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Implementation of Water Quality Monitoring System Using Arm LPC2148

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ABSTRACT: Recently, the worldwide industrial zone has been growing from rural to urban drift, and overuse of land and marine resources has severely degraded the quality of water accessible to humanity. And water is a necessary for human existence, and procedures for the quality test will be established water and supplies articulated in city and city for drinking. And the same thing Shoreline around villages and cities. Therefore the quality of water is more available vital to break illnesses such as waterborne infections and then immediately enhance their quality water. In the evaluation and safety of water, the Surface Water Tracking Community is a key part of this development. Therefore, we are creating a prototype consisting of a simple installation technique in which we can monitor all sorts of surface water (like a river) Indicators.

KEYWORDS: ARM (LPC2148), Power supply, pH Sensor, Turbidity Sensor, Conductivity Sensor, Temperature Sensor, Smell Detection Sensor, Blynk App.

I. INTRODUCTION

Water is used in various activities, such as consumption, agriculture and travel, which may affect water quality. Therefore, the water quality monitoring is necessary which includes several chemical parameters. There is need to improve existing system for monitoring water bodies, given that laboratory methods are too slow to develop an operational response and does not provide a level of public health protection in real time. Improve and expand 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.

Problem Statement

Water is used in various activities, such as consumption, agriculture and travel, which may affect water quality. Therefore, the water quality monitoring is necessary which includes several chemical parameters. Some of these are: pH, redox potential, conductivity, dissolved oxygen, ammonium and chloride ion amount. There is need to improve existing system for monitoring water bodies, given that laboratory methods are too slow to develop an operational response and does not provide a level of public health protection in real time.

Objectives

Monitoring the pH, Conductivity, Temperature, Turbidity, detecting smell through sensor. Monitoring all the above mentioned parameters which affect the water quality using LPC2148 ARM microcontroller and Blynk.



II. METHODOLOGY

Implementation:

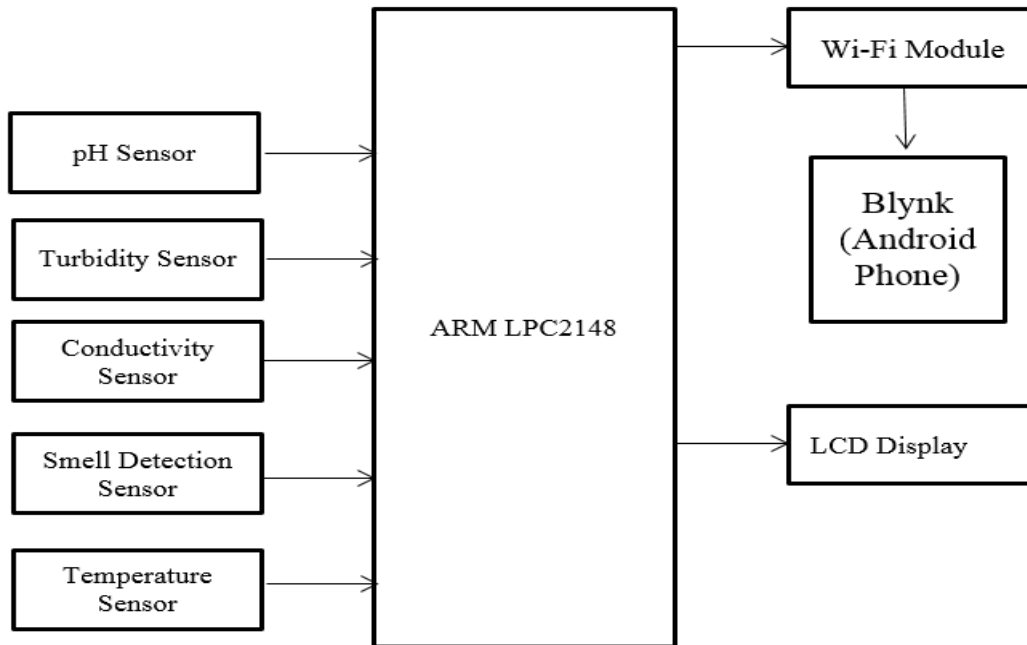


Fig 1: Implemented Block Diagram

The water quality monitoring using ARM LPC2148 consists of three levels:

1. Level 1 consists of the sensor part
2. Level 2 consists of the cloud part
3. Level 3 consists of the user part

• **Sensor part:**

It consists of the sensors which are connected to the microcontroller. Temperature sensor which measures the analog values of the environment, PH sensor which measures the PH value of the water and conductivity and water level and turbidity are also used to measure the different parameters of the water.

