Department of Information Technology
NBA Accredited

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A Project Report on

Home Automation using AI

Submitted In Fulfillment of the Degree of
Bachelor of Engineering(Sem-8)
in

INFORMATION TECHNOLOGY
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1. Introduction

- Home automation or domotics is building automation for a home, called smart home or smart house.

- A home automation system will control lighting, entertainment systems and appliances. It may also include home security such as access control and alarm systems.

- When connected with the internet, home devices are an important constituent of the internet of things.

1.1 Abstract

- In today's world Automatic systems are being preferred over manual system.
- With advancement of Automation technology, life is getting simpler and easier in all aspects.
- With the rapid increase in the number of users of internet over the past decade has made Internet a part and parcel of life, and IoT is the latest and emerging internet technology.
- Internet of things is a growing network of everyday object-from industrial machine to consumer goods that can share information and complete tasks while you are busy with other activities.

1.2 Objectives

- The objective of this project is to implement a low cost, reliable and scalable home automation system that can be used to remotely switch on or off any household appliance, using a phone to achieve hardware simplicity.

1.3 Literature Review

1.	Title:	Literature Review on Home Automation
	Author and Publisher:	Manish Prakash Gupta, Neha Shrivastava
	Description	Home, it is the place where one fancies or desires to be after a long tiring day. People come home exhausted after a long hard working day. Some are way too tired that they find it hard to move once they land on their couch, sofa or bed. So any small device/technology that would help them switch theirs lights on or off, or play their favorite music etc. on a go with their voice with the aid of their smart phones would make their home more comfortable. Moreover, it would be better if everything such as warming bath water and adjusting the room temperature were already done before they reach their home just by giving a voice command.

1.3 Literature Review

2.	Title:	A REVIEW PAPER ON HOME AUTOMATION
	Author and Publisher:	Nikita Baidya, Prem Kumar S
	Description	Home automation is become more beneficial because of its safety and security. Nowadays, home automation became more advance and precise to monitor all the home appliances. Home automation system become energy efficient and highly approachable smart home technique. It involves basic features to maintain the user satisfaction and comfort.

1.3 Literature Review

3.	Title:	A Review on Home Automation System (HAS)
	Author and Publisher:	Renuka P. Dhage, S.P.Kharde
	Description	Sougata Das, describes the design and development Home Automation System in which a system for household appliance control using cell phone through global system for mobile communication (GSM) technology. This system allows the user or home owner to monitor and control the home appliances via mobile phone set by sending commands in the form of SMS (short message service) messages and the system also provides current status of the home appliances.

1.4 Problem Definition

- Conventional wall switches are located in different parts of the house and thus necessitates manual operations like to switch on or off all of theses witches to control various appliances that are running and also monitoring their performances.

- Home automation provides security, energy efficiency and ease of use hence, it is adopted more.

- It also provides remote interface to home appliances to provide control.

1.5 Scope

- Home automation is the wireless and remote control of different aspects of a living space like lighting, temperature, security, entertainment, etc. It performs with the help of connected smart devices and appliances that use communication technology like WiFi, Bluetooth and Ethernet, to share data and facilitate the efficient management of power consumption. It has advantages like:

- Cost-effective: Home automation appliances have a longer life cycle than the regular device. Hence this saves money.

- Self-sufficient: The home automation technologies come with the option of running on sustainable sources of energy like wind or solar power and even water harvesting.

