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IOT Based Home Automation using Online and Offline Mode

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ABSTRACT: Now a days, people are getting busy in their day-to-day schedule so, to save time and energy they prefer to the automated things. Globally Automatic systems are more preferable than manual systems. Home automation is a term that can cover variety of technological capabilities. The IOT refers to automatic control of home devices from anywhere and anytime. It also helps to save electricity which is major factor in these days. This technique has achieved great popularity and also increased comfort and quality of life.

KEYWORDS: Internet of Things, NodeMCU, PIR Sensor, Energy Conservation.

I. INTRODUCTION

The concept of controlling home appliances using wi-fi and Bluetooth is interesting. This project is designed to control home appliances using an Android application. A Bluetooth device is interfaced to the control unit for sensing signals transmitted by the Android application. This data is conveyed to the control unit which switches on loads ON/OFF as desired. An NodeMCU microcontroller is used in this project as a controlling device.

Remote operation is achieved by any smart-phone or Tablet with Android OS, upon a GUI (Graphical User Interface) based voice operation. The transmitting end uses an Android application for the voice commands that are transmitted to digital bits. At the receiver end, these commands are used for controlling the home appliances on and off. At the receiving end, the appliances are driven by RELAY through relay driver that are interfaced to the microcontroller. Serial communication data sent from the Android application is received by a Bluetooth receiver interfaced to the microcontroller. The program on the microcontroller refers to the serial data to generate respective output based on the input data to operate the RELAY through relay driver.

In our project we are using PIR Sensor. It is in-built with an additional PIR Sensor which TURNS ON Light in the presence of human and switches OFF after 60 seconds if no human detected for energy saving operation.

Thus, it provides artificial light only when it is needed. This reduces the large amount of energy wastage and helps in making the most energy efficient lighting.

• OBJECTIVES

- To develop a home automation remote system.
- To save energy proper management of electricity distribution.
- To control and monitor any operating system.
- To make it suitable for inexperienced users or even disabled people.

II. SYSTEM MODEL

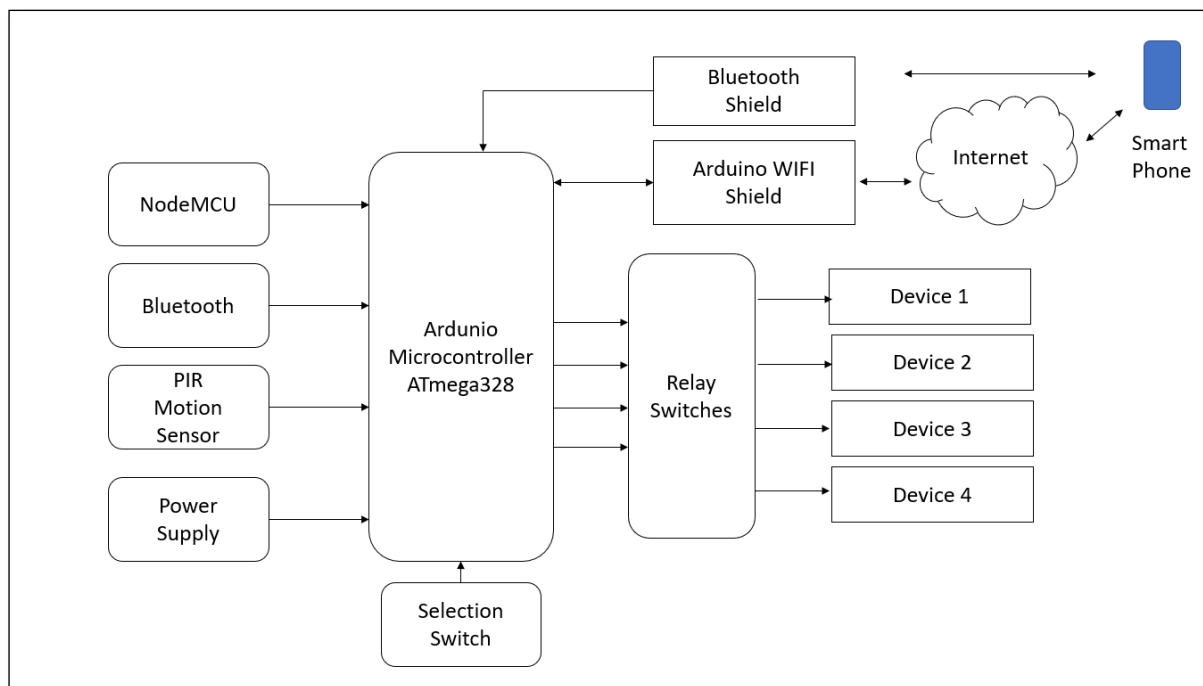


Fig. 1 Block Diagram

- Hardware Required:

1. Node MCU
2. Power Supply
3. Bluetooth
4. Relay Driver
5. Relay
6. PIR Sensor
7. Mode selection switch

III. PROPOSED METHODOLOGY AND DISCUSSION

The above diagram gives us the perceptible idea of a system that contain two modes i.e., Online and Offline. A Bluetooth device is interfaced to the control unit for sensing signals transmitted by the Android application. This data is conveyed to the control unit which switches on loads ON/OFF as desired. An NodeMCU microcontroller is used in this project as a controlling device.

Remote operation is achieved by any smart-phone or Tablet with Android OS, upon a GUI based voice operation. The transmitting end uses an Android application for the commands that are transmitted to digital bits. At the receiver end, these commands are used for controlling the home appliances on and off. At the receiving end, the appliances are driven by RELAY through relay driver that are interfaced to the microcontroller. Serial communication data sent from the Android application is received by a Bluetooth receiver interfaced to the NodeMCU microcontroller. The program on the microcontroller refers to the serial data to generate respective output based on the input data to operate the RELAY through relay driver. In our project we are using PIR Sensor. It is in-built with an additional PIR Sensor which TURNS ON Light in the presence of human and switches OFF after 60 seconds if no human detected for energy saving operation. The main feature of this system is that the peoples with hands disability can use this system by voice recognition this feature makes this a totally hands-free home automation system. This is mainly used system by handicaps and elders who are suffering from hands disability or those who cannot move their limbs frequently.

IV. EXPERIMENTAL RESULTS



Fig.2 Hardware Design

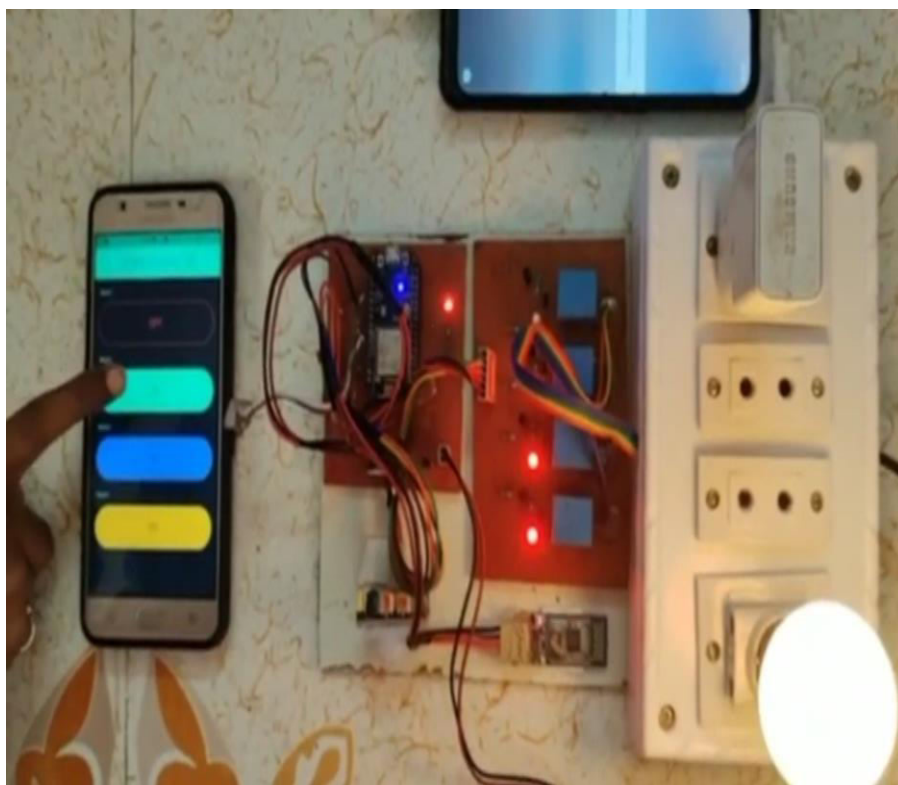


Fig.3 Result of System



V. CONCLUSIONS

IoT based smart home system will bring more convenience and convenience in people's lives. The Android based smart home application communicates via the Internet. Any Android supported device can be used to install Smart Home app. The smart home environment can be controlled and monitored using the Android application. These home automation systems are mandatory because sometimes the man may forget to turn off the appliances when they do not need to be used and, in this case, home automation systems are used to reduce power dissipation.

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