Smart Home Technology

NTI Team

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SCOPE OF DOCUMENT

This document specifies requirements on Smart Home System.

INTRODUCTION

Automation is term used to define things are doing work by electronically and mechanically by pressing just one button on a remote or any other mobile device. Now a day we can automate hardware devices through Android software. We can operate equipment's such as large machinery, home appliances and even detect temperature through sensors. Communication is required as a host for these systems such as Wi-Fi and Bluetooth, and is configured by different controlling devices.

PURPOSE

We are creating this application instead of any remote for automation because every person have their personal android phone and they can easily control their home appliances and security system for their home, and sometimes remote device is misplaced or destroyed. Another reason is that remote device is hard to carry when you are outside from home but your personal phone is always with you. So users can easily control home automation appliances and security-based system through one application through their android mobile phone. So technology is in your one hand in your one app.

BACKGROUND AND EXISTING SYSTEM

Home automation plays a very important role in the modern era because of its flexibility in using it at different places so it will save money and time by decreasing human hard work. The focus of this technology is to control the household equipment's like light, fan, door, AC etc. automatically. Some systems are also discovered like if a person will enter into the house then the count of the number of persons entering in the house will be incremented, in Home Automation

mode appliances will be turned on and security light will be turned on along with the alarm. The count of the number of persons entering the house is also displayed on the LCD screen. In Home Automation mode when the room will become empty i.e. the count of persons reduces to zero then the appliances will be turned off making the system power efficiency. Another system was also designed if anyone enters in the home while security mode is on an SMS will be sent to house owner's mobile phone which will indicate the presence of a person inside the house. The alarm can be turned on using an Android application. A remotely accessible environment is an environment in which each home appliances can be remotely accessed and controlled using a software as an interface, which includes an Android application or a Web application. Such remotely accessible systems are already available in the market but have a number of drawbacks as well. The aim of this project is to control home appliances remotely and will also enable home security against intrusion in the absence of homeowner. Home security has been a major issue where crime is increasing and everybody.

PRODUCT FUNCTIONS

- For Home Automation:

[SRS_REQ_1] Home Appliances: control home appliances as oven , coffee machine, washer ,dryer,etc.

[SRS_REQ_2] Heating System: adjust home temperature for maximum comfort and efficiency

[SRS_REQ_3] Cooling System: adjust home temperature for maximum comfort and efficiency

[SRS_REQ_4] Movie Mode Night: adjust the blinds & sound system it also sync the lighting with the TV for a home cinema experience

[SRS_REQ_5] Geo-Location: it control the house systems according to your location which is not only convenient but also energy efficient

[SRS_REQ_6] Voice Control: To control the intensity of light and the blind by using on word.

[SRS_REQ_6.1] Light on: Command To Help you to turn the light on.

[SRS_REQ_6.2] Light off: Command To Help you to turn the light off.

[SRS_REQ_6.3] Open blinds: Command To help you to open the blinds.

[SRS_REQ_6.4] Close blinds: Command To help you to close the blinds.

[SRS_REQ_6.5] Morning command: Command to help you to open the blinds and open the light with one word ”Good morning”.

[SRS_REQ_6.6] Night command: Command to help you to open the blinds and open the light with one word” Good Night”.

[SRS_REQ_7] Home Assistant: To help you to know the weather and display it on screen.

[SRS_REQ_8] Garage Control: a simple feature which help with security and convenience.

[SRS_REQ_9] Automated window treatments: with a simple voice command or app you can control your curtain or blinds or set it to open or close according to a specific schedule

[SRS_REQ_10] Lighting control: With smart lights, you can use voice commands or app to turn your lights off and on, set routines to turn all of your lights off and on at certain times, and check on your lights from anywhere.

- For Security:

[SRS_REQ_1] Mockupancy: A feature which lets you set up a randomized schedule for lighting and blinds that can make it look like someone is home for maximum home security when you are traveling or away from home.

[SRS_REQ_2] Gas Sensor: sense gas leakage and trigger sirens

[SRS_REQ_3] Fire sensor: sense fire and smoke which not only trigger sirens but also calls fire fighters