1.6 Technology stack

1.SOFTWARE REQUIREMENTS
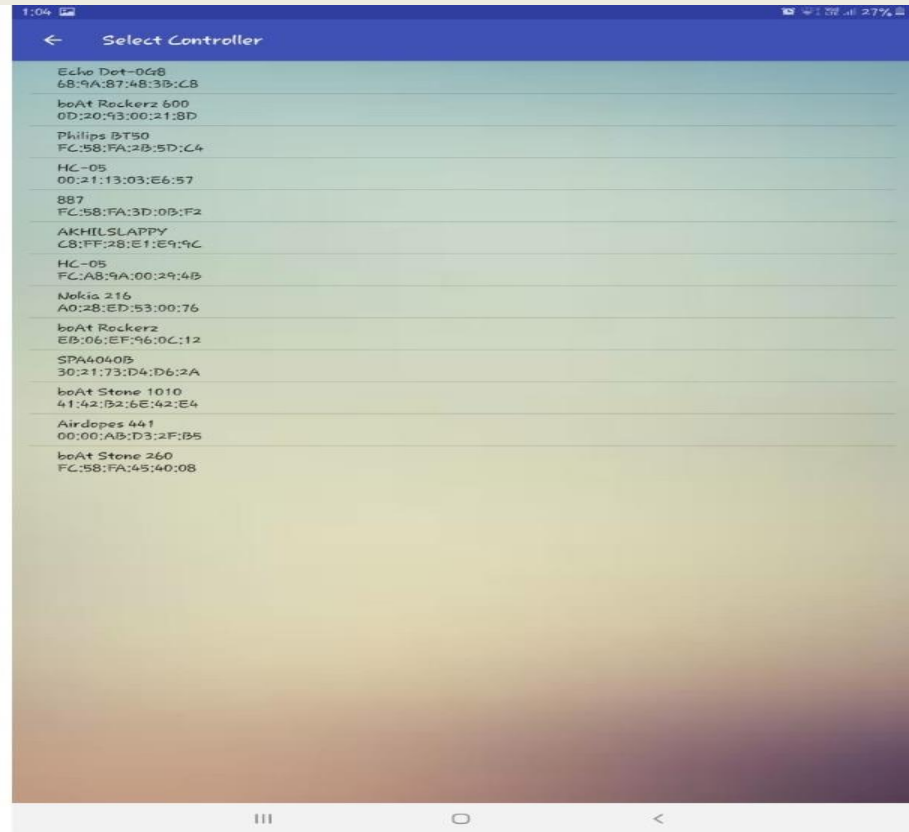
- Arduino IDE
- Android Studio
- Python

