e-ISSN: 2582-5208
International Research Journal of Modernization in Engineering Technology and Science
(Peer-Reviewed, Open Access, Fully Refereed International Journal)
Volume:05/Issue:10/October-2023 Impact Factor- 7.868 www.irjmets.com

SMART HOME AUTOMATION APPLIANCE

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ABSTRACT

Smart Home Automation is a safe, networked, and intelligent home control system integrated with automation control, network communication, and Internet of things (IoT) technology. In a smart home, various appliances and devices are interconnected, allowing occupants to monitor and control them remotely. Here are some key points: A smart home utilizes Io to monitor and control appliances using a home automation system. It enables seamless communication between devices and provides convenience for users. Smart home Systems consist of hardware interfaces (such as sensors and Wi-Fi technology) and software interfaces (applications for controlling devices). Users can manage lighting, climate, entertainment systems, and more. Energy Management, Smart homes optimize energy usage by controlling appliances efficiently. Security, Sensors enhance home security by detecting intrusions or hazards. Convenience, Users can remotely control devices via smartphones, tablets, or computers. Challenges, Existing systems face limitations such as unfriendly user interfaces and high costs. However, ongoing research aims to address these challenges.

Keywords: Node MCU, Rely, Arduino IDE.

I. INTRODUCTION

Home automation can quickly bring the future in to our homes by incorporating security, climate, and household gadgets and transforms our regular home into a futuristic smart home. These smart home systems can be used for simple or elaborate tasks by integrating devices and gadgets inside and outside of your home.

A simple definition for home automation is the ability to do tasks automatically and monitor or change status remotely. Common tasks include turning off lights when no one is in the room, locking doors via smartphone, automates air condition systems that can sense and memorize temperature settings and appliances that help you reduce the time you spend in the kitchen.

II. METHODOLOGY

When it comes to home automation, having a well-thought-out methodology ensures a successful implementation. Here are some key steps to consider:

1. **Define Your Goals and Users**:

a Understand who the system is for. Is it for your family, guests, or specific individuals?

b Identify the parts of your home that you want to control through automation.

2. **Choose Control Methods**:

a Decide how you want to interact with your automated home. Options include voice commands, smartphone apps, or physical switches.

b Consider both manual and automatic modes for controlling devices.

3. **Plan Installation Stages**:

a Break down the implementation into manageable phases. Prioritize critical areas or devices.

b Consider scalability and future expansion.

4. **Involve Everyone in Planning**:

a Collaborate with family members or other stakeholders.

b Ensure their needs and preferences are considered during the planning process.

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5. **Timing Matters**:

a Plan installations during convenient times.

b Avoid disrupting daily routines or special occasions.

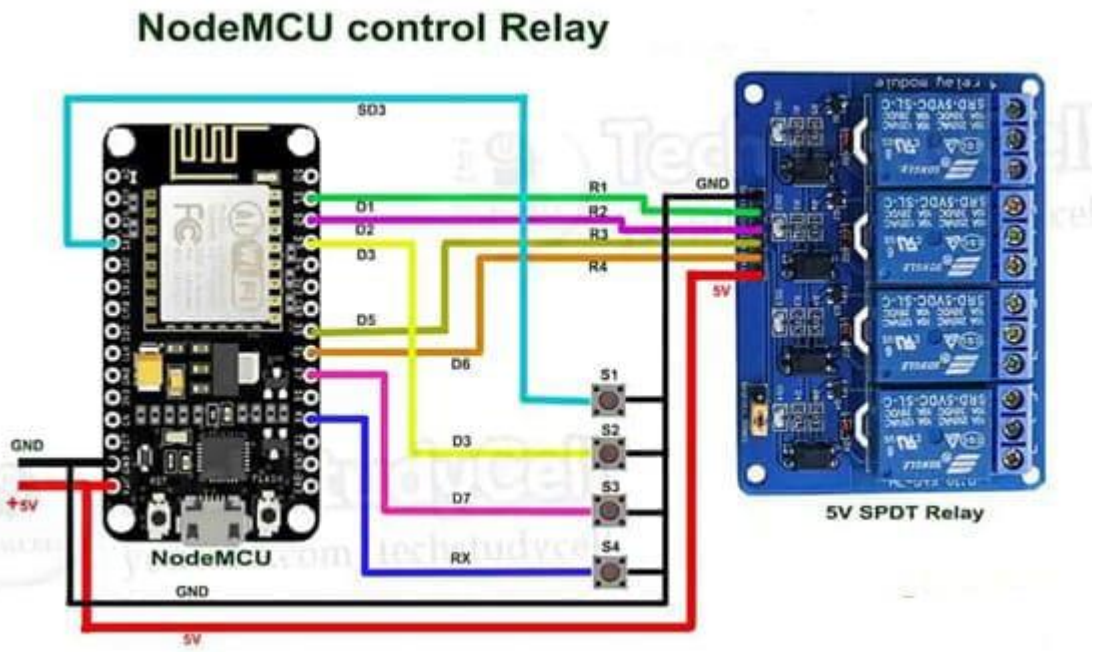
6. **Quality Over Shortcuts**:

a Don't compromise on quality or safety.