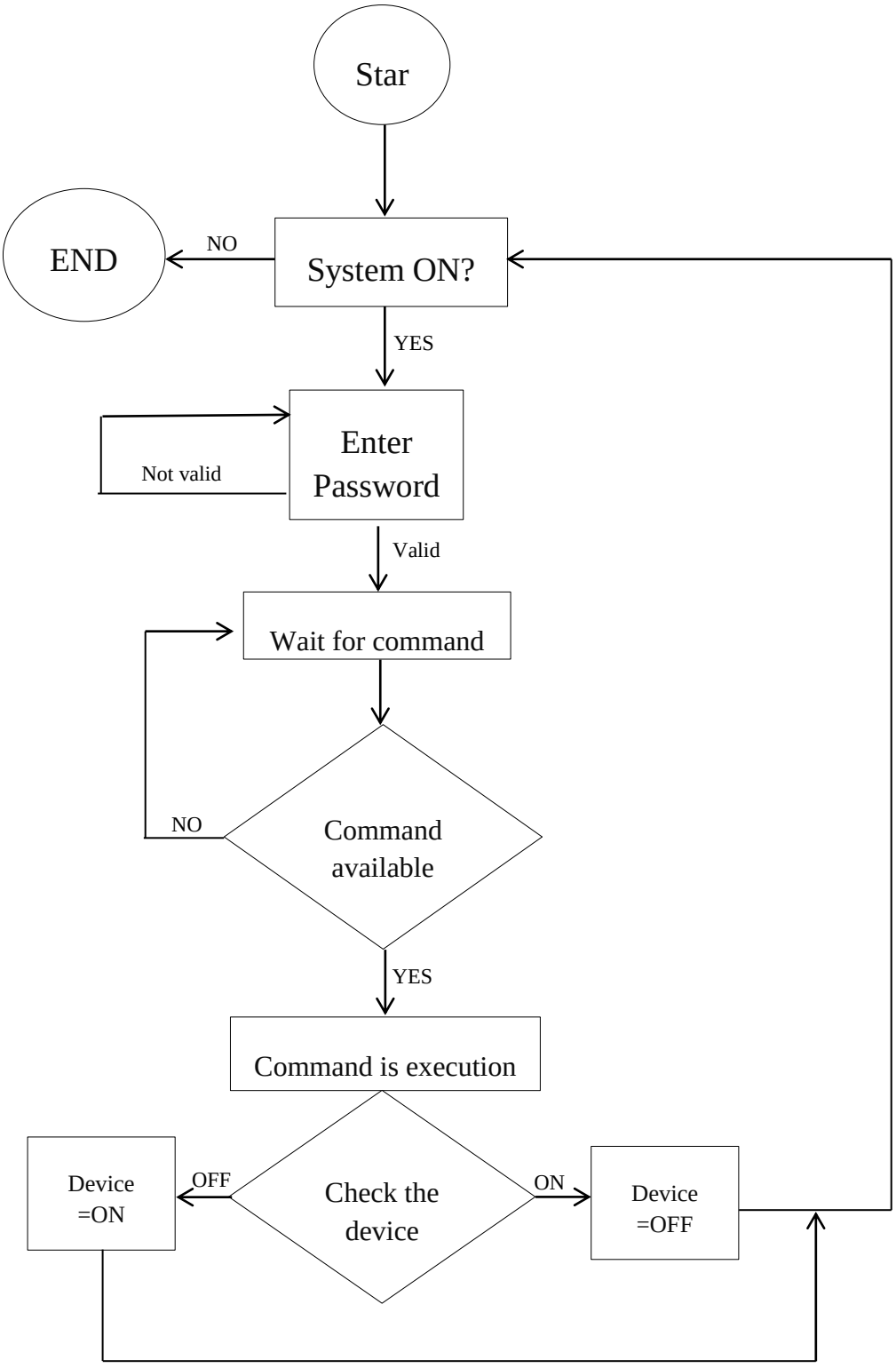
[SRS_REQ_4] Smart door lock: lock your home with a security pin instead of a traditional key and it also triggers sirens if the pin is entered wrongly three times a row.

[SRS_REQ_5] Motion Sensor: Detect intruders and trigger siren

USER CHARACTERISTICS

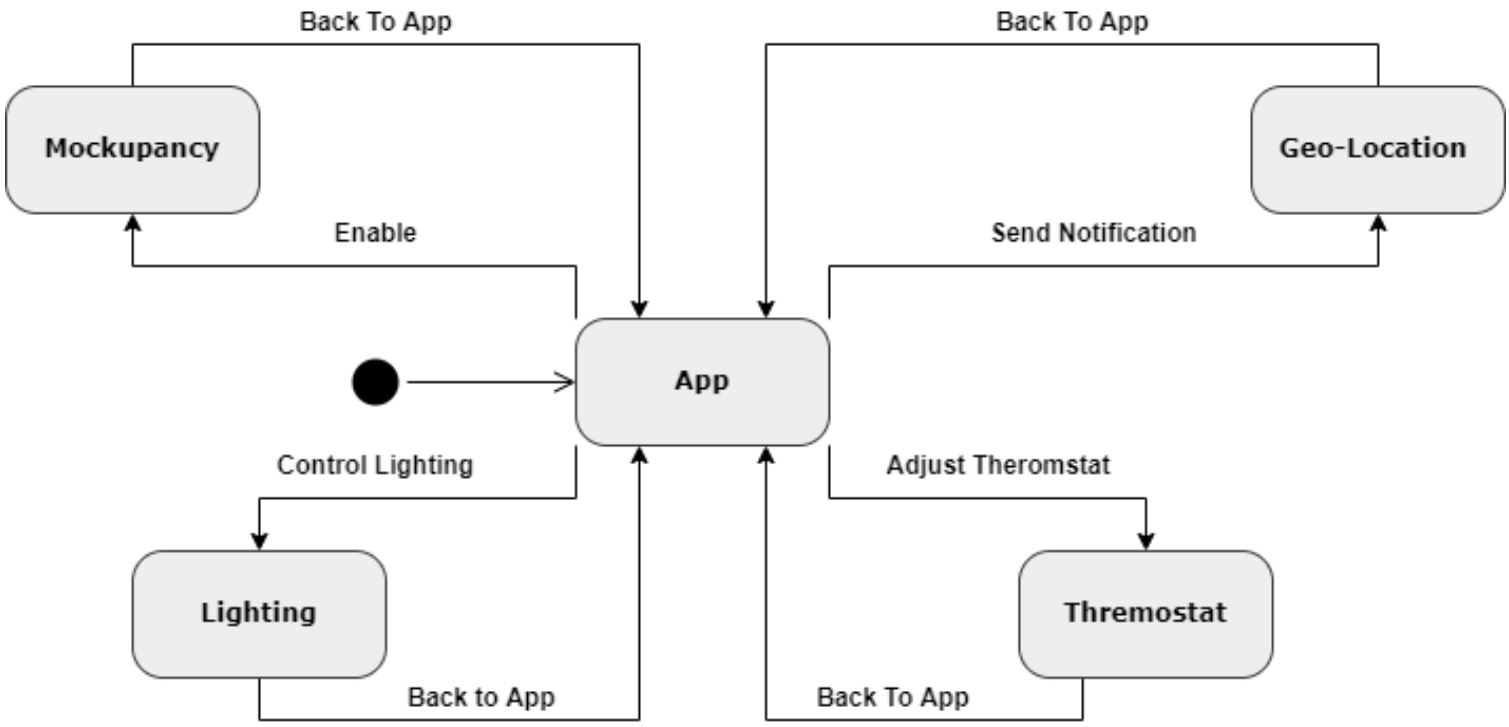
Our app Auto Home droid and Security is developed for the users home members, for a specific place, in offices. They can easily automate their home appliances.