2.HARDWARE REQUIREMENTS

- ARDUINO UNO
- Raspberry PI
- RELAYS
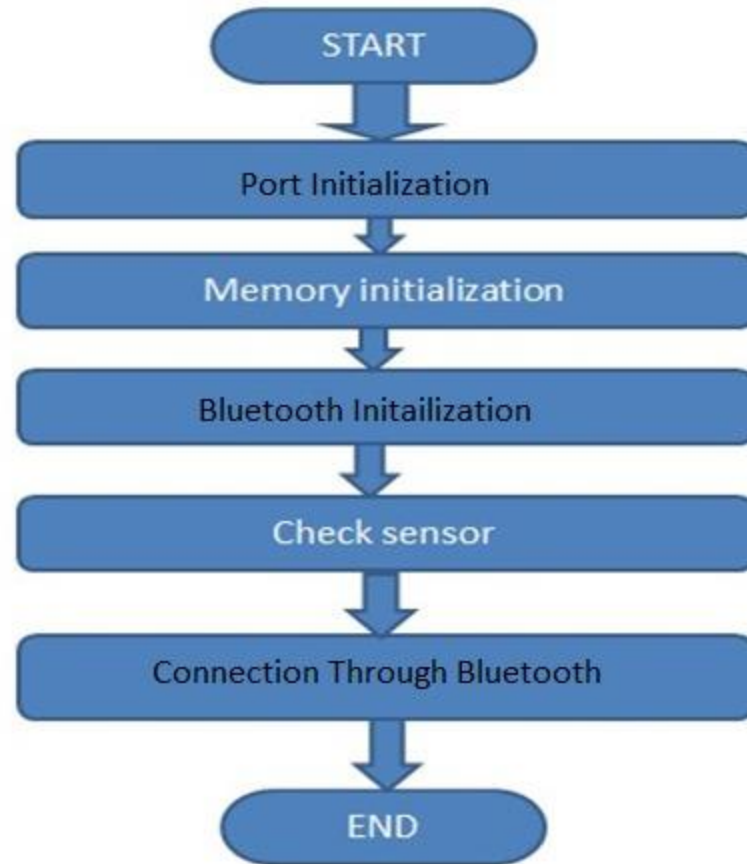- FINGERPRINT SCANNER
- LED INDICATORS
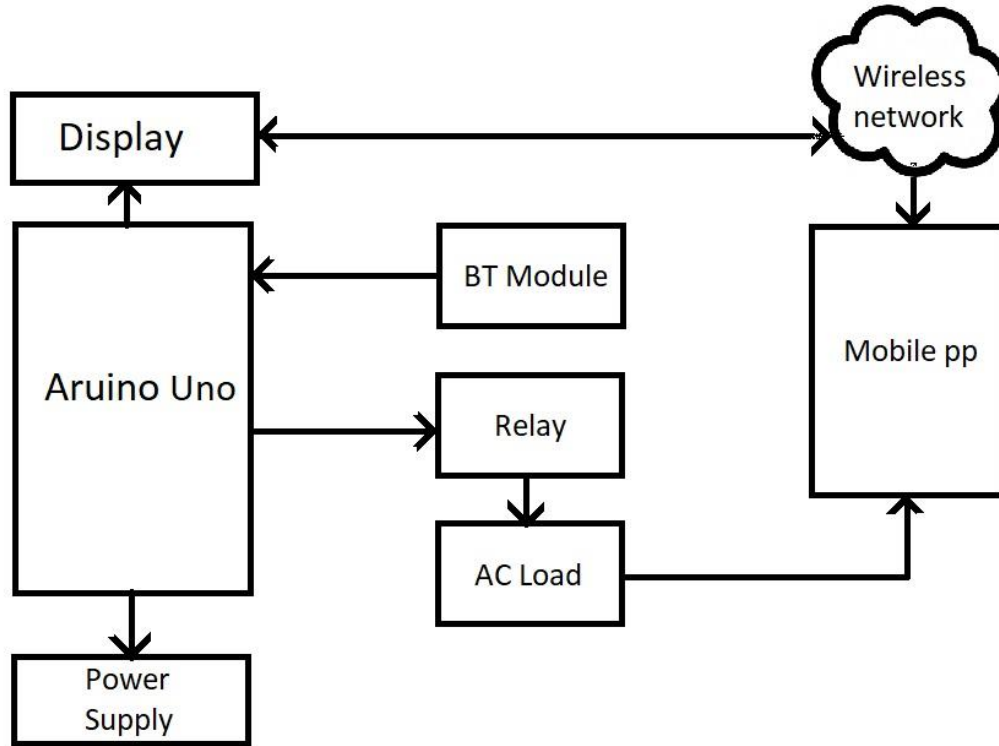