HACETTEPE UNIVERSITY DEPARTMENT OF

COMPUTER ENGINEERING

BBM 460 PROJECT

Mehmet Taha USTA – 21527472

Arduino & Bluetooth Based Home Automation

Project Summary

The main objective of this project is to develop a home automation system using an Arduino board with Bluetooth being remotely controlled by an Android OS smartphone. As technology is advancing so houses are also getting smarter. Modern houses are gradually shifting from conventional switches to the centralized control system, involving remote controlled switches. Presently, conventional wall switches located in different parts of the house make it difficult for the user to go near them to operate. Even more, it becomes more difficult for the elderly or physically handicapped people to do so. Remote controlled home automation system provides the most modern solution with smartphones.

Method

Arduino based home automation using Bluetooth project helps the user to control any electronic device using Device Control app on their Android Smartphone. The android app sends commands to the controller — Arduino, through wireless communication, namely, Bluetooth. The Arduino is connected to the main PCB which has five relays as shown in the block diagram. These relays can be connected to different electronic devices like lamps, television, fan, etc. When the user presses on the ‘On’ button displayed on the app for the device 1, the Buzzer is switched on. This Buzzer can be switched off, by pressing the same button again. Similarly, when the user presses on the ‘On’ button displayed on the app for the device 2, the fan is switched on. The fan can be switched off, by pressing the same button again. This project of home automation using Bluetooth and Arduino can be used for controlling any AC or DC device.

Technologies to be used

Hardware Requirement

Arduino UNO

Arduino Bluetooth Modül HC05

Arduino 4 Way 5V Relay Module

Breadboard

Connecting wires

Bluetooth enabled smartphone

Software Requirement

Arduino 1.8.13 compiler

Android Studio 4.1

Android Application

Project plan

1) To supply necessary hardware

2) Connecting the supplied hardware properly

3) Connecting to Arduino Bluetooth HC05 module by phone

4) Coding Arduino UNO hardware with Ardunio programming language

5) Android application design

6) Sending signal from Android application to Arduino UNO

References

https://www.elprocus.com/wireless-communication-projects-for-engineering-students/

https://medium.com/@aagarwal1012/home-automation-using-arduino-and-bluetooth-module-dfb9d849aea5

http://projectsnproduct.blogspot.com/2018/10/simple-home-automation-using-bluetooth.html

https://www.youtube.com/watch?v=hJH2JiSzssw&ab_channel=Mr.Arduino

https://www.electronicshub.org/arduino-based-home-automation/

https://create.arduino.cc/projecthub/Oniichan_is_ded/simple-home-automation-with-bluetooth-and-relay-8428fa