FLOW CHART

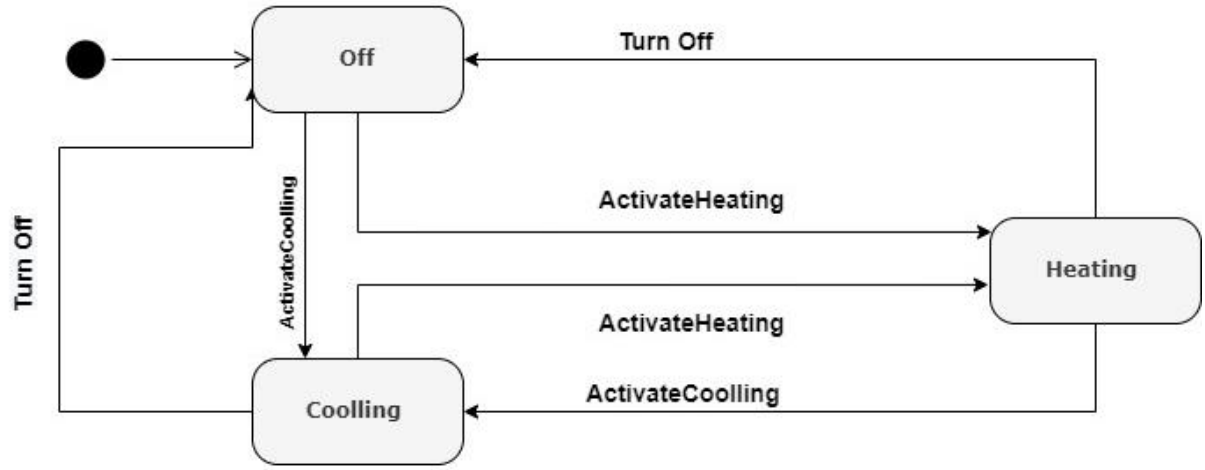

Star
System ON?
NO
END
YES
Enter Password
Not valid
Valid
Wait for command
Command available
NO
YES
Command is execution
Check the device
OFF
Device =ON
ON
Device =OFF

