Survey Paper on Home Automation for Elderly and Physically Disabled

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ABSTRACT - This paper presents home automation for elderly and physically incapacitated people. Home automation is implemented in homes of older adults and people with disabilities to maintain their independence and safety, withal preserving the costs and solicitousness of peregrinating to a healthcare facility. For the incapacitated, astute homes give them an opportunity for independence, providing emergency alert systems, automated appliances, automated reminders, and abbreviating the concern of family members.

I. INTRODUCTION

The Internet of Things (IoT) is a growing network of common things, ranging from industrial machines to consumer goods, that can distribute data and complete tasks while you focus on other duties. Because of the advanced development in computer technology, microprocessors are not only on the desktop but additionally subsist everywhere. Home automation sanctions us to control household appliances like lights, doors, fans, AC, etc. It withal provides home security and an emergency system to be activated. Home automation not only refers to minimizing human efforts but additionally energy efficiency and time-preserving. It is conspicuous that microprocessors are embedded in electronic appliances in our abode today. In the past, the appliances are working on standalone and cannot cooperate. But in recent years, these appliances can be monitored and controlled by embedded microprocessors and be exhibited on terminals. The main aim of our system is to build an impeccable companion for someone to be at home. Our system is a computer-predicated system that can accept voice-to-direct commands and process them. The system provides us with switching any contrivance ON/OFF. For people

with circumscribed auricularly discerning, vision, etc. voice-operated contrivances or contrivances with pre-programmed commands can take the arduousness out of everyday tasks. The medicine reminder system emerges subsidiary to takingthe opportune dosage of medication. An emergency alert system will be subsidiary to seek avail in case of emergency. Whether you require technologies for more preponderant mobility, ease of home-living, or enhancement of lifestyle, there's a perspicacious home solution to suit you.

II. LITERATURE SURVEY

A review of several home automation systems reveals that many technologies are employed to construct this sort of system. All of the proposed methods have been presented and contrasted, revealing some of their advantages and disadvantages systems. This review expounded on different home automatic systems e.g. Web predicated, Bluetooth-predicated, mobile-predicated, SMS predicated, ZigBee predicated, Arduino microcontroller predicated, Android app predicated, IOT predicated, and cloud-predicated.

Additionally, understand that the above-mentioned systems have some quandaries and require some resources that cause the system costly. Systems working in different environments and different resources cause users to adjust to the system. To increment the scope of these systems needs to be implemented with some utilizer cordial interfaces which will avail users and give more efficient access to the system. But again, on the other hand, due to its performance, simplicity, low cost, and reliability, the abode automation system is making its position in the ecumenical market. That day is not far when every abode will be an astute homemaking life more facile and convenient. The Cyber World of things is a developing network of everyday activity from industrial machines to

consumer goods that can contribute information and consummate tasks while you are diligent with other activities. Wireless Home Automation system utilizing IoT is a system that adopts the computer system or mobile contrivances to control essential home purport and features indubitably through the internet from anywhere around the world, an automated habitation is frequently called a keenly intellective home. It signifies preserving electricity and human energy. Wireless Home Automation System utilizing IoT is the system that controls the domicile appliances like celerity of fan, light, and temperature utilizing the mobile phone anywhere around the globe through the internet. This utilizer study about how to provide a plenarily astute environment condition by utilizing sundry sensors (temperature, sultriness, light, and level). Many people are not able to move more from one place to another so systems must be designed with less human interaction. These techniques are utilized.