b Invest in reliable components and professional installation.

III. MODELING AND ANALYSIS

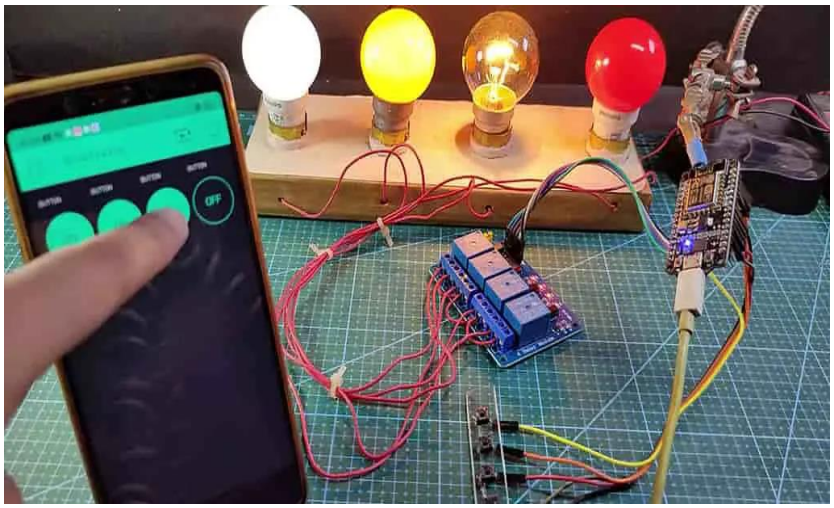
Circuit of this ESP8266 Project



The circuit for this Node MCU home automation project is very simple. Here I have used an active low 5V relay module. I have used the **INPUT_PULLUP** function in the code instead of connecting pull-up resistors with the push buttons.

IV. RESULTS AND DISCUSSION

NodeMCU ESP8266 Home Automation System is now ready.



Now, you can easily control the home appliances from the smartphone using ESP8266 wifi module. And you can also monitor the real-time status of switches in the android software.

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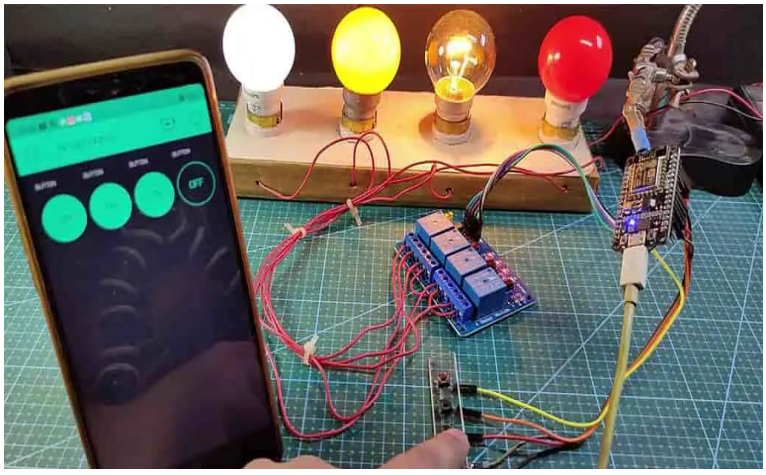

You can also control the home appliances manually from the push buttons. even if there is no internet sill you can use the push buttons to control the home appliances.

V. CONCLUSION

SMART HOME AUTOMATION will control devices (simulated) connected to the home PC from a remote location via internet. It permits you to access home appliances (simulated) within your home pc without compromising security. It pays utmost importance to security, therefore does not provide a direct access from a public network. Rather it accesses your home pc files through a public mailing system. We use Gmail SMTP/POP3/IMAP servers to achieve these feats. Simulated home automation Simulated home automation therefore is a faster, secure, economic way to remotely control your electronic gadgets at home through your home pc from any part of the world.

VI. REFERENCES

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