IOT BASED HOME AUTOMATION

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Abstract - The system for controlling a home has been in use for decades, but because of the project's costs and budgeting, it continues to be a specialty item for wealthy customers. Security is one of the main reasons that the home automation technology is not implemented, according to the Integrated Residence Automation System. They occasionally forget to turn off the devices at home due to their busy daily schedules. The combination of our clumsy attitude and busy daily schedules can sometimes leave us in a rush and cause us to forget to turn off the lights. It will result in a dramatic increase in power costs. Additionally, it is a form of electrical waste that will contribute to the planet's decline in health. The ability to use a smartphone or internet to manage household appliances like a light, pump, fan, and doors is a project's power. The system uses NODEMCU in connection with household appliances. Appliances for the home that may be used to manage household technology and provide a healthy living environment to avoid loss and harm to any the company property. This project uses a relay, servomotor, liquid pump, fan, bulb owner and bulb as its components. Arduino is used for software in the meantime. The primary piece of software utilized in this project is Arduino. The command is being given using the Think Speak programmed. Most projects that are linked to home digitization, sometimes referred to as home appliances, employ this app or software and seldom use any other apps. Compared to another project that uses a tablet, laptop, and other devices that are far more user-friendly, this project uses a mobile

phone and an internet connection to issue commands.

1. INTRODUCTION

1.1 Introduction

A smart house comprises two main cooperating sections, a network of intelligent devices and an intelligent load, in addition to detectors, actuators, middleware, and a network. Household automation, sometimes referred to as a smart house, uses modern technology to improve the convenience, comfort, security, and cost-effectiveness of domestic tasks. Connecting different sorts of devices to the the internet, such as phones, tablets, and personal computers, is known as the "the Internet of Things" and introduces a cutting-edge form of exchange between both people and objects. IoTs have made it more common in recent years to conduct research and build home automation systems. Many of the gadgets are monitored and managed to aid people. Various wireless systems also support assist in establishing connections from faraway locations to raise the home's environmental intelligence. When a human has to link with other objects, a sophisticated IoT network is created. The internet of things (IoT) technology is utilized to create cutting-edge concepts and significant growth for intelligent houses in order to raise the standard of living. The ability to establish a connection from any remote location and find rapid solutions to multiple issues thanks to the internet helps to lower overall costs and energy usage.

Problem Statement:

presently people's hectic daily schedules might cause them to occasionally forget to turn off the gadgets in their homes. As humans, we cannot escape the clumsy mentality and the hectic

daily schedule that occasionally causes us to be in such a hurry that we forget to turn off the lights. The power cost will significantly increase as a result. In addition, it is a form of electrical waste that contributes to the planet's decline in health. In addition, manual operation of the light and fan was difficult for older and disabled users compared to automation.

2. Literature Survey

1)Micro Controller

The microcontroller is a piece of equipment that is contained on only one integrated circuit and is used only to carry out a single operation and run a single programmed. It has a memory, a processor, and customizable input/output peripheral. Microcontrollers are frequently employed in autonomously operated electronic devices, including smartphones, cameras, microwaves, washers, dryers, and other appliances. They are primarily created for applications that are embedded.

2) Microcontroller Selection for Home Appliances

We will select the microcontroller that we use for this undertaking from a variety of options, including Arduino, NODEMCU, a wifi module, a cell phone module, plus others.

Previous Research

NODEMCU	ARDUINO UNO
128KB RAM	2KB RAM
ROM(flash) can store morecode compare to NO	32KB
Comes with micro USB port	Comes with USB type B connector
Small in size	Bigger than NODEMCU

Table : differentiator of microcontroller

Control System:

solution for controlling homes that makes use of WiFi. The system consists of up of three main parts: a website hosted on a server that displays the system's functionality and handles and tracks users' homes, and a physical interface module made up of a The Arduino project PCB (ready-made), a Wi-Fi prevent PCB, three input alarm PCBs, and a trio result actuators PCBs that serve as the right interface for the system's various sensors and the actuators.

The System outperforms traditionally accessible smart home solutions in terms of customization and capacity. The User can sign in via the server's application via the web using the same technique. If the computing device is online, distant

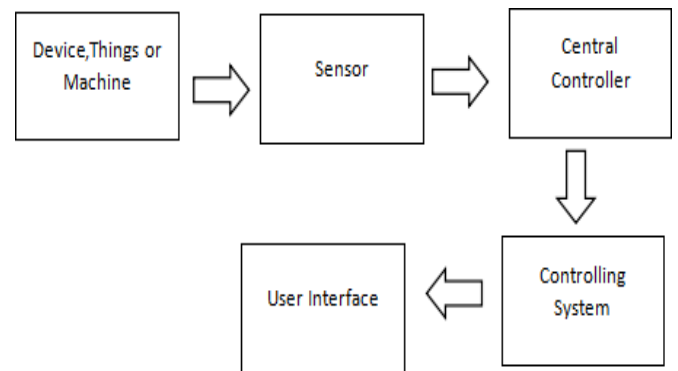users require a suitable internet window to access the network's web-based applications online.

