Bangabandhu Sheikh Mujibur Rahman Digital University

Department of IOT & Robotics Engineering

Program in IOT & Robotics Engineering

Project Report

Project title:

ChatHouse - An IOT_ Based Smart Home Appliances controlling system via WhatsApp**.**

Course Code: IoT 4312

Course Title: Wireless Communications for IoT Lab

SUBMITTED TO	SUBMITTED BY
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Submission Date: 09th December,2024.

Project Title: **ChatHouse** - An IOT-Based Smart Home Appliances controlling system via WhatsApp**.**

Introduction: Home automation systems have become increasingly popular, allowing users to control various household appliances such as lights, fans, and other electrical devices remotely. This project will focus on creating a low-cost, efficient, and user-friendly home automation system that leverages the power of IoT (Internet of Things) and WhatsApp messaging for remote control.

Objectives:

- **To** design and implement a home automation system.
- **To** allow users to control home appliances remotely.
- **To** integrate the WhatsApp messaging platform (e.g. twilio) to send and receive control commands for the home automation system.

Components Required:

i) Hardware:

- ESP32
- Relay Module.
- Connecting Wires
- Power Supply
- Fan
- Water pump
- Led

ii) Software:

- Arduino IDE
- ThingESP
- Twilio API for WhatsApp messaging.
- Whatsaapp

Hardware Implementation:

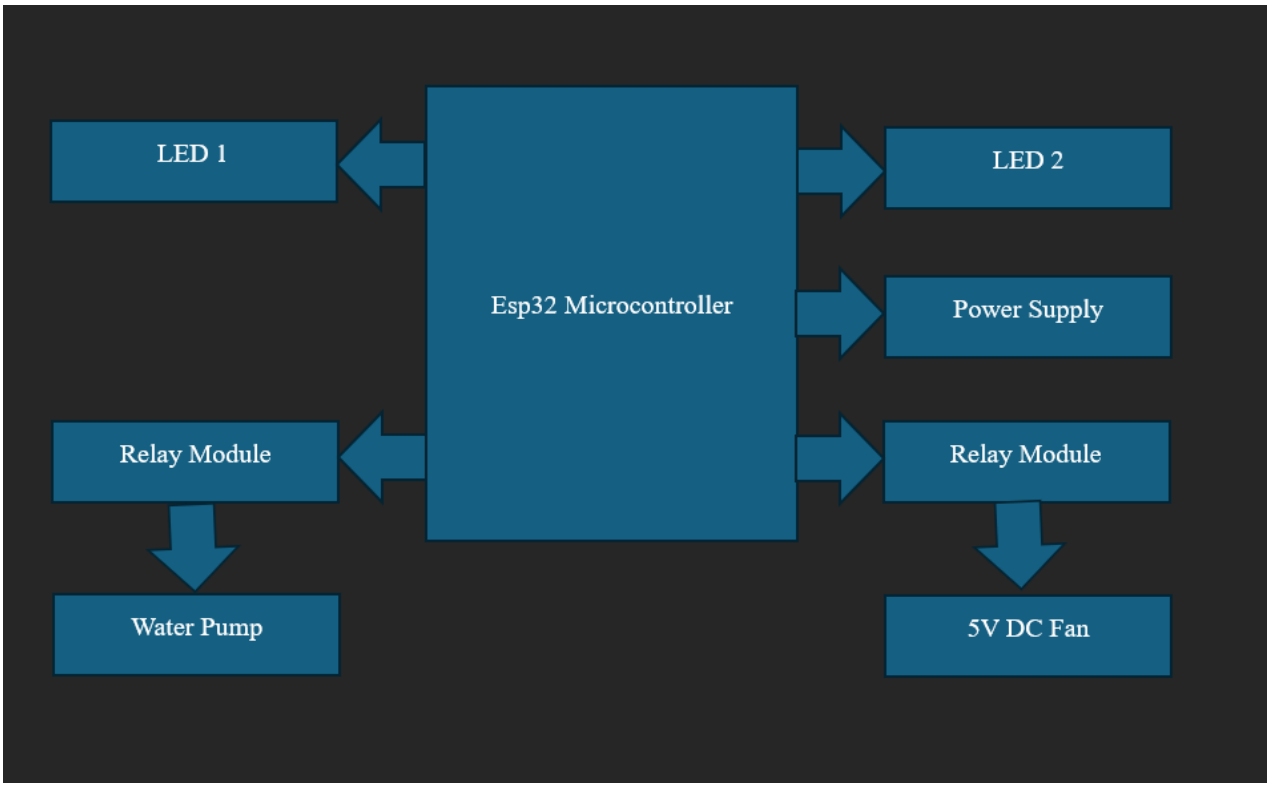


Figure: Diagram of hardware component setup

Project Description: The proposed system (**ChatHouse)** enables the control of home appliances through WhatsApp messages, utilizing the ESP32 microcontroller as the central processing unit. When a user sends a command via WhatsApp, the message is received by a server or directly by the ESP32 using the WhatsApp API, such as Twilio. The ESP32 processes the command, identifies the appliance to control (e.g., turning on a light), and triggers the appropriate relay to manage the power supply to the appliance, effectively switching it on or off. Additionally, the system can be configured to send a confirmation message back to the user, providing real-time feedback on the appliance's status, such as confirming that the light has been turned on.

