Cairo University  
Faculty of Computers and Information



**CS251**

**Software Engineering I**

Smart Home Control Board

Software Requirements Specifications

Team A

Bullet

Team C

Team D

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# Team

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# Document Purpose and Audience

# This document is the Software Requirements Specifications of the Smart Home Control Board.

# The expected Readers are Product Owner and Client.

# Introduction

## Software Purpose

## The Software Purpose is to provide the User with remote control on all home appliances through an application that allow to turn on / off any device on the board and view the status of each appliance to decide whether it works probably or it needs to be modified.

## Software Scope

## Control home appliances through sensors embedded in it

## Add Member or Device to the board

## Switch on/off appliances on the board

## Remove Member or Device from the board

## View Current Status of home appliances

## Cut the electic current from home circuits

## Automatically Switch on Fire extinguisher in case of fire

## 

# Definitions, acronyms, and abbreviations

## None

# Requirements

## Functional Requirements

# 1 – Open a device through the board.

# 2 – Close a device through the board.

# 3 – Add a new device to the board.

# 4 – Remove a device from the board.

# 5 – Add a new member to the board.

# 6 – Remove a member from the board.

# 7 – Enable & Disable the electric current flowing in home appliances.

# 8 – Give Alarms or warning notifications in emergency cases such as fire or failure in some devices.

# 9 – View the board status and the status of each device.

# 10 – Take Some action automatically in emergency cases.

# i.e: Cut the electric current or disable all the appliances of the home.

## Non Functional Requirements

1 – Scalibilty : response to many requests at a time.

2 – Documentation : to be as a guide for users.

3 - Compatibility : Compatible with mobile and web platforms.

4 – Safety : while controlling home appliances.

5 - Response Time : at most 5 seconds for each request.

6- Disaster Recovery : response to emergency cases without having the permission of the Adminstrator.

7 - Configuration Management

8 - Security : providing Security for the board to not to be penetrated.

9 - Reliability : software's ability to function, given environmental conditions, for a particular amount of time

10 – Privacy : People who don't have access to the board , cannot view it.

|  |  |
| --- | --- |
|  | **Details** |
| **Performance** | * **Turning On / Off device operation is done in atmost 5 seconds.** * **Update the Status of the board is done in atmost 3 seconds.** * **Response to emergency cases in atmost 1 second.** * **Adding or removing Member / device Operation is done in atmost 3 seconds.** * **Cutting electric current operation is done in atmost 1 second.** |
| **Scalability** | * **System should be able to support up to 20 Simaltaneous Users .** |

# 

# System Models

## Use Case Model

Make account

Give access to the member

Admin

Remove Member

Request for adding Device/Member

Display board

Member Update board

## Use Case Tables

|  |  |
| --- | --- |
| ID: | 1 |
| Title: | Sign up |
| Description: | Adminstrator's Signing up to the system. |
| Primary Actor: | Administrator |
| Preconditions: | The Board has just been created and has no members or admins |
| Post conditions: | This User has become the admin of the board |
| Main  Success Scenario: | 1 – User entered his information to the system  2 – choose user name and password  3 – Submit |
| Extensions: | The Information has some errors. |
| Frequency of Use: | Very low |
| Priority: | Medium |

|  |  |
| --- | --- |
| ID: | 2 |
| Title: | Sign in |
| Description: | Signing in to the system by Verfying the account. |
| Primary Actor: | Member / Admin |
| Preconditions: | The System has the member's account. |
| Post conditions: | The User gets into the board. |
| Main  Success Scenario: | 1 – Admin / Member enters Username  2 – member Enters the password.  3 – The system matches the entered information with the account.  4 – The Member has signed in successfully. |
| Extensions: | 1 – The entered information doesn't match with any account on the board.  2 – The Information has some errors. |
| Frequency of Use: | Many times. |
| Priority: | Medium |

|  |  |
| --- | --- |
| ID: | 3 |
| Title: | Emergency case (fire or failure). |
| Description: | Taking some action in the emergency cases such as fires or failures in some devices. |
| Primary Actor: | Administrator |
| Preconditions: | The System has failure. |
| Post conditions: | The system is restarted. |
| Main  Success Scenario: | 1 – The sensor sends a warning notification to the administrator.  2 – The administrator cuts the electric current from all electric appliances.  3 – The System carries out the administrator command to repair the failure.  4 – The system is restrated. |
| Extensions: | 1 – The Sensor is failed.  2 – There is some error in the connection between administrator and the system. |
| Frequency of Use: | few times. |
| Priority: | High |

