WATER LEVEL CONTROLLER USING WOKWI AND BLYNK CLOUD

A PROJECT REPORT

Submitted by

BOSE A S (731621205006)

in partial fulfillment for the award of the degree

of

BACHELOR OF TECHNOLOGY

in

INFORMATION TECHNOLOGY

K S R INSTITUTE FOR ENGINEERING AND TECHNOLOGY,TIRUCHENGODE

AUTONOMOUS

SEPTEMBER 2023

K S R INSTITUTE FOR ENGINEERING AND TECHNOLOGY,TIRUCHENGODE

(AUTONOMOUS)

BONAFIDE CERTIFICATE

Certified that this project report **"WATER LEVEL CONTROLLER USING WOKWI AND BLYNK CLOUD"** is the bonafide work of **"BOSE A S (731621205006)"** who carried out the project work under my supervision.

SIGNATURE	**SIGNATURE**
Dr. N. SARAVANAN, M.E.,MISTE	Dr.P.Kalyana Sundaram.
HEAD OF THE DEPARTMENT,	**SUPERVISOR,**
Department of Information Technology,	Professor,
K S R Institute for Engineering and	Department of Information Technology,
Technology, Tiruchengode - 637215.	K S R Institute for Engineering and
	Technology, Tiruchengode - 637215.

Submitted for the Project Viva-Voce examination held on _____

Internal Examiner **External Examiner**

ACKNOWLEDGEMENT

Behind every achievement lays an unfathomable sea of gratitude to Thosewho actuated it, without them it would never have come into existence. To themwe lay the word of gratitude imprinted within ourselves.

We wish our heartfelt thanks to our respected Founder of K S R Group of Institutions **Theivathiru Lion Dr. K. S. RANGASAMY MJF** and the Chairman of K S R Group of Institution **Mr. R. SRINIVASAN B.B.M..,** for giving as an opportunity and facilities for the completion of the project at this institution.

We are expressing our extreme gratitude and heartfelt thanks to the respected Principal **Dr. M. VENKATESAN M.E., Ph.D.,** for allowing us to have the extensive use of the college facilities to do this project effectively.

We would like to express our profound interest and sincere gratitude to our respected Director - Academics **Dr. P. MEENAKSHI DEVI, M.E., Ph.D.,** for her valuable guidance and constant support in successful completion of the project.

We would like to express our profound interest and sincere gratitude to our respected Head of the Department **Dr. N. SARAVANAN, Ph.D., MISTE** for his valuable guidance and constant support in successful completion of the project.

We feel proud and hour in extending our sincere thanks to our Project guide **Dr.P. KALYANA SUNDARAM.,** for being more informative and providing guidelines for this project all the time.

ABSTRACT

The "Water Level Controller Using Wokwi and Blynk Cloud" project presents an innovative solution for efficiently managing and controlling water levels in tanks or reservoirs. Water is a precious resource, and its optimal utilization is crucial in various applications, including agriculture, industrial processes, and residential settings. This project leverages the power of Internet of Things (IoT) and cloud computing technologies to ensure the automated and remote monitoring of water levels.

The core components of this system are the Wokwi platform, which facilitates the development and simulation of electronic circuits, and the Blynk Cloud, which serves as the IoT interface. The project begins with the creation of a digital representation of the water level control circuit using Wokwi, allowing users to design and simulate the hardware without physical components. This simulation capability simplifies the prototyping phase and ensures accuracy in the design.

The Blynk Cloud integration enables real-time monitoring and control of the water level controller. Users can access the system from a mobile application, allowing them to remotely check water levels and take action as necessary. This level of control is invaluable for preventing water wastage, ensuring tanks are filled when needed, and alerting users to potential issues such as overflows or insufficient water levels.

This project demonstrates the synergy between Wokwi and Blynk Cloud, showcasing how these technologies can be harnessed to create smart and sustainable solutions for water level management. With its potential to save water, reduce manual labor, and enhance overall efficiency, the "Water Level Controller Using Wokwi and Blynk Cloud" project has the potential to make a significant impact in various sectors where water management is critical.