STATE MACHINE

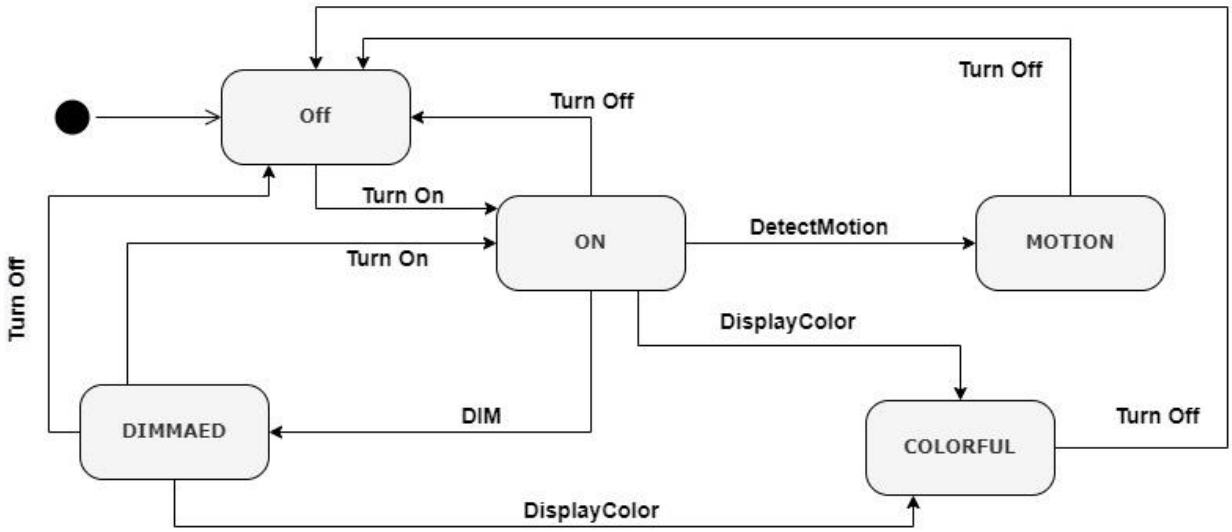
APP CONTROLS



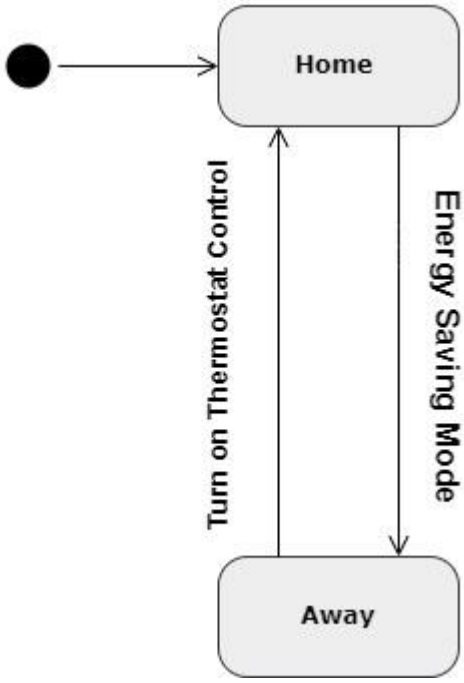
HEATING & COOLING



LIGHTING

