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1.	Project Reference Number	46S_BE_1629
2.	Title of the Project	AN IOT SYSTEM FOR REAL TIME MONITORING AND CONTROLLING OF WASTE WATER
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6. INTRODUCTION

Now a day's the water gets easily polluted by various factors like industries and analyzing such polluted water is the biggest deal for the planet to tackle. The monitoring of such polluted water

should be made continuously. The troubles of surface water bodies are predominantly because of organic nutrients. Over 90% of the board plants surveyed demonstrated that agribusinesses, a gigantic worry within the bowl, which include diffuse or factor source pollutants with the help of organic be counted, nutrients, pesticides and hydro-morphological influences Using a cluster of sensors to watch the parameters gives the hydrogen of ions concentration in a very solution and it's helpful to spot the acidity or alkalinity of a solution.

Water is a critical resource for agriculture and has not been well managed in India. The urban wastewater has been monitored by using the smart solution for testing the quality of water by using an array of sensors and thus the measured value is displayed in LCD. The system consist of several sensors is used to measuring physical and chemical parameters of the water. The parameters such as temperature, PH, turbidity, Temperature, BOD, Conductivity of the water can be measured. The measured values from the sensors can be processed by the core controller. It helps to identify the deviations in parameters and provides an alert message when there's an abnormal level, i,e. The value exceeds the predefined threshold or the standard value set within the Arduino Uno Controller. The Arduino model can be used as a core controller. Finally, the sensor data can be viewed on internet using WI-FI system.

7. OBJECTIVES

- The main objective of this project is to design and development of the real- time monitoring of the water quality parameters in IOT environment.
- System must be low cost, more efficient and capable of processing, analyzing, sending and viewing the data on cloud and also through WIFI to mobile device.
- Implementation is suitable for environment monitoring, ecosystem monitoring,etc. and
- With this single instrument can detect all the possible water parameters such as pH, Turbidity, Temperature, and conductivity. Based on sensor values deciding the water is suitable for agriculture, house hold purposes or domestic purposes.
- Intimation message sent to user.
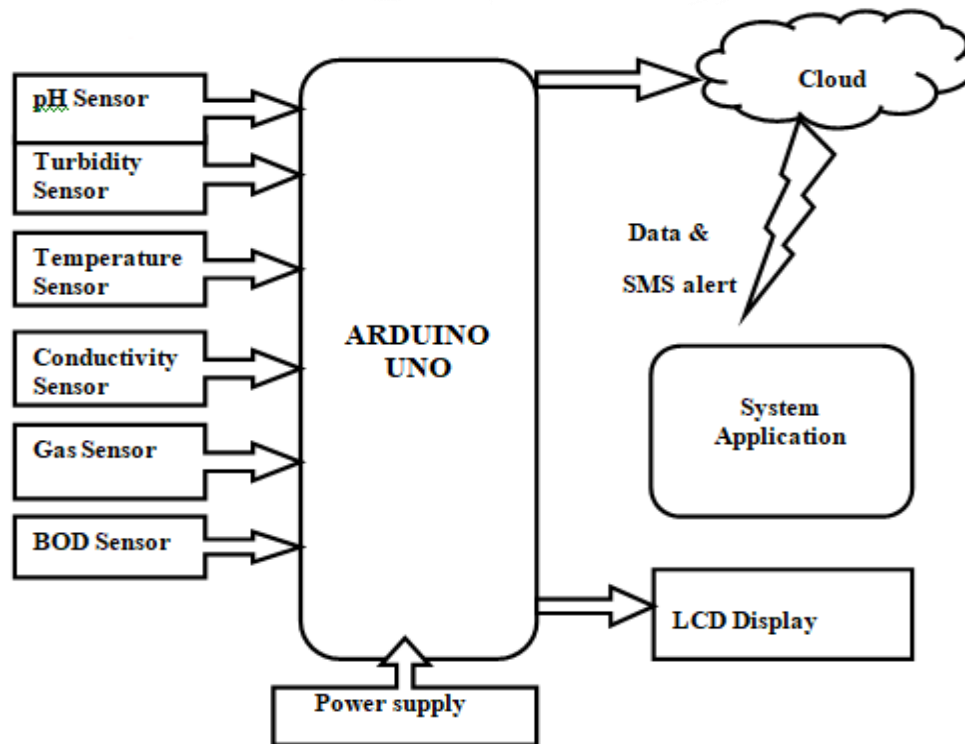
8. METHODOLOGY

Figure 1: Block Diagram of proposed system

There are two parts of programming in this System using IoT. In the first part, Arduino UNO is programmed and in the second part, NodeMCU will be programmed. Arrays of sensor gathers information that presents the deviation of water exceptional parameters. The parameters monitored in the recommended framework are pH, Turbidity, Temperature, TDS and BOD. Additionally sends measured data to the microcontroller through IoT and it gives an alert message to consumers. Assistance of Node MCU Module is used. and data from the sensors will be displayed on the LCD.