Figure: Block diagram of Home Automation

3. OVERVIEW OF THESYSTEM

3.1 Existing System

• If a GPRS connectivity cannot be established, the entire GSM-based home automation setup will not function under the current system. Effective in terms of cost: As is common knowledge, GPRS systems are more costly than Wi-Fi. Data Pack requirement: Because certain systems rely on GPRS, we must renew our data packs every month for use with such services. Some architectural designs incorporate the Wi-Fi principle; however, they frequently make use of the pricey Raspberry Pi. Some fundamental capabilities, such as automated control of outside lighting, are still missing from home automation systems. Automated homes also lack a notification feature that would allow users to quickly respond to a notification.

3.2 Proposed System

development and prototype deployment of a new home control system that connects its component elements over a wireless Internet (Wi-Fi) architecture. The suggested system has two primary parts. The hosting device (web server), which shows the computer's core and regulates and administers users' homes, is the initial component. Users and administrators of systems can manage and oversee computer code locally (LAN) or remote (internet). The second component is the physical interface of the module, which offers the actuators and sensors that are part of the home system's automation with the proper interface. The projected

system is scalable, which means that one server may control several external hardware elements as long as they are under the scope of (Wi-Fi) networks, in contrast to the majority of automated homes now on the market. Numerous home automation options are supported by certain systems. procedures such as safety and authority management elements, etc. Comparing the capacity for expansion and adaptability of the system that was suggested to currently on the market home information technology solutions.

3.3 Research Methodology

Home appliances are the main emphasis of this project. To ensure that the task at hand is finished on time, a step-by-step process is followed. Circuit layout and physical part design are included in this.

3.3.1 Project Design and Overview

As mentioned in the preceding section, the NODEMCU serves as the primary controller for the house controller.


Proteus Studio is used to build a controller module for the NODEMCU and try out the design of the circuit. This project makes use of the Think talk programmed as a platform for speaking commands into the project.

3.3.2 Main components of Project

NodeMCU is the primary component what has been used in the present endeavor. An free and open-source Internet of Things (IoT) platform is NodeMcCU. It consists of electronics based on the ESP-12 module and firmware that runs on Espressif Systems' ESP8266 Wi-Fi SoC.The firmware is typically referred to as "NodeMCU" as opposed to the creation kits. The Lua programming language is employed by the system. It was created using the Espressif Non-OS SDK for ESP8266 and has its foundation on the eLua project. It makes extensive use of free source programmed like SPIFFS and lua-cjson.

3.3.3 Project Software

Arduino Apps for Phone is the programmed used in the current endeavor. Think of an app store with iOS as well as Android apps for controlling Raspberry Pi, Arduino, and similar devices online. With here, we may issue a command
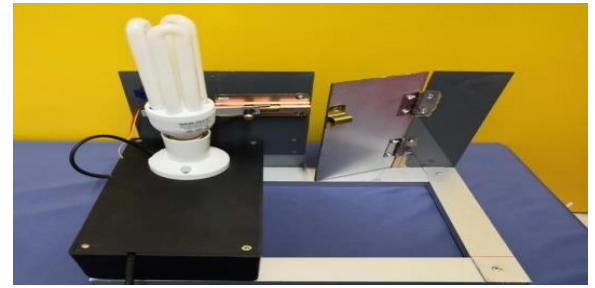
using Think Speak to operate the light bulb, door, fan, water breathe, or any other item. The following is an instruction that was sent using the Think Speak app:
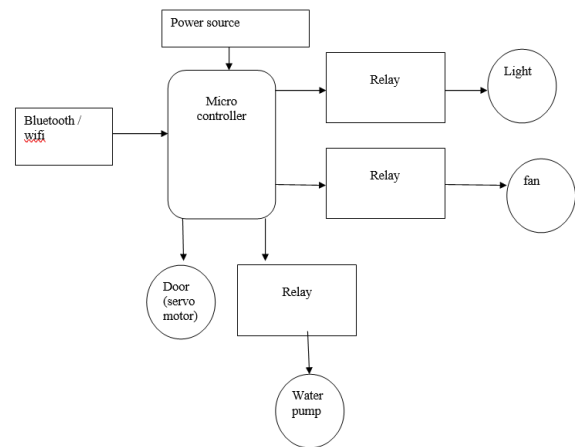
4   Block Diagram:

Figure: Block diagram of the Project

Fig 1: System Architecture

5   RESULTS SCREEN SHOTS

Prototype Image:

Figure: Circuit of Prototype Development

Medical Device Product Layout:

Sustainability Element in The Design Concept

It is neater since the design indicates that the wire component is in a compact box. It is also extremely convenient that the design is not too large and that a bag can be used to transport it.

6. CONCLUSION

✓ Modern technology is developing quickly, and home automation is no exception. Regarding this project, it is strongly advised for everyone in the globe, especially for disabled users and homeowners. This suggestion will contribute to a greener future and can help cut and save money on power costs. Additionally, it will enable people with disabilities to operate on their own and control their home security in a more organized manner. It will assist in avoiding any losses or unfavorable situations for a user..

Future Enhancement

✓ The project is intended to carry out exhaustive testing, and it is also recommended that the thermometer sensor be upgraded to wireless function without utilizing a cable connection. This project will also enhance its capabilities to be used widely for other purposes outside monitoring freezers have including monitoring servers' temperatures in rooms or residential appliances.

7. References

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