III. METHODOLOGY
i) Voice controlled lights and appliances:
In this system, the voice apperception system which is the input module to the microcontroller takes the voice ordinant dictation given by the utilizer as input, and the controller judges whether the injunctive authorization is on/off the contrivance and according to the utilizer's voice, the switching mechanism controls the contrivance. We can use our voice to operate electronic items such as televisions, fans, and lights through the internet. We've linked Arduino to a 4-channel 5V relay module in this example. Because it is a four-channel relay, we can connect up to four electronic appliances to it and operate them remotely. The Arduino and Blynk app on our android will be connected through Wi-fi. If we don't operate voice control we can directly operate the contrivances through the Blynk app. The Blynk app may interface with the Arduino directly and transmit data to it. But since we are integrating the feature of voice commands, we are utilizing Google assistant. However, Google Assistant has a problem in that it cannot grasp complex requests like as "turn on the fan" or "turn on relay one" on its own. So, to overcome this, we'll use a third-party program called 'IFTTT.' and the connection between Google Assistant and the Blynk app will be established with the avail of IFTTT. IFTTT receives the peregrine instruction from Google Assistant. IFTTT analyses this instruction and uses the Blynk Server to send a on or off signal to the Blynk app. After then, Blynk will transmit this signal to the Arduino, which will subsequently be sent to our electrical appliances.
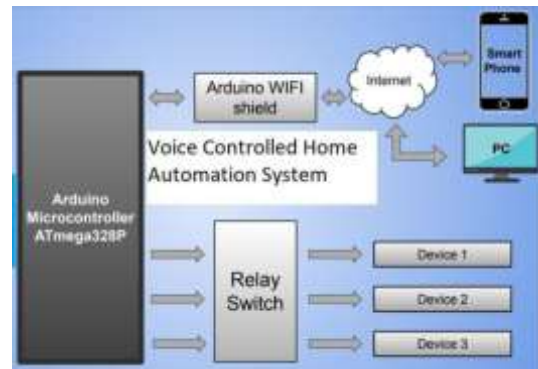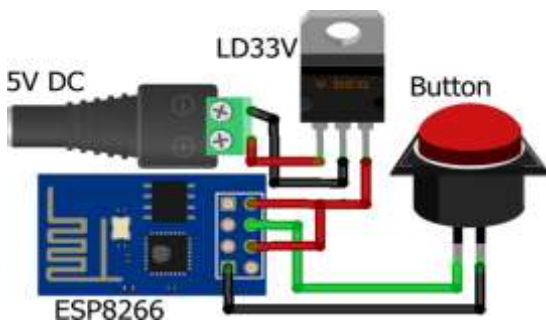

ii) Medicine Reminder system:
A 5V supply is used to power the Medicine Reminder System. It displays a welcome message when it first starts up. The LCD panel is set up to alternate between three screens. The phrase "Stay Healthy" appears on the first screen.The second screen is an avail screen that instructs you to press the cull push button to recollect (once, twice or three times per day) anyone's time slot. The program's time slot is changeable and can be modified properly. e.g., Right now, there are just three options: 8 a.m., 2 p.m., and 8 p.m.The time slots have been divided into three different categories. When the user clicks the first push button, Mode 1 chooses to take antibiotics once a day at 8 a.m. When the user clicks the second push button, Mode 2 chooses to take antibiotics twice every day at 8 a.m. and 8 p.m.If the user hits the third push button, Mode 3 chooses to take antibiotics multiple times a day at 8 a.m., 2 p.m., and 8 p.m. The user's input is logged and the time is acquired from the Real-time clock whenever the user selects desired slots by hitting push buttons. The buzzer will start to sound and indeed the LED will glow when the time matches the set time slot. By pressing the stop button, the buzzer may be shut off.The same approach is utilized for the next slot reminder.
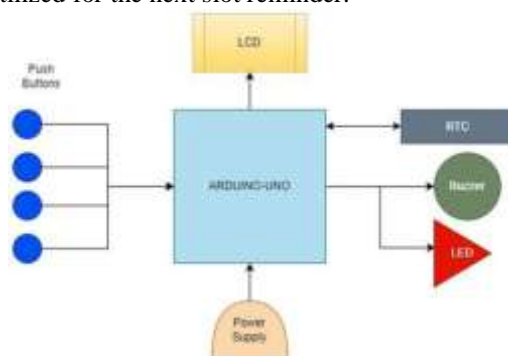