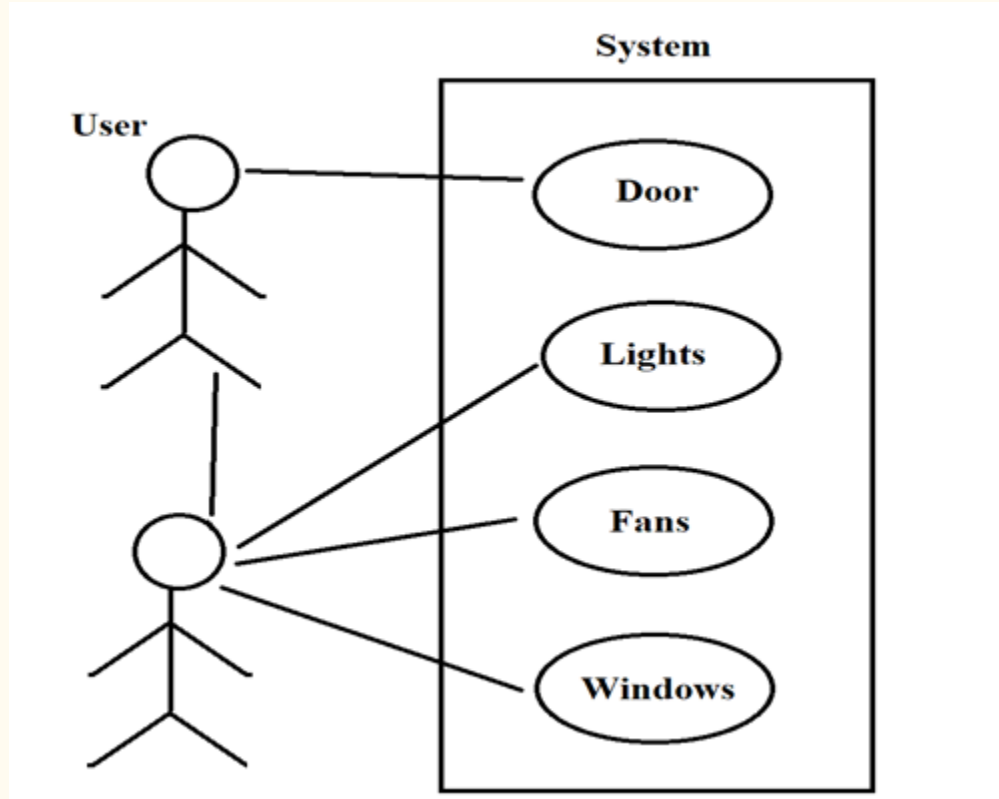- SOLENOID LOCK
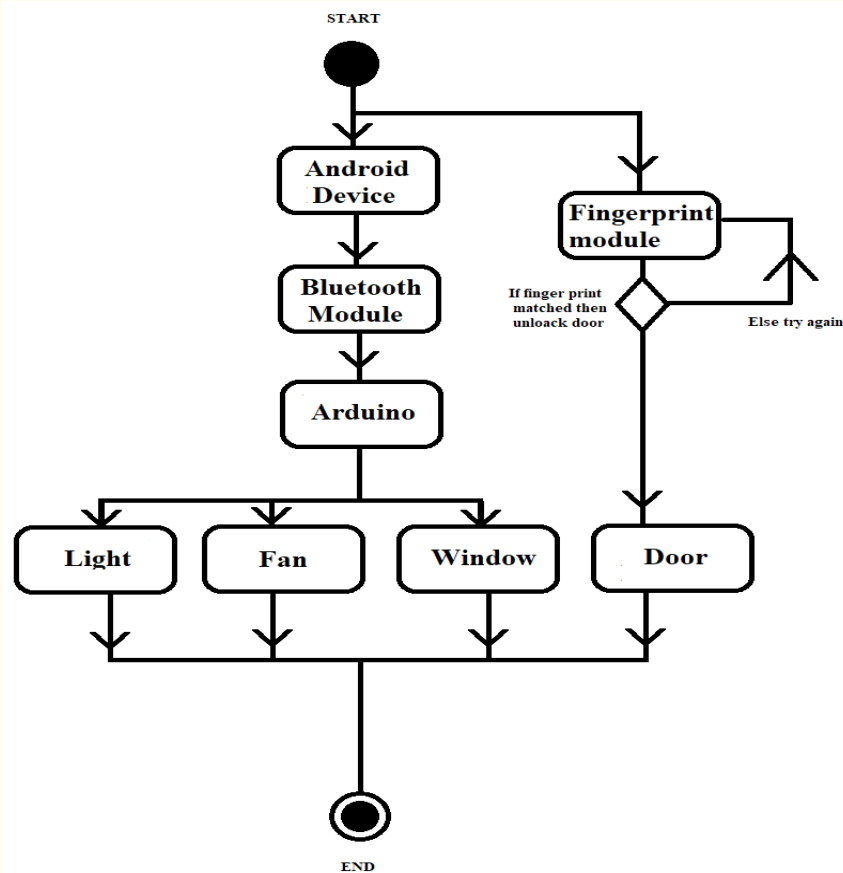
Project Design
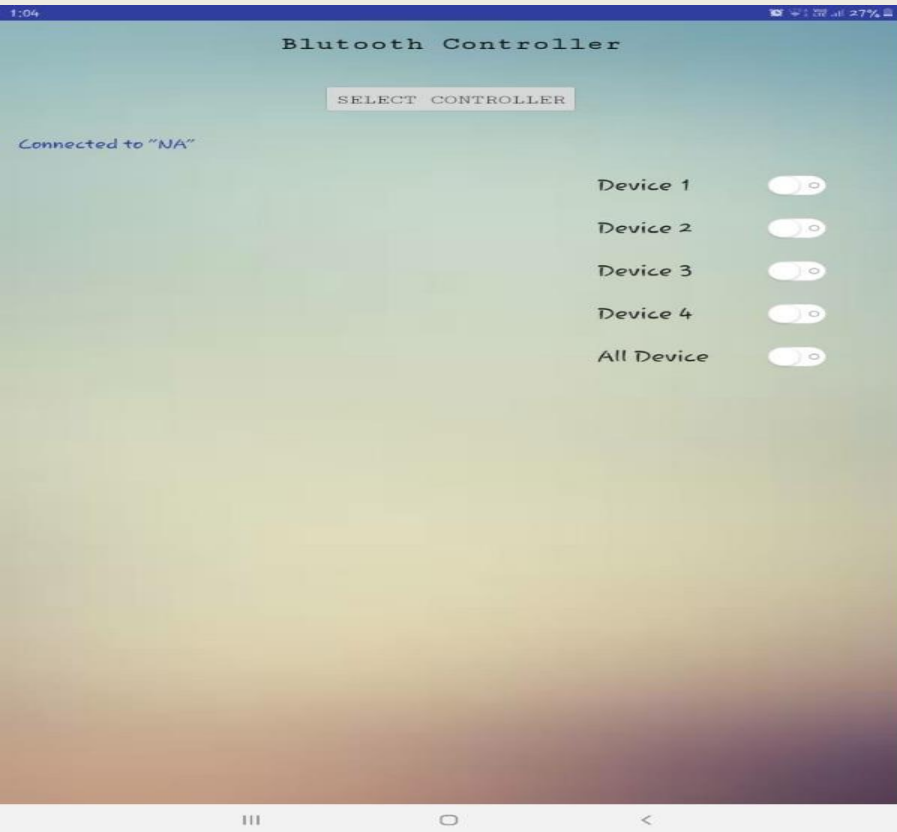
SCREEN1