TABLE OF CONTENTS

CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

Water is a vital resource that plays a pivotal role in numerous aspects of our lives, from agriculture and industry to domestic use. Efficient management of water resources, particularly in the context of water level control in tanks and reservoirs, is of paramount importance to prevent waste, ensure a consistent supply, and contribute to water conservation efforts. In light of the advancements in the Internet of Things (IoT) and cloud computing, we introduce the "Water Level Controller Using Wokwi and Blynk Cloud" project, aimed at addressing these challenges. This project amalgamates the power of virtual circuit simulation with remote monitoring and control through IoT to create an innovative solution for real-time water level management.

1.2 OBJECTIVES

The primary objective of the "Water Level Controller Using Wokwi and Blynk Cloud" project is to design and develop a comprehensive system that efficiently monitors and controls water levels in tanks or reservoirs. The key objectives include:

1.Circuit Design and Simulation: Create a digital representation of the water level control circuit using the Wokwi platform, allowing users to design, test, and simulate the hardware before implementing it in the physical world. The objective is to streamline the prototyping phase, reduce development time, and ensure the accuracy and reliability of the system.

2.IoT Integration: Implement the Blynk Cloud, an IoT interface, to establish a connection between the physical water level controller and the cloud platform.

This integration will enable real-time data transfer, remote monitoring, and control of the water level controller, making it accessible from anywhere via mobile applications.

3.Remote Monitoring: Develop a user-friendly mobile application through the Blynk Cloud platform that allows users to remotely monitor water levels in tanks or reservoirs. This will provide instant access to critical information, enabling users to make informed decisions and take action as required.

4.Water Conservation and Efficiency: Ensure that the system actively contributes to water conservation by preventing overflows, minimizing wastage, and optimizing water usage based on real-time data. The objective is to enhance water management and reduce human intervention in water level control processes.

5.Scalability and Affordability: Design the system with scalability and cost-effectiveness in mind, making it suitable for a wide range of applications across various sectors. The aim is to offer a solution that can be easily adopted by businesses, agricultural operations, and residential users without imposing exorbitant costs.

6.Contribution to Sustainability: This project aligns with global sustainability efforts by promoting responsible water usage, reducing energy consumption, and enhancing overall efficiency in water management practices.

CHAPTER 2

PROPOSED SYSTEMS

2.1 PROPOSED SYSTEM

The proposed system, "Water Level Controller Using Wokwi and Blynk Cloud," is designed to revolutionize the way we manage and control water levels in tanks or reservoirs. Leveraging advanced technology, this system offers a comprehensive solution for both real-time monitoring and automated control of water levels. Here is a detailed explanation of the proposed system:

1. Virtual Circuit Design and Simulation:

The system begins with the creation of a digital representation of the water level control circuit using the Wokwi platform. This virtual circuit design and simulation serve as the foundation of the project. Users can design and simulate the hardware components without the need for physical components, thus simplifying the prototyping phase. This ensures that the circuit design is accurate and functional, reducing the risk of errors in the actual implementation.

2. IoT Integration with Blynk Cloud:

The heart of the system lies in its integration with Blynk Cloud. Blynk Cloud serves as the bridge between the physical water level controller and the cloud platform. This integration allows real-time data transfer, enabling users to monitor and control the water level remotely via a mobile application.

3. Mobile Application for Remote Monitoring:

A user-friendly mobile application is developed, which communicates with the Blynk Cloud platform. This application provides users with instant access to critical information about water levels in their tanks or reservoirs. Through the app, users can remotely monitor the water level, ensuring that they are well-

informed about the status of their water storage.

4. Real-Time Control and Alerts:

The system offers real-time control capabilities. Users can take action directly from the mobile application, adjusting water levels as needed. For example, if the water level is too low, the system can trigger a pump to fill the tank, and if the water level is too high, it can initiate a drainage process to prevent overflows.

5. Water Conservation and Efficiency:

One of the primary goals of the system is to promote water conservation and efficiency. By monitoring water levels in real-time and allowing for automated control, the system reduces water wastage, ensures tanks are filled when necessary, and prevents overflows. This not only conserves a precious resource but also reduces operational costs associated with water management.