iii) Emergency system:
This geriatric panic alarm is really simple

to use. You merely click the button, and a 5-second LED glow shows as confirmation.In addition, an electronic mail is sent to anybody you choose to receive attention from. We may easily arrange it to send a Message or place a call.You can also set the setting to summon an ambulance or a hospital.So, it's fundamentally a digital height. So that you can utilize that to do any triggering activities. For example, electronic mail can be sent to their Son or Daughter. A text SMS can go out to relatives. With a single button, they can contact their grandson or son. It's a project that can be taken with you. You may incorporate a battery pack and create a wearable contraption. Actually, there are numerous advantages to using this project. This panic alarm for the elderly is incredibly simple to use. You simply press the button, and acknowledgement appears in the form of a 5-second LED glow.In the meantime, an electronic mail is sent to everyone you want to pay attention to. We may easily arrange it to send an SMS or make a phone call. You can also set the setting to summon an ambulance or a hospital. So, it's fundamentally a digital height. So that you can utilize that to do any triggering activities. For example, electronic mail can be sent to their Son or Daughter. A text SMS can go out to relatives. They can call their grandson or son with one button. It's a project that can be taken with you. You may incorporate a battery pack and create a wearable contraption. Actually, there are numerous advantages to using this project.
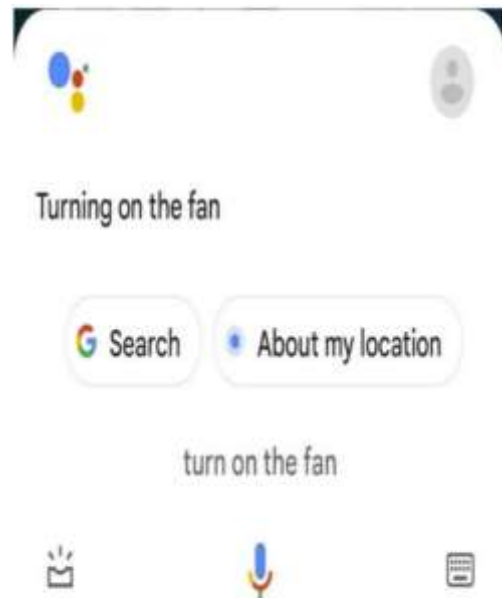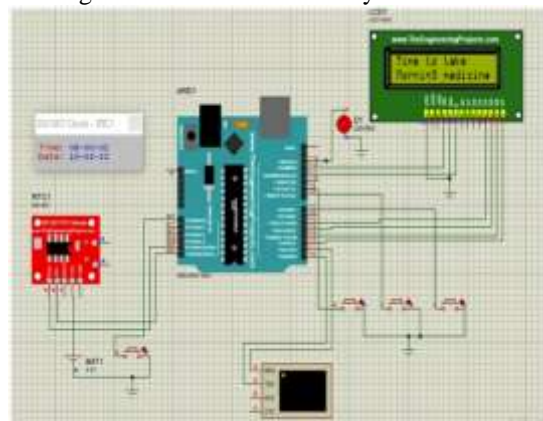

IV. RESULTS OBTAINED
Voice-controlledhome automation system: Proteus Simulation
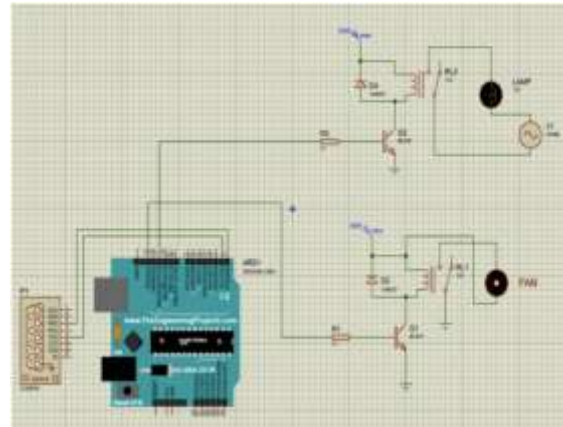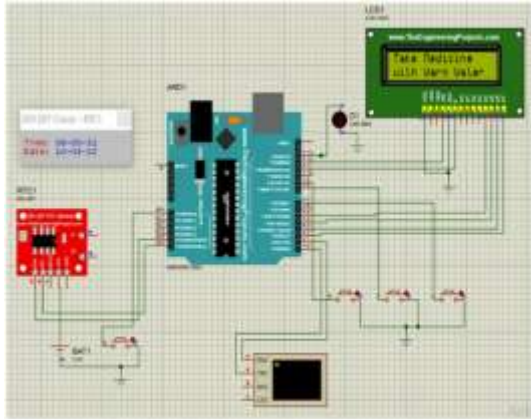

The commandwas given to google assistant to switch on the fan:

Working of Medicine Reminder System:

V. CONCLUSION

The idea is to be able to control some of the most significant household appliances using voice commands. Its purpose is to not only give users with a healthy and enjoyable lifestyle, but also to assist the sick, disabled, and elderly who live alone by allowing them to conveniently complete all of their chores in one area. The future requirement is to make the design more streamlined and user-friendly, with a mechanism to control multiple appliances at once. As of now, we're able to control the same equipment in two different rooms at the same time, such as a light bulb, and we've also been capable of handling more astronomically massive loads, such as an AC's. The voice-activated home automation system is both mobile and simple to implement in your main household circuit. The voice-controlling remote and the system's application end have both been made portable. Additionally, this emergency system and medicine reminder system boost people's comfort, therefore reducing tension by ensuring felicitous safety, comfort, and security.

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