SCREEN 2

2.1 Proposed System

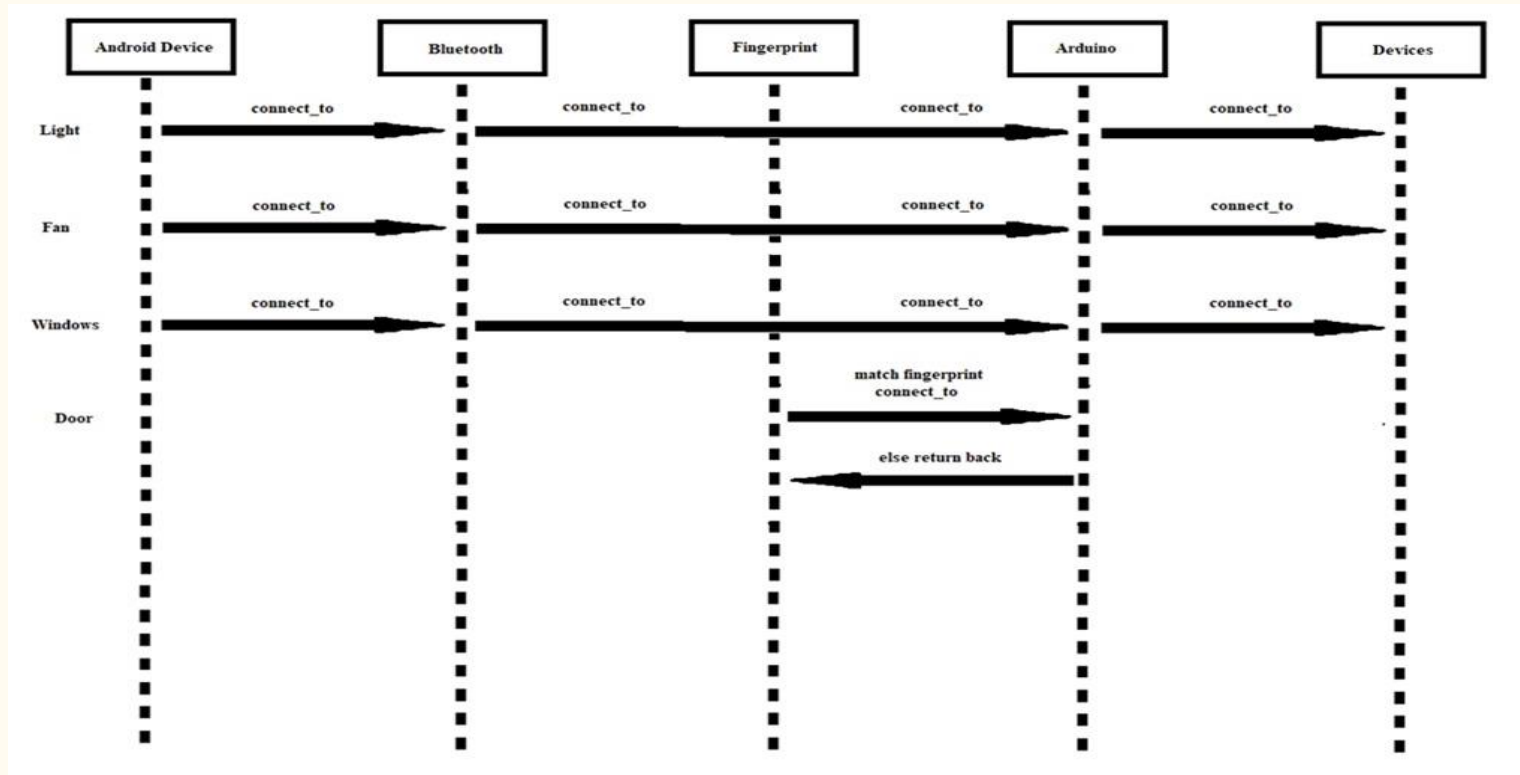# 2.2 Prototype Design Demonstration
