on the board through Arduino IDE (mentioned to as uploading software).
 Different most earlier programmable circuit boards, Arduino does not need an extra bit of hardware (called a programmer) in directive to load a new code onto the board. You can simply use a USB cable.
 Moreover, the Arduino IDE uses a simplified version of C++, making it informal to learn to program.
 Finally, Arduino provides a usual form aspect that breaks the functions of the

Figure 4 Arduino Board

D. Mobile or Web app

We can develop and UPI using Mobile app or web app. Upi is very useful for interaction with system. We are developing an Mobile app for User Interface. It makes system more user friendly.

VI. PROPOSED LEVELS

The water quality monitoring using IOT consists of three levels:
1. Level 1 consists of the sensor part
2. Level 2 consists of the database part
3. Level 3 consists of the user part

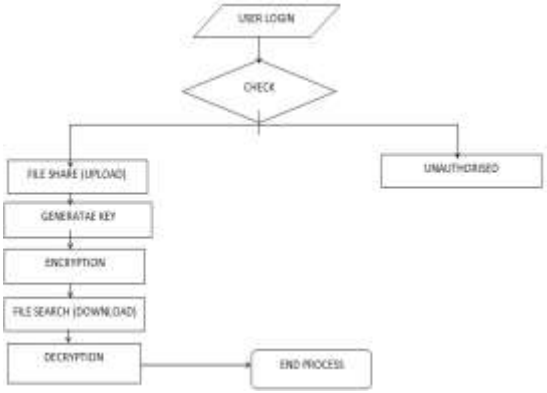

Figure 5 Architecture Diagram (How to Access Values from the Cloud and View in App)

To download a file from database the user logins the systems checks weather he is an authorized user or not. If he is an authorized user then he can share file i.e. he can upload the values to the database and then the key generation for encryption and when we search for a specific file i.e. want to download a file the decryption process takes place and then we can access the values.

It defines dissimilar states of a module in a system. The conditions are specific to a module/object of a system. They define dissimilar states of an object throughout its lifetime. And these states are changed by events. So State diagrams are beneficial to model reactive systems. Reactive systems can be well-defined as a system that replies to external or internal actions. State diagram describes the flow of control from one state to another state. States are distinct as a condition in which an object exists and it variations when some event is activated. So the most important resolution of State diagram is to model life time of an object from creation to end.

VII. SWQMS IOT ENVIRONMENT

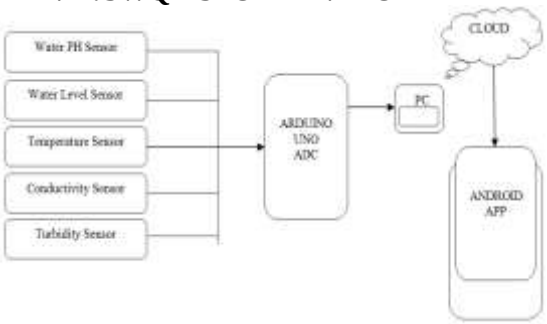

Figure 6 SWQMS IoT Environment

The Hardware's of SWQMS system is shown in fig. These are the few hardware components ,we have used in our project Smart Water Quality Monitoring System and these hardware plays very

important role in this project as the software

.

VIII. RESULT AND DISCUSSION

Sr No	Hydrog -nion of Fluid (H+)	Applied Formula	pH	Result	Use
1.	0.0001	-log(H+)	4	Acidic	Killing Insects
2.	0.03	-log(H+)	1.5	Acidic	Battery Acid
3.	0.0000001	-log(H+)	7	Neutral	Drinking Water
4.	0.00000001	-log(H+)	8	Basic	Household ammonia
5.	0.000000019	-log(H+)	7.72	Basic	Ground treated Water

IX. CONCLUSION

By using a WI-FI module, the interfacing is done among transducers and the sensor network on a single chip solution wirelessly. For the monitoring process, the system is accomplished with reliability and feasibility by verifying the four parameters of water. The time interval of monitoring might be changed depending upon the necessity. Organic environment of water resources is protected in this research. The time is reduced, and the cost is low in this environmental management.

REFERENCES

[1]. B. Corona, M. Nakano, H. Pérez, "Adaptive Watermarking Algorithm for Binary Image Watermarks", Lecture Notes in Computer Science, Springer, pp. 207-215, 2004.

[2]. L. Ghouti, A. Bouridane, M.K. Ibrahim, and S. Boussakta, "Digital image watermarking using balanced multiwavelets", IEEE Trans. Signal Process., 2006, Vol. 54, No. 4, pp. 1519-1536.

[3]. Heinzelman WR, Kulik J & Balakrishnan H, "Adaptive protocols for information dissemination in wireless sensor networks", 5th annual ACM/IEEE international conference on Mobile computing and networking, (1999), pp.174-185.

[4]. "Smart Water Quality Monitoring System Using Iot Environment" Nikhil R1, Rajender R2, Dushyantha G R3, M N S Khadri4, Jagadevi N

[5]. Kalshetty51,2,3,4,5Department of Computer Science and Engineering,

[6]. NMIT, Bengaluru, Karnataka, India.

[7]. C.S. Lu, H.Y.M Liao, "Multipurpose watermarking for image authentication and protection," IEEE Transaction on Image Processing, vol. 10, pp. 1579-1592, Oct. 2001.

[8]. Sharma H & Sharma S, "A review of sensor networks: Technologies and applications", IEEE Recent Advances in Engineering and Computational Sciences (RAECS), (2014), pp.1-4.

[9]. Jing M, "The design of wireless remote monitoring system of water supply based on GPRS", IEEE International Symposium on Computer Science and Society (ISCCS), (2011), pp.29-31.

[10]. Paparao N & Bhagya LS, "A Secured IoT Based Advanced Health Care System for Medical Field using Sensor Network", International journal of engineering & Technology, Vol.7, No.2, (2018), pp.105-108.

[11]. Singh S, Kumar A, Prasad A & Bharadwaj N, "IOT based Water Quality Monitoring System", IRFIC, (2016).

[12]. Rao T, Ling Q, Yu B & Ji H, "Estimate the densities of pollutions in water quality monitoring systems based on UV/vis spectrum", IEEE 26th Conference on Chinese Control and Decision, (2014), pp.2984-2989.

[13]. Stankovic JA, "Research directions for the internet of things", IEEE Internet of Things Journal, Vol.1, No.1, (2014), pp.3-9.

AUTHORS PROFILE

Prof. Tejaswini S. Bhoye Dept. of Computer Engineering, Marathwada mitra mandal institute of technology , Pune, India.

Email: tejaswini.bhoye@mmit.edu.in

Ms. Simran R. Sharma Dept. of Computer Engineering, Marathwada mitra mandal institute of technology , Pune, India.

Email: simran.sharma@mmit.edu.in

Mr. Vaibhav S. Mahajan, Dept. of Computer Engineering, Marathwada Mitra Mandal institute of technology,Pune,India

Email:vaibhav.mahajan@mmit.edu.in

Mr. Vishvesh S. Raipatrewar, Dept. of Computer Engineering, Marathwada Mitra Mandal institute of technology , Pune, India.

Email:vishvesh.raipatrewar@mmit.edu.in

Mr. Avinash D. Jambhale, Dept. of Computer Engineering, Marathwada Mitra Mandal institute of technology , Pune, India.

Email: avinash.jambhale@mmit.edu.in