6. Scalability and Affordability:

The proposed system is designed to be scalable and cost-effective, making it suitable for various applications across different sectors. It can be adopted by businesses, agricultural operations, and residential users without imposing excessive costs, making it accessible to a wide range of users.

7. Contribution to Sustainability:

In a broader context, the "Water Level Controller Using Wokwi and Blynk Cloud" system aligns with global sustainability efforts by promoting responsible water usage, reducing energy consumption, and enhancing overall efficiency in water management practices. It embodies the principles of IoT and cloud technology to create a smart, sustainable solution for water level control.

CHAPTER 3

SYSTEM SPECIFICATION

3.1 WOKWI :

Wokwi is a powerful virtual prototyping platform that brings the world of electronics and IoT development to your web browser. Its intuitive interface, real-time simulation, extensive component library, and code integration capabilities make it an indispensable tool for both beginners and experts in the field. Whether you're a student, hobbyist, or professional, Wokwi provides an ideal environment for designing, testing, and sharing electronic circuits and projects

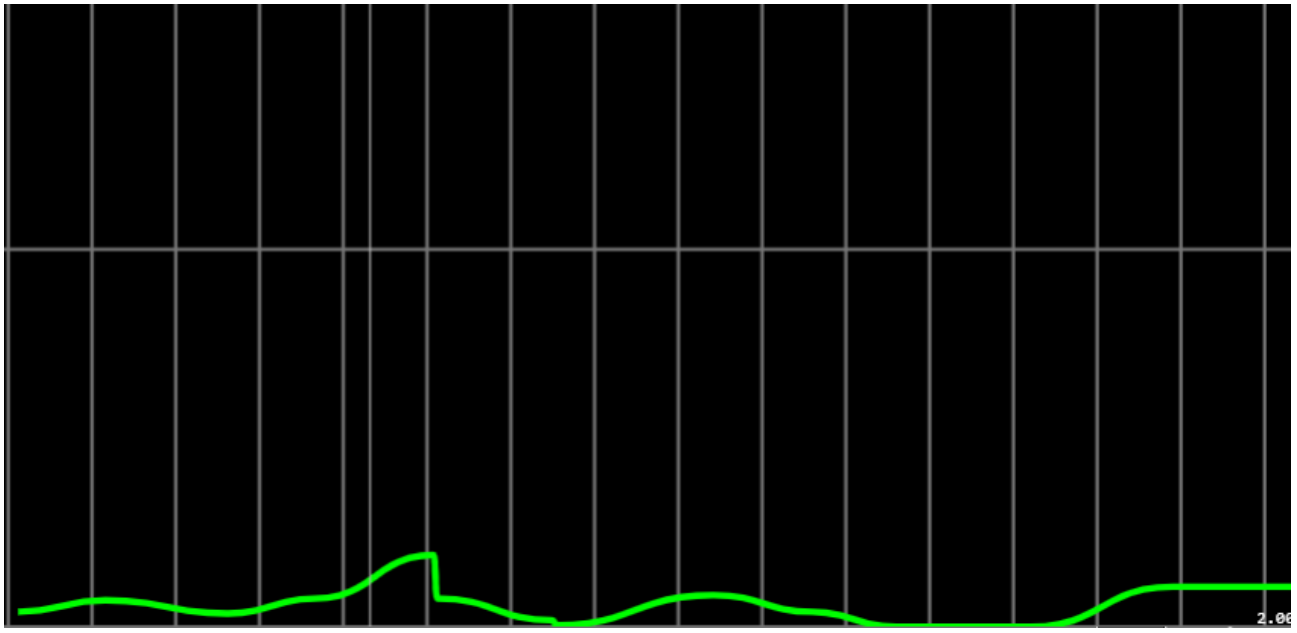
3.2 BLYNK CLOUD :

Blynk Cloud is a cloud-based Internet of Things (IoT) platform that plays a pivotal role in simplifying the development and management of IoT applications. Developed to cater to a wide range of IoT projects, Blynk Cloud offers a user-friendly and efficient way to connect hardware devices, sensors, and microcontrollers to the internet, allowing users to monitor and control them remotely.

CHAPTER 4

PERFORMANCE ANALYSIS

4.1 PERFORMANCE ANALYSIS



CHAPTER 5

CONCLUSION

5.1 CONCLUSION:

.