• **Cloud part:**

Cloud computing is a type of Internet-based computing that provides shared computer processing resources and data to computers and other devices on demand. It is a model for enabling ubiquitous, on-demand access to a shared pool of configurable computing resources (e.g., computer networks, servers, storage, applications and services).

• **User part:**

It is an android phone which in which a Blynk app should be downloaded from the play store. Blynk is a Platform with iOS and Android apps to control Arduino, Raspberry Pi and the likes over the Internet.



Circuit Diagram:

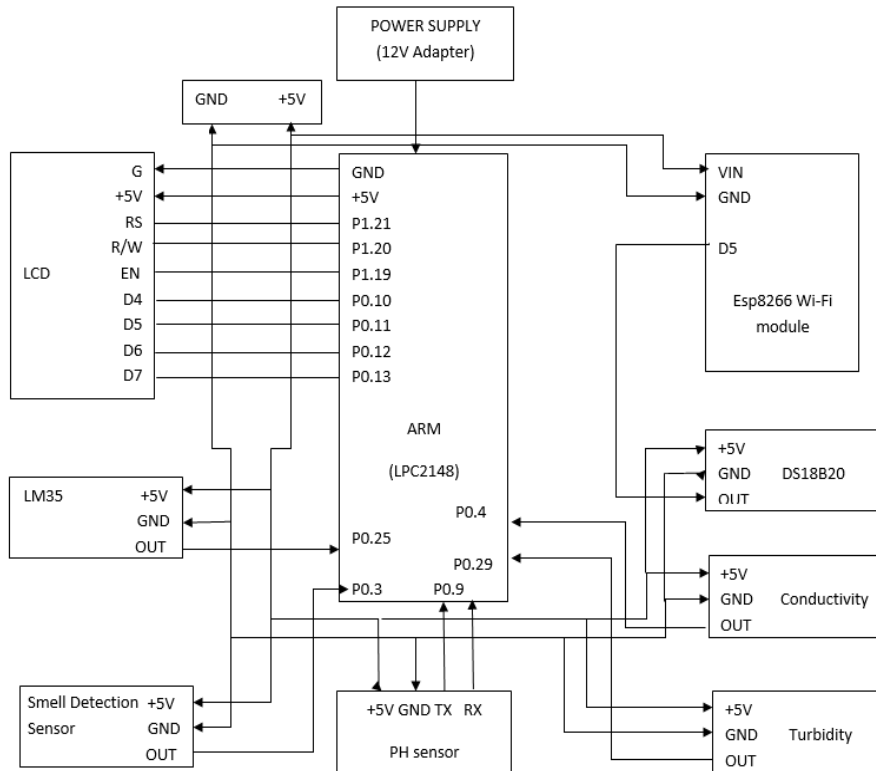


Fig 2: Circuit diagram of Water Quality System

Flowchart:

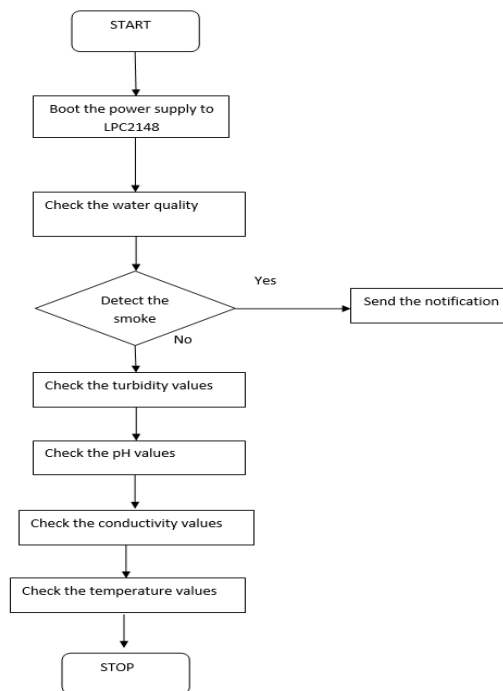


Fig 3: Flowchart of Water Quality System



All the Sensors data are collected and sends to the ARM LPC2148 Microcontroller which analyze the collected data. The controller with the help of Wi-Fi module sends data to the Blynk cloud server. From the blynk server data can be received in android phone through blynk app. So person can monitor water quality just by knowing different parameter values which affects the water quality and can take required measurements in order to maintain the water quality.