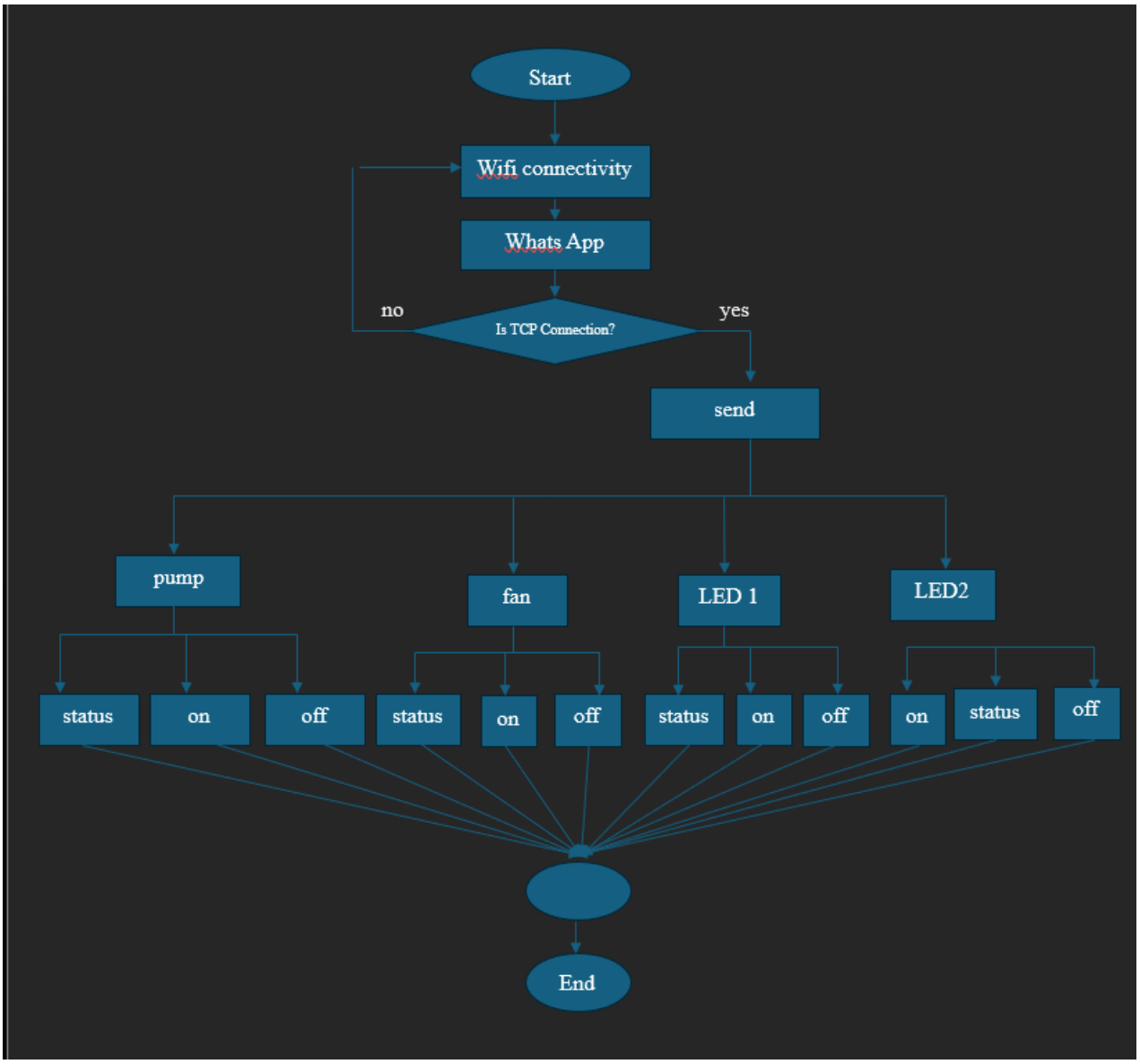
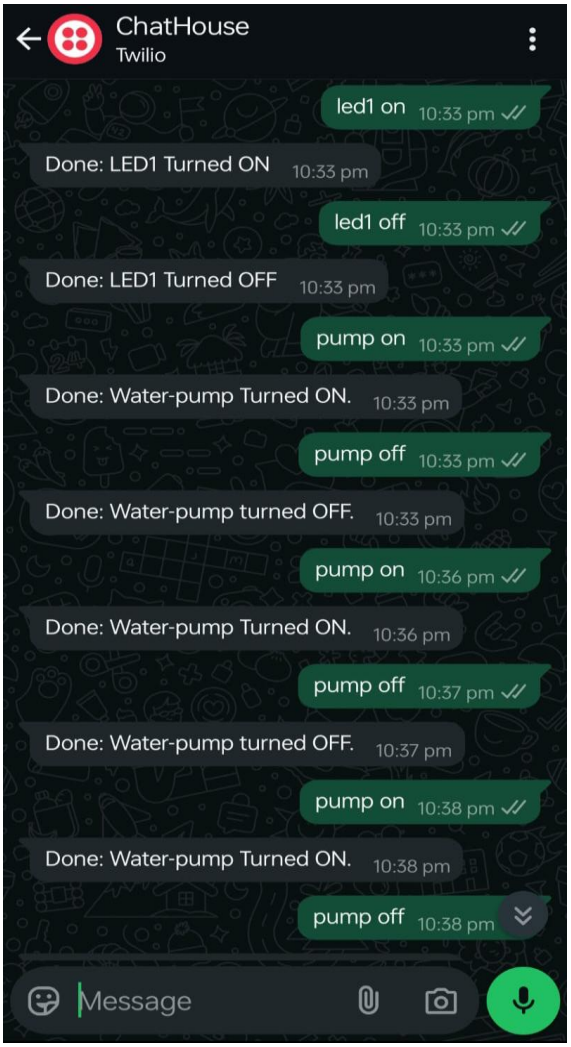
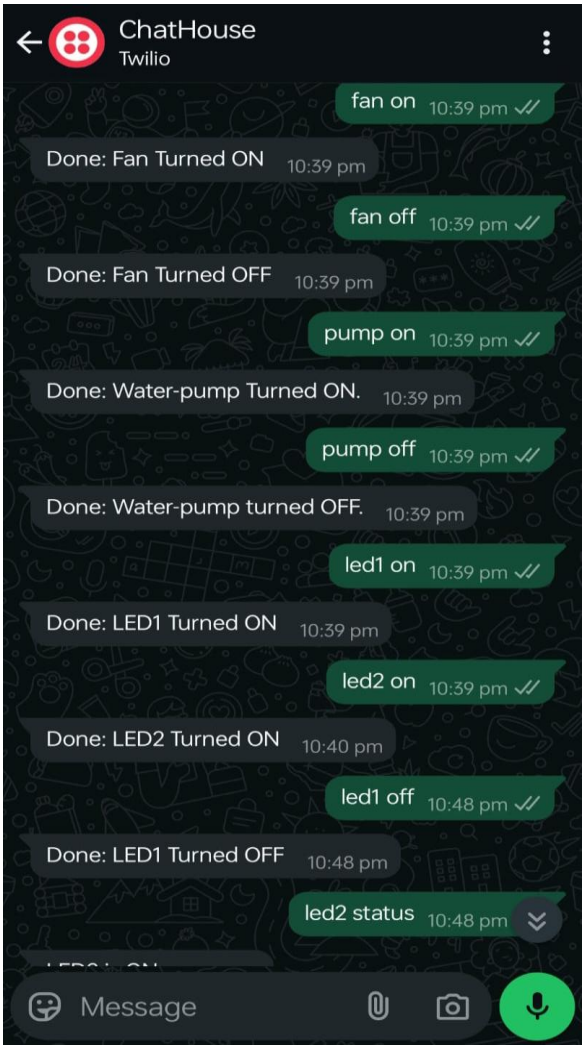
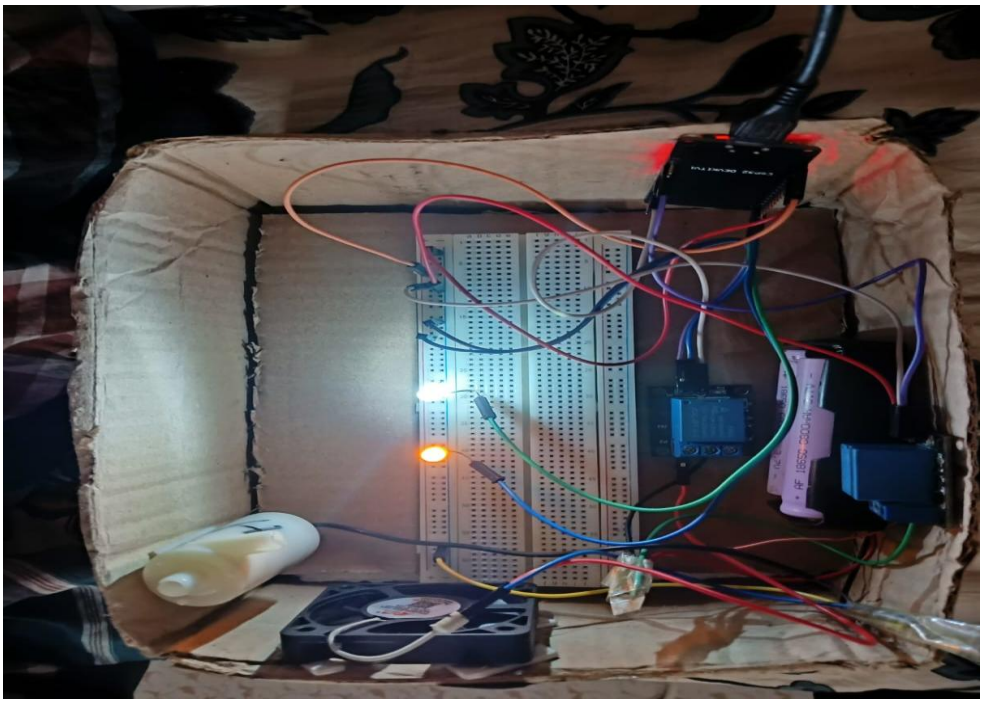