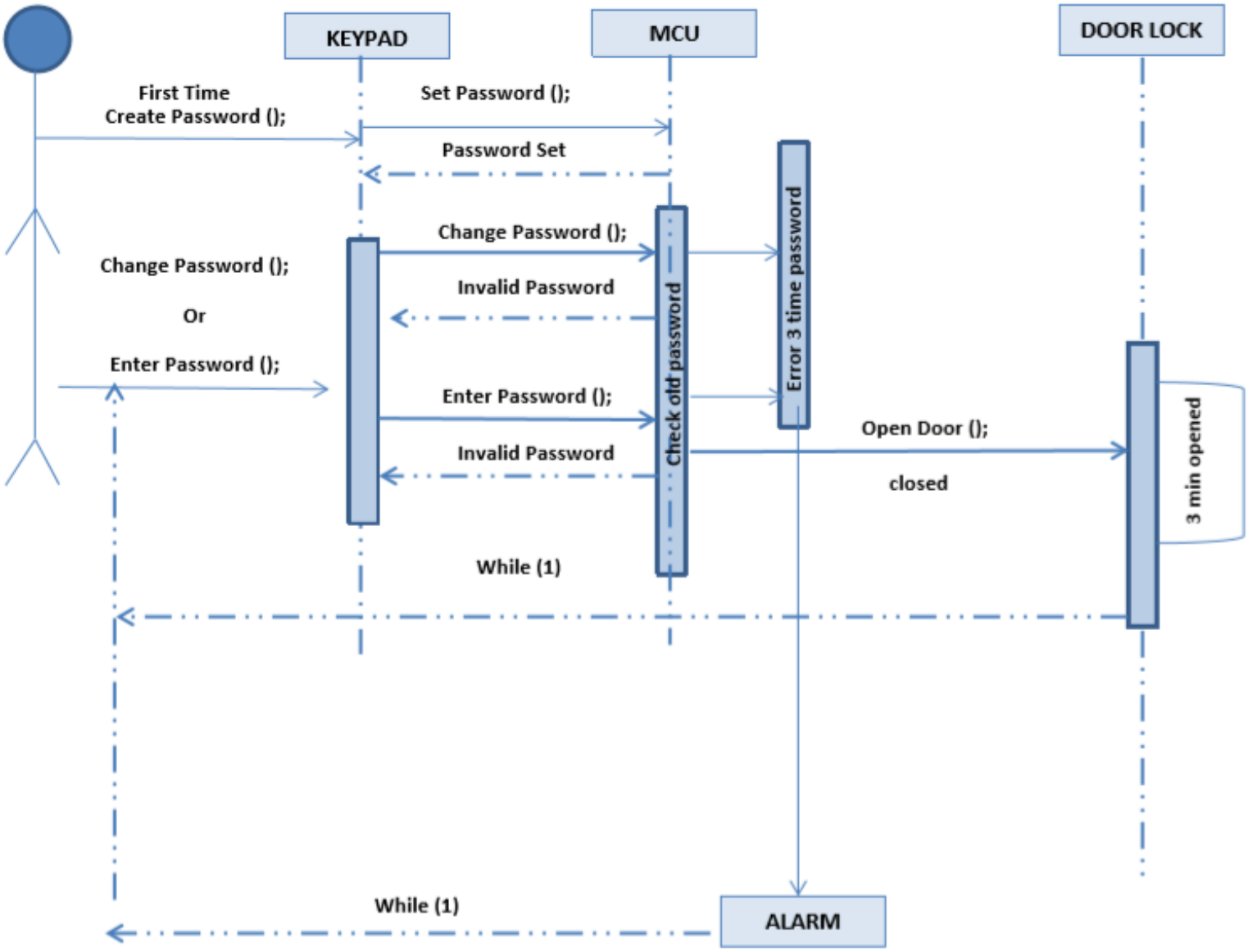


GEO-LOCATION

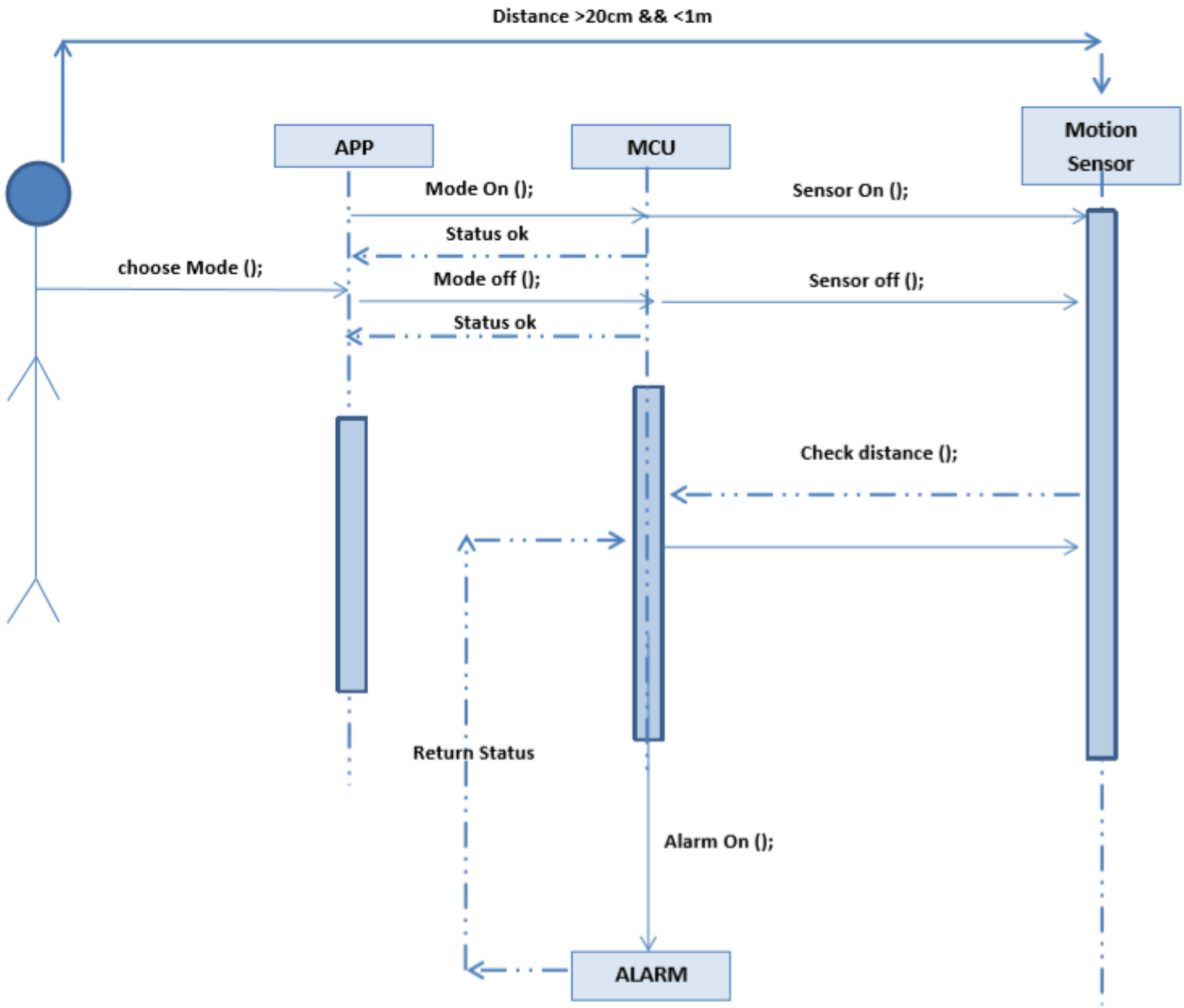


SEQUENCES DIAGRAM