|  |  |
| --- | --- |
| ID: | 4 |
| Title: | Switch on a device |
| Description: | Change the device's Status by turning it on. |
| Primary Actor: | Administrator |
| Preconditions: | The Device is Switched Off |
| Postconditions: | The device is now working |
| Main  Success Scenario: | 1. The Administrator logs in the board. 2. View the desired device. 3. Click on Switch on |
| Extensions: | 1 – The device is already working  2 – The User who is trying to do the Operation is not the adminstrator |
| Frequency of Use: | Many |
| Priority: | High |

|  |  |
| --- | --- |
| ID: | 5 |
| Title: | Switch off a device |
| Description: | Change the device's Status by turning it off. |
| Primary Actor: | Administrator |
| Preconditions: | The Device is Switched on |
| Postconditions: | The device is not working |
| Main  Success Scenario: | 1. The Administrator logs in the board. 2. View the desired device. 3. Click on Switch off |
| Extensions: | 1 – The device is already not working  2 – The User who is trying to do the Operation is not the adminstrator |
| Frequency of Use: | Many |
| Priority: | High |

|  |  |
| --- | --- |
| ID: | 6 |
| Title: | Add device |
| Description: | Add a device to the board to be controlled by it |
| Primary Actor: | Administrator |
| Preconditions: | The device is not on the board |
| Postconditions: | The device is on the board |
| Main  Success Scenario: | 1. The Administrator logs in the board. 2. Choose add device 3. Enter the device information and giving it unique ID 4. Submit it to the System |
| Extensions: | The User who is trying to do the Operation is not the adminstrator |
| Frequency of Use: | Many |
| Priority: | High |

|  |  |
| --- | --- |
| ID: | 7 |
| Title: | Remove device |
| Description: | Remove a device from the board |
| Primary Actor: | Administrator |
| Preconditions: | The device is on the board |
| Postconditions: | The device is not on the board |
| Main  Success Scenario: | 1. The Administrator logs in the board 2. Choose the desired device 3. Click on remove this device 4. Ascertain his Choice. |
| Extensions: | The User who is trying to do the Operation is not the adminstrator |
| Frequency of Use: | Many |
| Priority: | High |

|  |  |
| --- | --- |
| ID: | 8 |
| Title: | Add Member |
| Description: | Add a Member to the board |
| Primary Actor: | Administrator |
| Preconditions: | The Member is not on the board |
| Postconditions: | The Member has an account on the board |
| Main  Success Scenario: | 1. The Administrator logs in the board. 2. Choose add Member 3. Enter the Member's information and giving it access to the board by choosing username & password 4. Submit it to the System |
| Extensions: | 1 - The User who is trying to do the Operation is not the adminstrator.  2 – There is an error in the entered information |
| Frequency of Use: | Many |
| Priority: | High |

|  |  |
| --- | --- |
| ID: | 9 |
| Title: | Remove Member |
| Description: | Remove a Member from the board |
| Primary Actor: | Administrator |
| Preconditions: | The Member is has an account on the board |
| Postconditions: | The Member 's account is deleted from the board |
| Main  Success Scenario: | 1. The Administrator logs in the board. 2. View Members list 3. Choose the desired Member 4. Click on remove this Member 5. Ascertain his choice |
| Extensions: | The User who is trying to do the Operation is not the adminstrator. |
| Frequency of Use: | Many |
| Priority: | High |

|  |  |
| --- | --- |
| ID: | 10 |
| Title: | View Board |
| Description: | View the current status of all aplliances on the board |
| Primary Actor: | Administrator / Member |
| Preconditions: | None |
| Postconditions: | The devices statuses are displayed |
| Main  Success Scenario: | 1. The Administrator / Member logs in the board 2. Choose view status |
| Extensions: | The User who is trying to do the Operation is neither an adminstrator nor a member |
| Frequency of Use: | Many |
| Priority: | High |

|  |  |
| --- | --- |
| ID: | 11 |
| Title: | Disable Electric Current |
| Description: | Disable the electric current flowing the home circuits |
| Primary Actor: | Administrator |
| Preconditions: | The electric current is flowing properly |
| Postconditions: | All appliances are Switched off |
| Main  Success Scenario: | 1. The Administrator / Member logs in the board 2. Either :  * Choose disable all appliances * Choose disable electric current  1. Ascertain his choice |
| Extensions: | 1. The User who is trying to do the Operation is not an adminstrator 2. The electric Current is already disabled before the operation |
| Frequency of Use: | Low |
| Priority: | Medium |

# Ownership Report

* **Remove the following notes and any red notes**
* **For every item in this document, write the owners. If someone is owner of something, s/he understands it 100%**
* **Team leader must verify the table with the team members.**

|  |  |
| --- | --- |
| **Item** | **Owners** |
|  |  |
|  |  |