SMART EXTENSION BOARD

INTRODUCTION

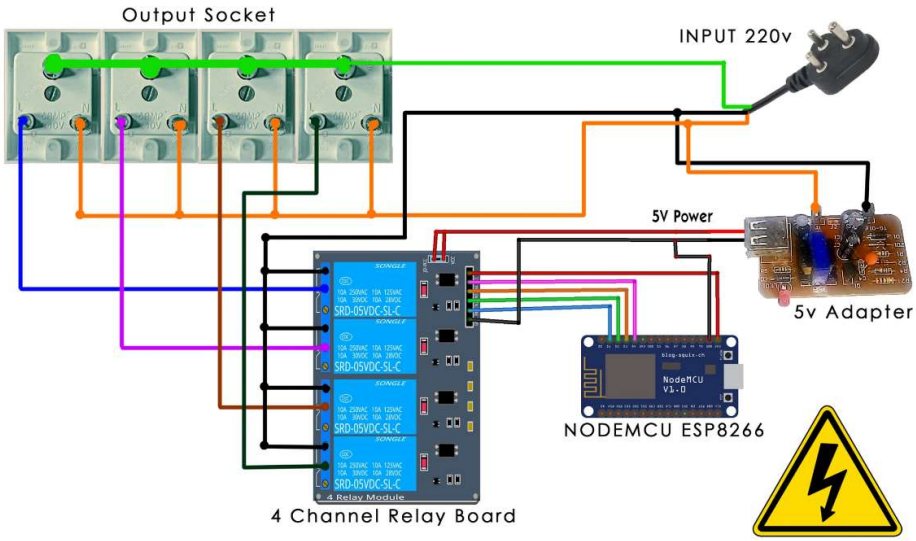
With the increasing development of cloud-based voice service, like Google Assistant and Amazon Alexa, there is an extensive demand for automation in homes. The objective of the Automatic Extension Board is to cost-effectively transform an existing home into an automated home without rewiring the home. Once the Esp32 (µc) has received an initiating signal, the microcontroller will switch a relay which in turn controls the socket of the extension board. The Automatic Extension Board obtains information through a Wi-Fi connection.

With this home automation project, we can control & the monitor the Sockets in the Google Home and Alexa App from anywhere in the world. If the Wi-Fi is available, the NodeMCU will automatically connect with the Wi-Fi.

ADVANTAGES OF SMART EXTENSION BOARD

- It can control multiple gadgets & devices at the same time from any corner of the world.
- It is compact in size and portable. Control the connected devices from the comfort of your couch or bed.
- Save energy and schedule the ON/OFF time of device.
- Transform ordinary home into an automated home without altering the existing wiring of the home.