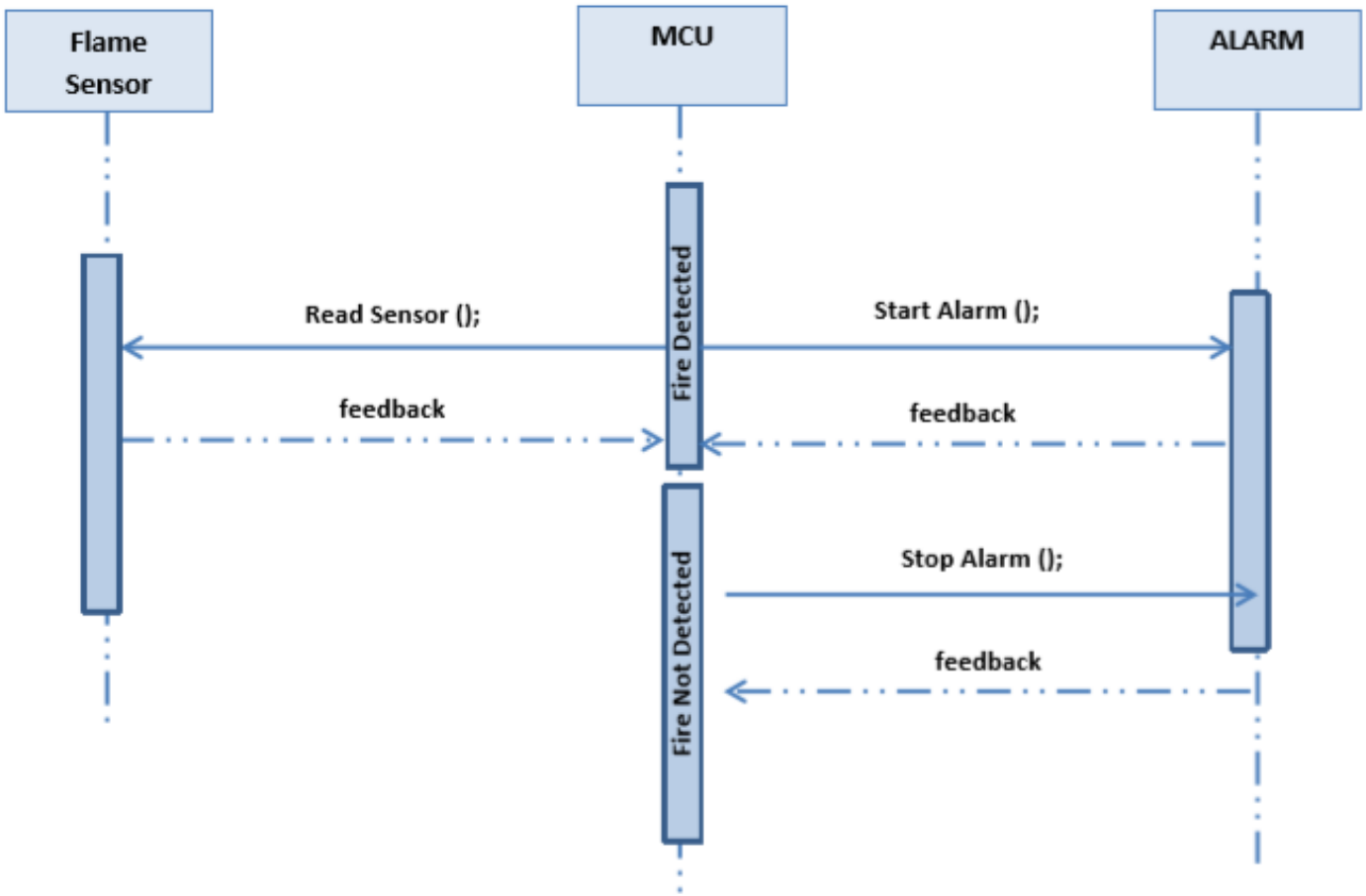
SMART DOOR LOCK



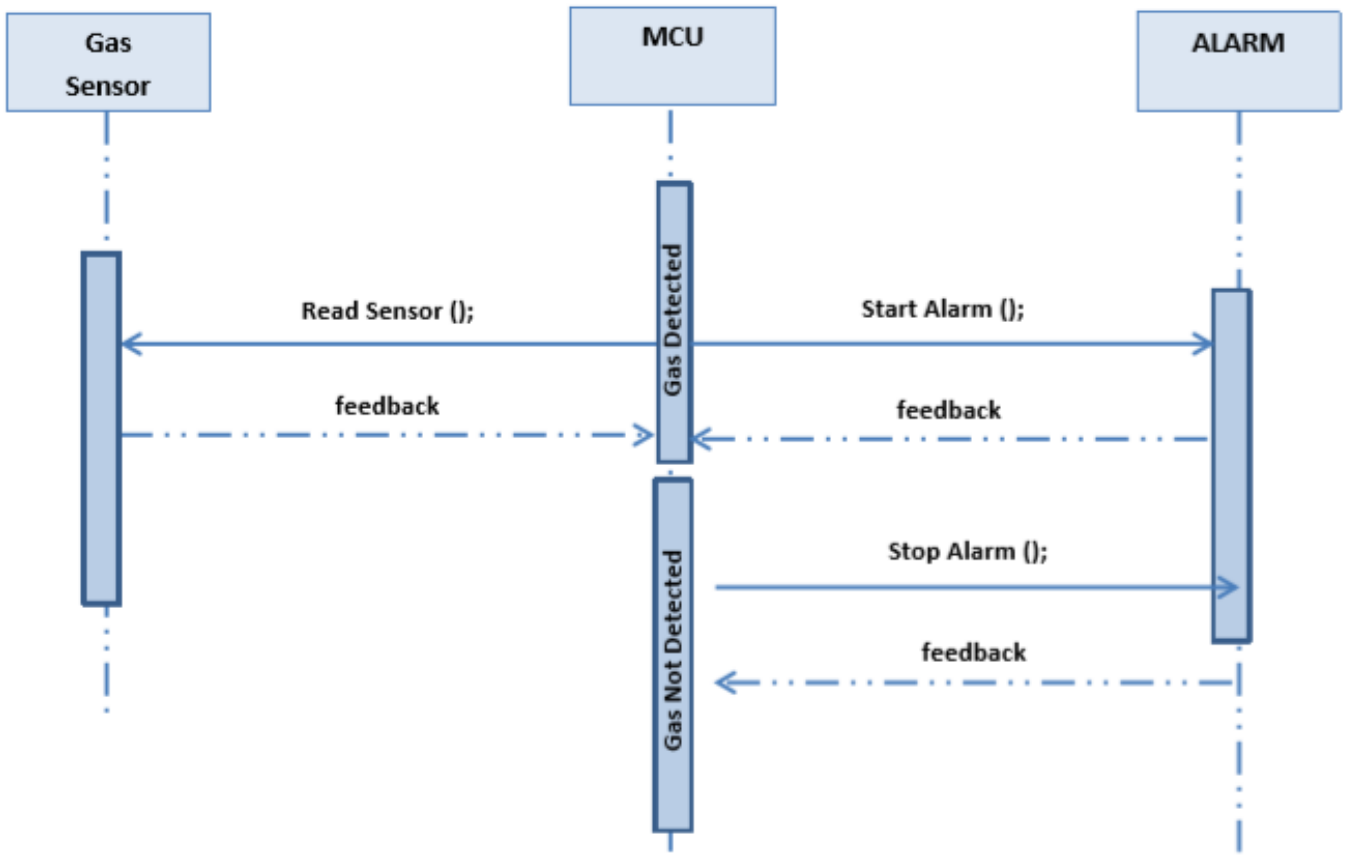
MOTION SENSOR



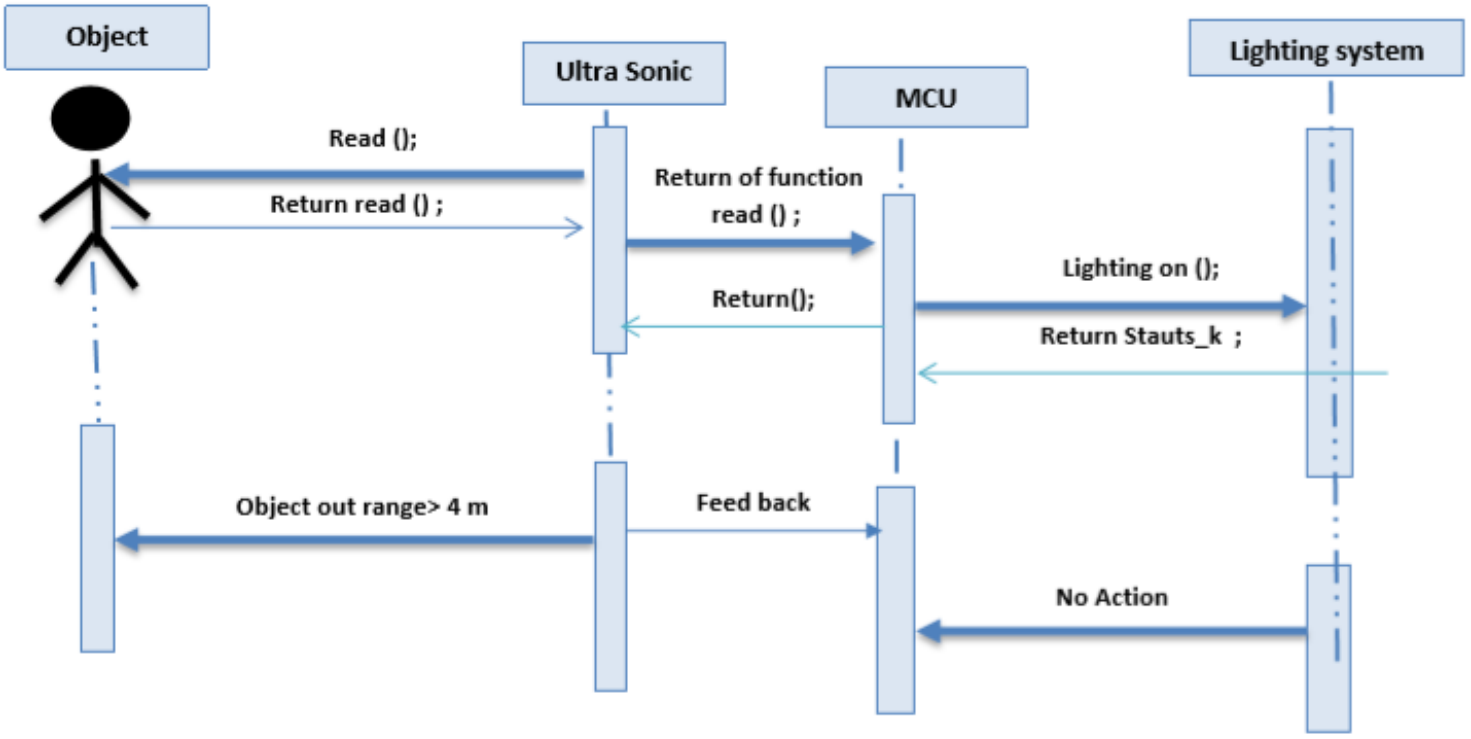
FIRE SYSTEM


Flame Sensor
MCU
ALARM
Fire Detected
Read Sensor ();
Start Alarm ();
feedback
feedback
Fire Not Detected
Stop Alarm ();
feedback