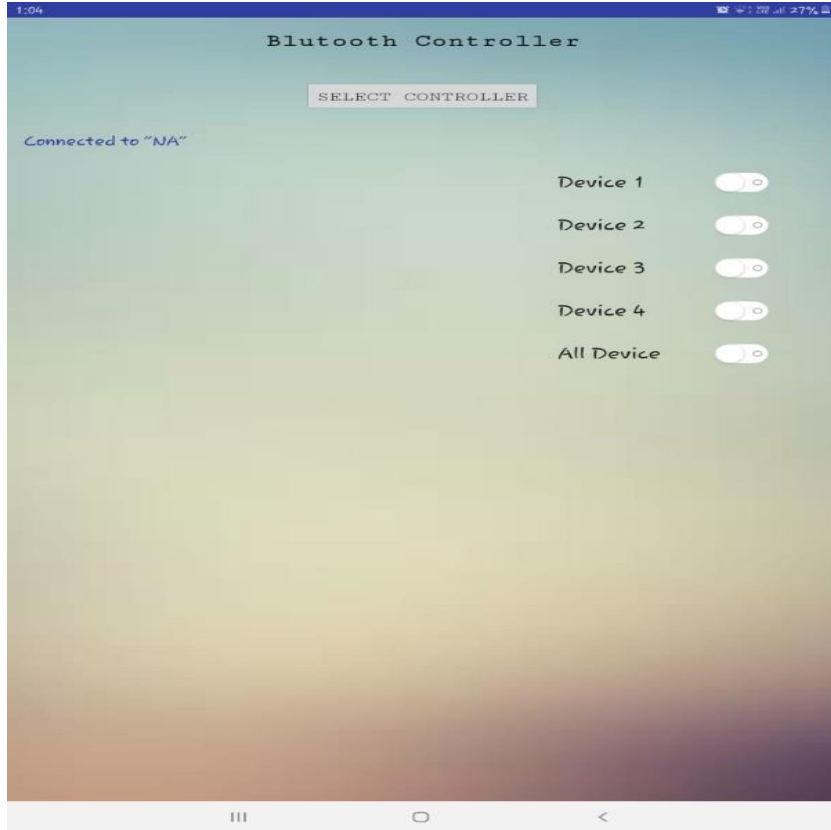
2.3 Description Of Use Case
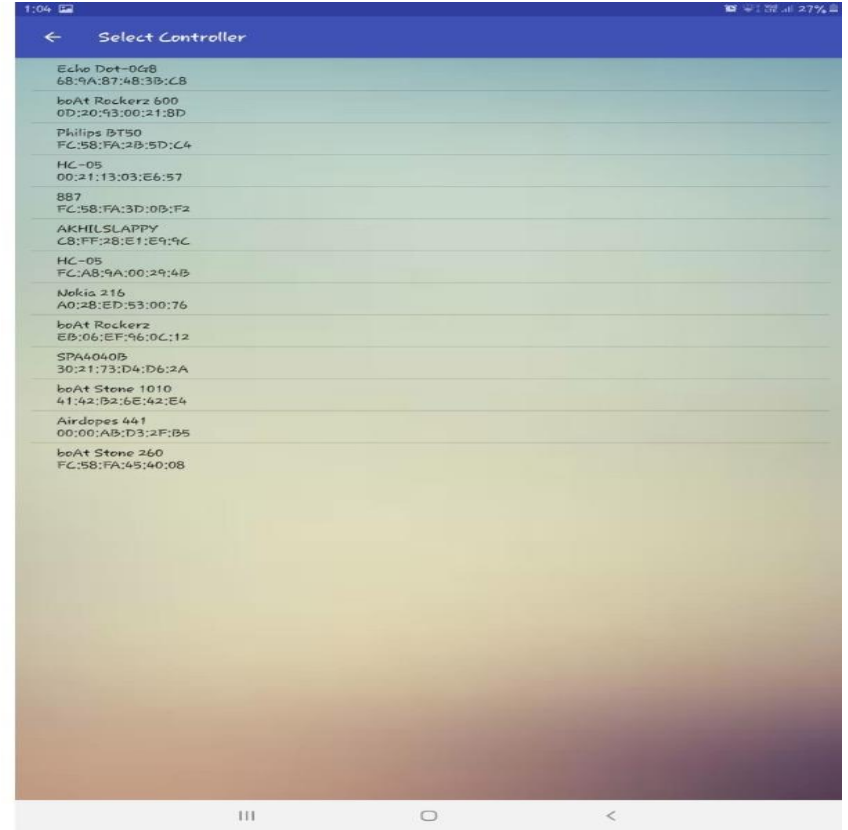
2.4 Activity diagram