In conclusion, the "Water Level Controller Using Wokwi and Blynk Cloud" project is a testament to the power of innovative technology in addressing real-world challenges.

It embodies the principles of responsible resource management and sustainability, aligning with global efforts to conserve water.

By simplifying water level control, reducing manual intervention, and enhancing efficiency, this project holds great potential for making a meaningful impact across various sectors where water management is of paramount importance.

It exemplifies the promise of IoT technology and cloud computing in creating smart, sustainable solutions for a better and more responsible future

APPENDIX

SOURCE CODE

```
#define BLYNK_TEMPLATE_ID "TMPL3_DBf0lHH"
#define BLYNK_TEMPLATE_NAME "Water level Controller"
#define BLYNK_AUTH_TOKEN "Xx_iRRFJrEPzsm6uobi_nBXX3tzg9VgO"
#include <WiFi.h>
#include<WiFiClient.h>
#include<BlynkSimpleEsp32.h>
#define PIN_TRIG 26
#define PIN_ECHO 25
#define LOWLED 18
#define MIDLED 19
#define HIGHLED 21
#define MOTOR 27
char auth[]=BLYNK_AUTH_TOKEN;
char ssid[]= "OPPO-F19";
char pass[]= "@Bosearivu14";
unsigned int level = 0;
BlynkTimer timer;
BLYNK_WRITE(V3)
{
  int pinValue=param.asInt();
  digitalWrite(MOTOR,pinValue);
  Blynk.virtualWrite(V3,pinValue);
}
void setup() {
  pinMode(LOWLED, OUTPUT);
  pinMode(MIDLED, OUTPUT);
  pinMode (HIGHLED, OUTPUT);
```

```
  pinMode (MOTOR, OUTPUT);
  digitalWrite(LOWLED, HIGH);
  digitalWrite(MIDLED, HIGH);
  digitalWrite(HIGHLED, HIGH);
  digitalWrite(MOTOR, LOW);
  Serial.begin(115200);
  pinMode(PIN_TRIG, OUTPUT);
  pinMode(PIN_ECHO, INPUT);
  Serial.print("Connecting to WiFi");
  WiFi.begin("Wokwi-GUEST","",6);
  while(WiFi.status() != WL_CONNECTED){
    delay(1000);
    Serial.print(".");
  }
  Serial.println("Connected");
  Blynk.begin(auth,"","");
}
void loop() {
  digitalWrite(PIN_TRIG, HIGH);
  delayMicroseconds(10);
  digitalWrite(PIN_TRIG, LOW);
  int duration =pulseIn(PIN_ECHO, HIGH);
  Serial.print("Distance in CM: ");
  Serial.println(duration/58);
  Serial.print("Distance in inches: ");
  Serial.println(duration/148);
  int level=duration / 58;
  Blynk.virtualWrite(V4,level);
  if(level < 100) {
  digitalWrite(LOWLED, LOW);
```

```
digitalWrite(MOTOR, HIGH);
digitalWrite(HIGHLED, HIGH);
digitalWrite(MIDLED, HIGH);
Blynk.virtualWrite(V0,HIGH);
Blynk.virtualWrite(V1,LOW);
Blynk.virtualWrite(V2,LOW);
Blynk.virtualWrite(V3,HIGH);
}
else if ((level >= 200) && (level <400)){
digitalWrite(LOWLED, HIGH);
digitalWrite(HIGHLED, HIGH);
digitalWrite(MIDLED, LOW);
 Blynk.virtualWrite(V0,LOW);
Blynk.virtualWrite(V1,HIGH);
 Blynk.virtualWrite(V2,LOW);
}
else if (level >= 400){
digitalWrite(HIGHLED, LOW);
digitalWrite(MIDLED, HIGH);
digitalWrite(LOWLED, HIGH);
digitalWrite(MOTOR,LOW);
Blynk.virtualWrite(V0,LOW);
Blynk.virtualWrite(V1,LOW);
Blynk.virtualWrite(V2,HIGH);
 Blynk.virtualWrite(V3,LOW);
}
delay(1000);
Blynk.run();
}
```