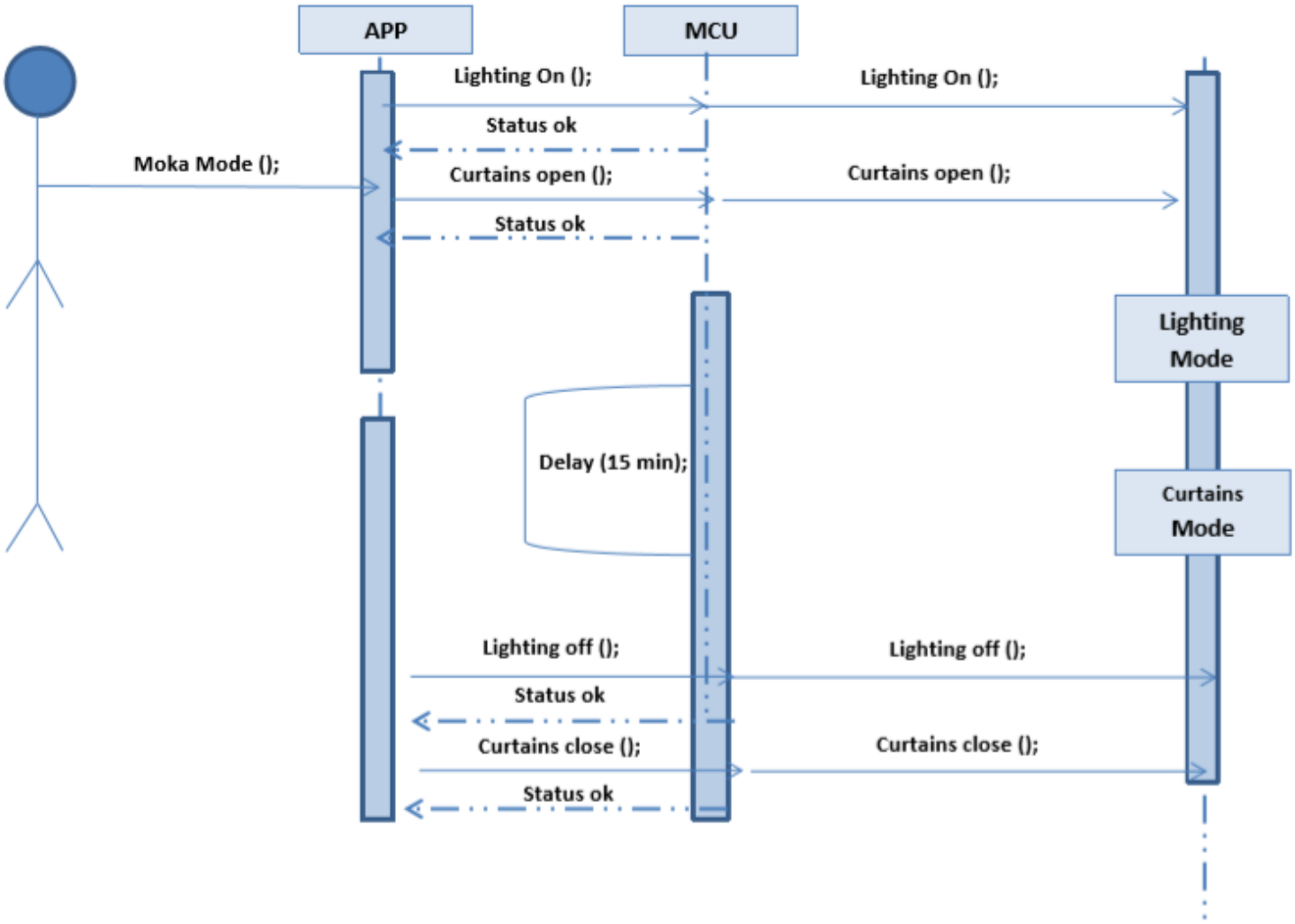
GAS SENSOR


Gas Sensor
MCU
ALARM
Gas Detected
Read Sensor ();
Start Alarm ();
feedback
feedback
Gas Not Detected
Stop Alarm ();
feedback

LIGHTING SENSOR



MOCKUPANCY


APP
MCU
Lighting On ();
Lighting On ();
Status ok
Moka Mode ();
Curtains open ();
Curtains open ();
Status ok
Lighting Mode
Delay (15 min);
Curtains Mode
Lighting off ();
Lighting off ();
Status ok
Curtains close ();
Curtains close ();
Status ok

ACTIVITY INDEX

NO	Activity	Duration
1	Requirement Analysis	2 days
2	Coding	7 days
3	Implementing	3 days
4	Testing	2 day