Arduino UNO

Arduino is a microcontroller board based on the ATmega328P. It has 14 digital input/output pins (of which 6 can be used as PWM outputs), 6 analog inputs, a 16 MHz quartz crystal, a USB connection, a power jack, an ICSP header and a reset button. It contains everything needed to support the microcontroller. Arduino Software (IDE) were the reference versions of Arduino, now evolved to newer releases. The Uno board is the first in a series of USB Arduino boards,

and the reference model for the Arduino platform; for an extensive list of current, past or outdated boards see the Arduino index of boards.

NodeMCU Wifi module:

The ESP8266 WiFi Module is a self contained SOC with integrated TCP/IP protocol stack that can give any microcontroller access to your WiFi network. The ESP8266 is capable of either hosting an application or offloading all Wi-Fi networking functions from another application processor. Each ESP8266 module comes pre-programmed with an AT command set firmware. The ESP8266 module is an extremely cost effective board with a huge, and ever growing, community The ESP 8266 Wi-Fi module is a low cost component with which manufacturers are making wirelessly networkable microcontroller module. ESP 8266 WiFi module is a system-on-a-chip with capabilities for 2.4GHzrange. It employs a 32 bit RISC CPU running at 80 MHz. It is based on the TCP/IP (Transfer control protocol). It is the most important component in the system as it performs the IOT operation. It has 64 kb boot ROM, 64 kb instruction RAM, 96 kb data RAM. Wi-Fi unit performs IOT operation by sending energy meter data to webpage which can be accessed through IP address. The TX, RX pins are connected to the 7 and 8 pins of the Arduino microcontroller.

Ph Sensor

A pH sensor may be a scientific device that's accustomed measure the cation activity in water. pH sensor determines pH by measuring the voltage level or the difference of the solution during which it's immersed. pH value of solutions ranges from 1 to 14. A pH sensor got two electrodes, which are measuring electrode and reference electrode. The reference electrode won't be changed because it always provides a tough and fast voltagewhen the pH meter is dipped into the solutions. The measuring electrode provides voltage and sensitivity to the cation. If the temperature changes, then the differential voltage of the electrode also changes. Therefore we would like a temperature sensor.

Gas sensor

Gas sensor is one which comes in handy in applications where we've got to detect the variation within the concentration of toxic gases to keep up the system safe and avoid/caution any unexpected threats. A gas sensor could be a device that detects the presence or concentration of gases within the atmosphere. supported the concentration of the gas the sensor produces a

corresponding electric potential by changing the resistance of the fabric inside the sensor, which may be measured as output voltage. supported this voltage value the kind and concentration of the gas are often estimated.

LCD

LCD (Liquid Crystal Display) is a type of flat panel display which uses liquid crystals in its primary form of operation.

Power Supply

A power supply may be a hardware component that supplies power to a device. It receives power from a wall plug and converts this from AC (alternating current) to DC (direct current), which is what the pc requires.

Turbidity sensor

Turbidity could be a measure of the cloudiness of water.Turbidity has indicated the degree at which the water loses its transparency. it's considered as a decent measure of the standard of water. The turbidity sensor is that the measurement of water transparency. it's accustomed measure total suspend solids (TSS) in water by sending the sunshine beam into the water body. Turbidity is measured in Nephelometric Turbidity Units, which is thought as NTU. Turbidity values from the turbidity sensor is higher or lower

9. RESULTS AND CONCLUSION

Monitoring of water quality parameters such as PH & Temperature, turbidity, conductivity and BOD of Water makes use of water detection sensor with unique advantage and existing network. The system can monitor water quality automatically, and it is low in cost and does not require people on duty. So the water quality testing is likely to be more economical, convenient and fast and displayed on screen. The system has good flexibility. Only by replacing the corresponding sensors and changing the relevant software programs, this system can be used to monitor other water quality parameters. The operation is simple. The system can be expanded to monitor industrial and agricultural production and so on. It has widespread application and extension value. By keeping the embedded devices in the environment for monitoring enables self

protection (i.e., smart environment) to the environment. To implement this need to deploy the sensor devices in the environment for collecting the data and analysis. By deploying sensor devices in the environment, we can bring the environment into real life i.e. it can interact with other objects through the network. Then the collected data and results will be available to the end user through the Wi-Fi and the values displayed on screen.

10. Scope for Future Work

Detecting the more parameters for most secure purpose, Increase the parameters by addition of multiple sensors. Its major limitation is the accuracy. It can be improved by taking a large number of readings and displaying them. The ultimate goal of this projet is to observe the quality of water by designing a IoT based system implemented in that can detect specific physical parameters: Temperature, pH, turbidity, conductivity and BOD. The future scope of this project is monitoring environmental conditions, drinking water quality, The system can be expanded to monitor hydrologic, air pollution, industrial and agricultural production and so on. it has widespread application and extension value. work can be carried on to include controlling the supply of water. This system could also be implemented in various industrial processes. The system can be modified according to the needs of the user and can be implemented along with lab view to monitor data on computers.