Figure: flowchart of ChatHouse

Outcome: The outcome of this project is a fully functional home automation system that allows users to control multiple home appliances like Fan, Light, Water Pump through WhatsApp messages. The system should be reliable, easy to use, and scalable for additional appliances.


ChatHouse
Twilio
led1 on 10:33 pm
Done: LED1 Turned ON 10:33 pm
led1 off 10:33 pm
Done: LED1 Turned OFF 10:33 pm
pump on 10:33 pm
Done: Water-pump Turned ON. 10:33 pm
pump off 10:33 pm
Done: Water-pump turned OFF. 10:33 pm
pump on 10:36 pm
Done: Water-pump Turned ON. 10:36 pm
pump off 10:37 pm
Done: Water-pump turned OFF. 10:37 pm
pump on 10:38 pm
Done: Water-pump Turned ON. 10:38 pm
pump off 10:38 pm
Message


ChatHouse
Twilio
fan on 10:39 pm
Done: Fan Turned ON 10:39 pm
fan off 10:39 pm
Done: Fan Turned OFF 10:39 pm
pump on 10:39 pm
Done: Water-pump Turned ON. 10:39 pm
pump off 10:39 pm
Done: Water-pump turned OFF. 10:39 pm
led1 on 10:39 pm
Done: LED1 Turned ON 10:39 pm
led2 on 10:39 pm
Done: LED2 Turned ON 10:40 pm
led1 off 10:48 pm
Done: LED1 Turned OFF 10:48 pm
led2 status 10:48 pm
Message



Challenges and Considerations:

- **Wi-Fi Connectivity**: Ensuring stable and reliable Wi-Fi connectivity for the ESP32.
- **API Integration**: Proper integration of the WhatsApp API to ensure timely and accurate communication.
- **Safety**: Proper insulation and safe handling of high-voltage appliances connected to the relay module.
- **Security**: As it is using WhatsApp social media for controlling the home appliances therefore there might be a challenge for ensuring security.

Conclusion: This project aims to demonstrate the practical application of IoT in everyday life by developing an iot-based smart home appliances controlling system via WhatsApp. By combining the ESP32's capabilities with the widespread use of WhatsApp, the project will showcase a simple yet powerful way to enhance home automation.