III. RESULTS

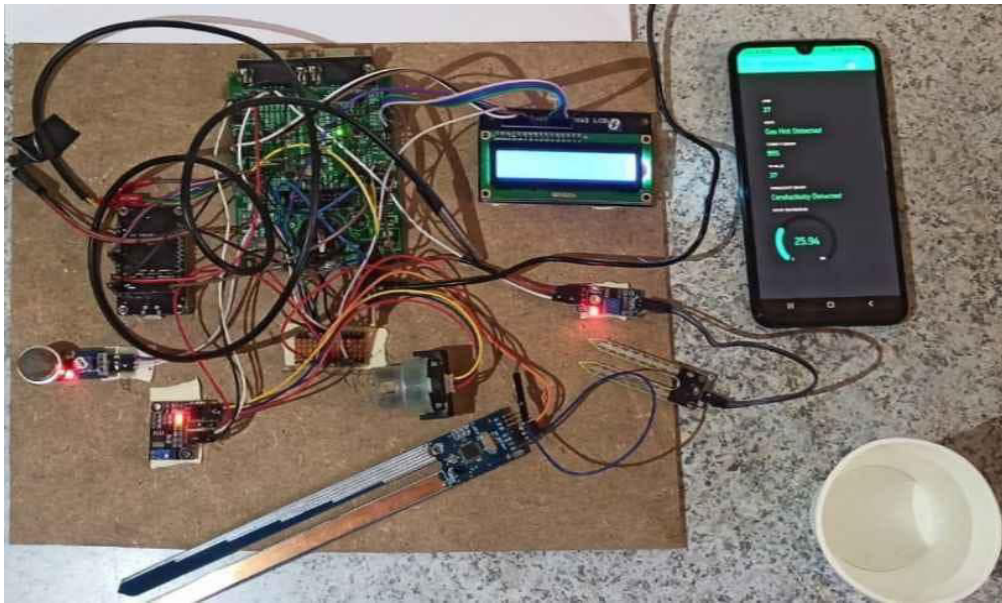


Fig 4:Water Quality System Before Detection

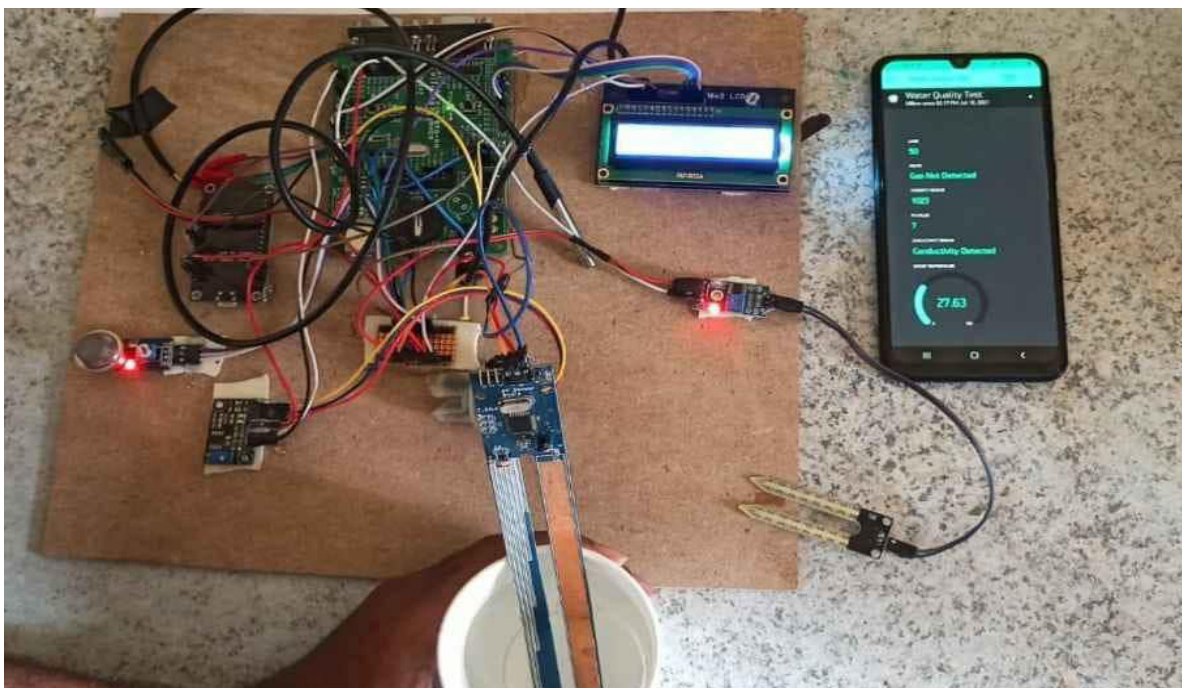


Fig 5:Water Quality System After Detection



Using Blynk App

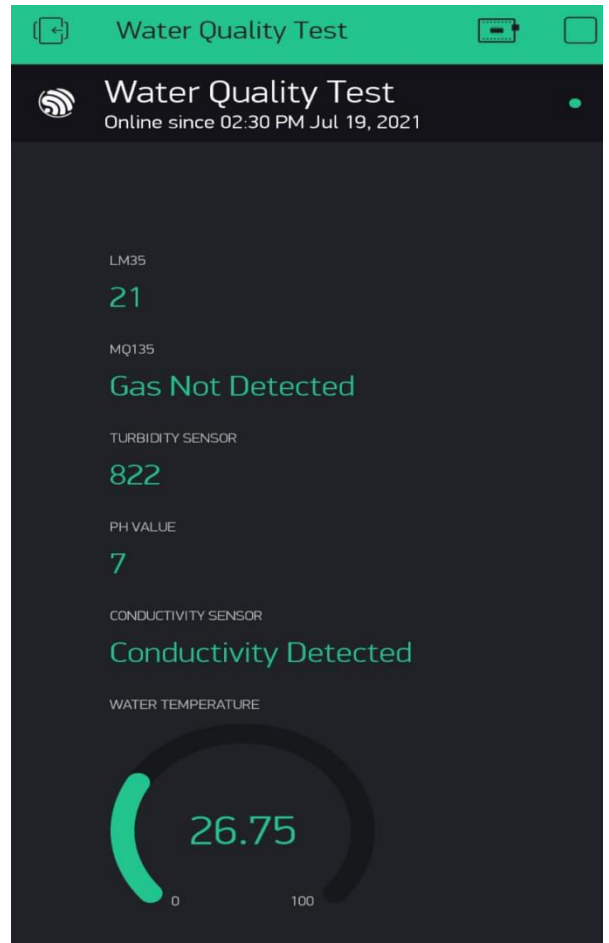
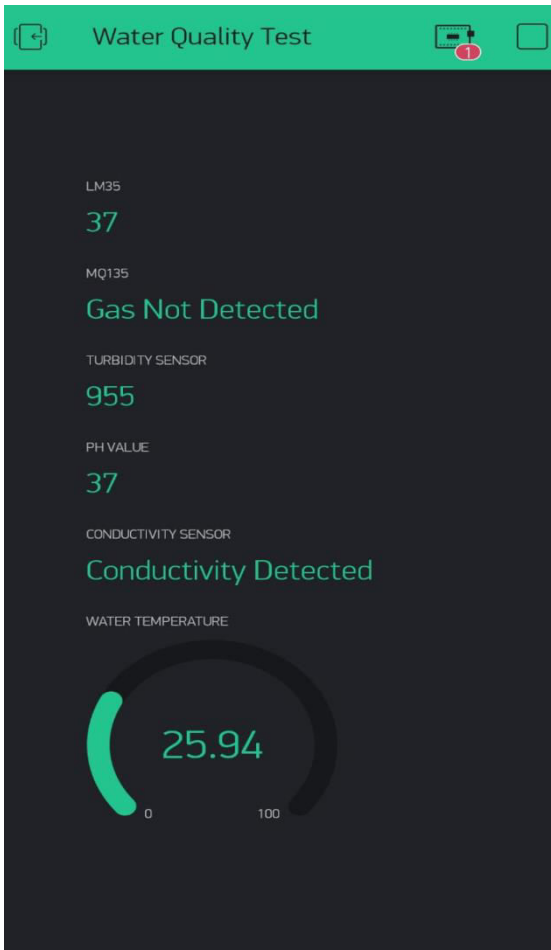


Fig 6: Before Execution in BLYNK App **Fig 7:** After Execution in BLYNK App

We can monitor the water quality using blynk app in android phone. Where we can see pH, conductivity, turbidity, temperature values of the water body and can take required measurements to maintain the water quality.