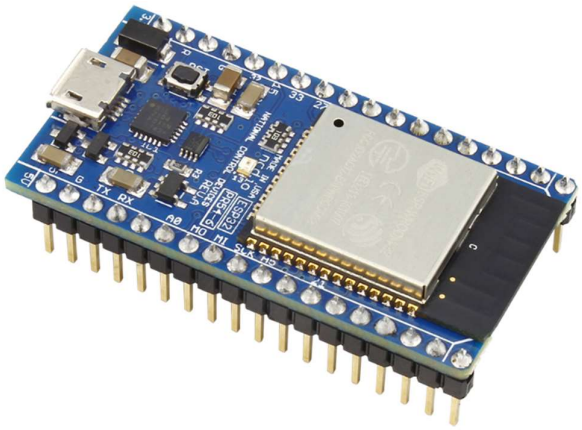
CIRCUIT DIAGRAM



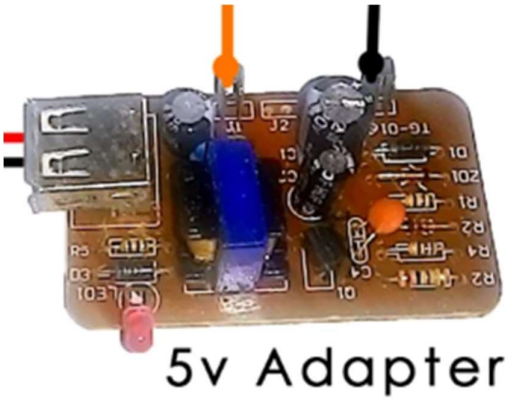
COMPONENTS REQUIRED

Hardware Requirements

ESP32 Wi-Fi module



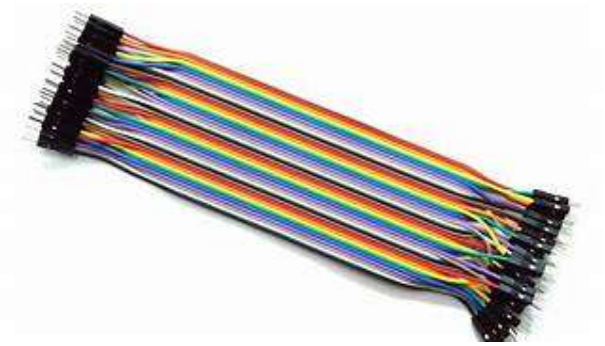
5V ADAPTER



2 CHANNEL RELAY

LED

JUMPER WIRES



Software Requirements

ARDUINO_IDE

GOOGLE HOME & ALEXA

WORKING

NODE MCU based home automation using WIFI project helps the user to control any electronic device using GOOGLE HOME & ALEXA. The App sends commands to the controller-ESP32, through wireless communication, namely WIFI. The NODE MCU is connected to the main PCB which has 2 Switch relays. These relays are connected to 2 Sockets.

When the user presses on the 'On' button displayed on the app or sends the voice command for switching on the Socket 1 or Socket 2 , the Socket 1 / Socket 2 is switched ON and the respective LED gets turned ON indicating the socket is in ON State.

Similarly, the Socket will be in OFF state when the OFF Button is pressed or the voice command for OFF is given.

This project of home automation using WIFI and NODE MCU can be used for controlling any AC or DC devices.

APPLICATIONS

A smart socket board that can be controlled by Google Assistant and Alexa offers several convenient applications. Here are some common uses:

- Voice-controlled Power Management: You can use voice commands through Google Assistant or Alexa to turn on/off the connected devices plugged into the smart socket board. This allows you to control lamps, fans, TVs, coffee machines, and other appliances without physically accessing the sockets or using their individual switches.

- Schedule and Timer Control: With the smart socket board, you can set up schedules or timers to automatically turn devices on or off at specific times. For example, you can schedule your coffee machine to start brewing coffee every morning or set timers to turn off lights after a certain period.

- Remote Control: By connecting the smart socket board to your home Wi-Fi network, you can control the devices plugged into it from anywhere using your smartphone or tablet. This enables you to turn devices on/off while you're away from home, providing added security and convenience.

- Integration with Smart Home Systems: Smart socket boards can be integrated with other smart home devices and systems. For example, you can create automation routines that trigger

specific actions based on certain conditions. You could have your lights turn on when you enter a room or have your coffee machine start brewing when your morning alarm goes off.

- Voice-controlled Home Automation: By integrating the smart socket board with other smart devices in your home, such as smart bulbs or smart thermostats, you can create a voice-controlled home automation system. You can command Google Assistant or Alexa to activate predefined scenes or control multiple devices simultaneously. For instance, you can say "Good night" to your voice assistant, and it can turn off all the lights, lower the thermostat, and lock the doors.

Overall, a smart socket board controlled by Google Assistant and Alexa provides convenience, energy efficiency, and automation capabilities for managing and controlling various electrical devices in your home.

REFERENCES

1) https://www.arduino.cc
2) Viral Science (viralsciencecreativity.com)
3) https://www.youtube.com