2.5 Sequence Diagram

2.6 Result

SCREEN1

SCREEN 2

2.7 Project Timeline

Planning 1 April – 30 June

Analysis 1 July – 31 August

Design and Requirements 1 September – 30 November

Development & Implementation 1 December – 30 April

2.8 Conclusion

- The home automation app using android been experimentally proven to work satisfactory by connecting simple appliances to it and the appliances were successfully controlled remotely through an app.

- Home automation is undeniably a resource which can make a home environment automated. People can control their electrical devices via these Home automation devices and set up controlling actions through mobile,electrical devices via these Home automation devices and set up controlling actions through mobile.

References

1. Oudji, S., Courr`eges, S., Paillard, J. N., Magneron, P., Meghdadi, V., Brauers, C., and Kays, R. "Radiofrequency Interconnection between Smart Grid and Smart Meters Using KNX-RF and 2.4 GHz Standard Protocols for Efficient Home Automation Applications".Journal of Communications, Vol.10, No. 10, (2015).

2. Kumar, M., and Shimi, S. L. "Voice Recognition Based Home Automation System for Paralyzed People. System", Vol. 4, No. 10, (2015)

3. A. N. Shewale, J. P. Bari. "Renewable Energy Based Home Automation System Using ZigBee" (2015)

Paper Publication

IEEE paper is ready yet pending to be published which will be done soon.

Thank You