IV. CONCLUSION

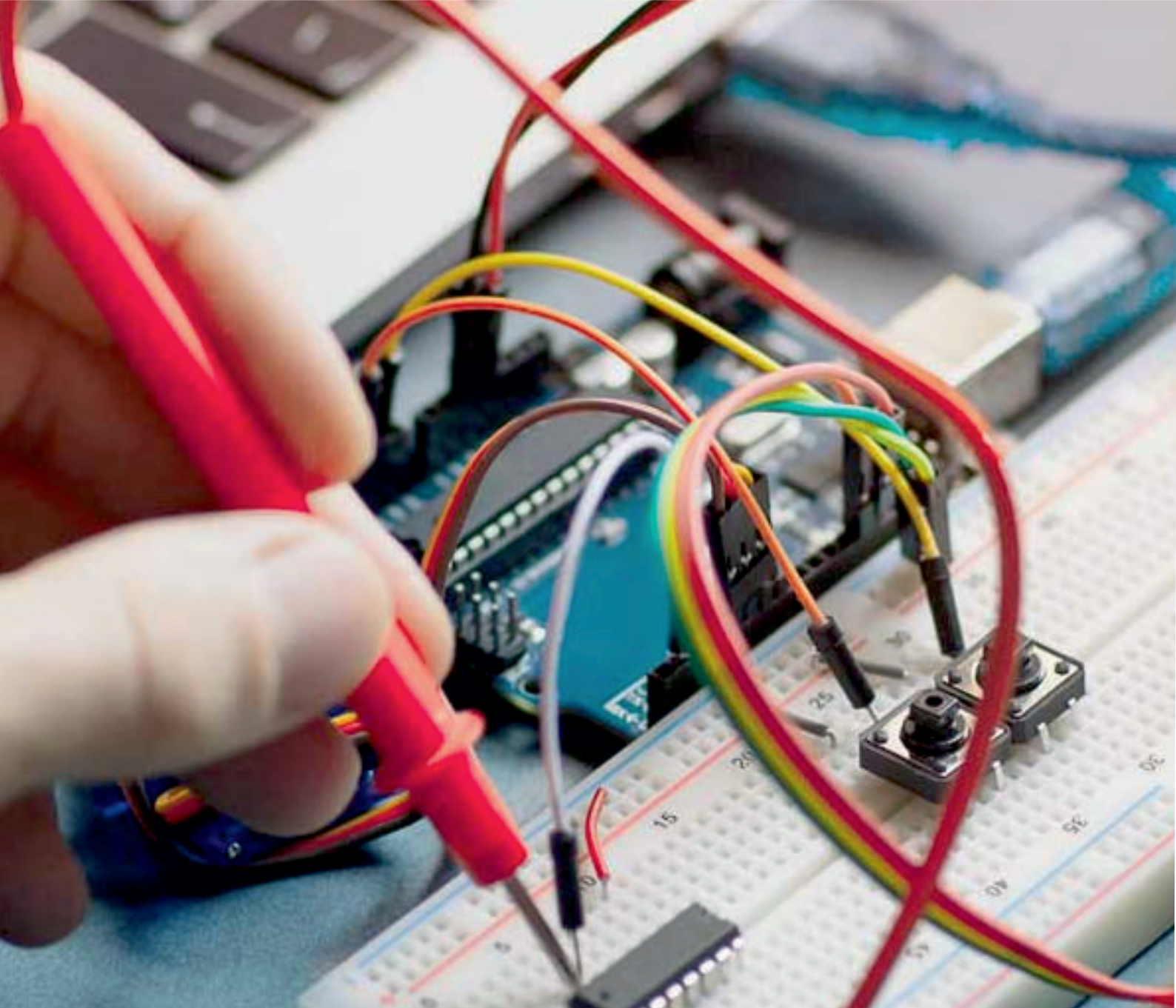
An Embedded System Based system for water quality monitoring is a one stop solution that aims to solve the existing problems, which would not require any manual test of the water quality which is automated in this project. And this concept will reduce the man power and mistakes while getting the accurate data. Here end user or concerned person can access the information at any time continuously which is a big advantage. Moreover user need not to have any extra devices for this system, just android phone is enough.

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