COEN 275 – Spring 2017

Object Oriented Analysis, Design and Programming

SoSafe Home Security Services

Deliverable-2 (complete document with Class Diagram, Sequence Diagram, Package partitioning)

By

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Contents

1.Requirement

1.1 Requirement#1

Install the system and select the areas for security or fire alarm sensors**.**

Installing the system should include the following:

Select the areas for sensor installation: The system should display the layout of the building either graphically or textually to enable customer/home-owner to select the areas for sensor installation. A building (identified by a building id) is divided into sections where each section is identified by an area id. Sensors can be installed in the sections for intruder and/or fire detection coverage.

The layout of the building is shown with

1.1.1 A graphical layout showing a drawing of the building area with the sections with ids.

1.1.2A textual display showing the building and the sections with ids.

1.1.3Setting the customer's password information. The customer is required to enter the password to activate/deactivate the system.

Once the selections are made for sensor coverage, the information is stored for the system to be configured in step 1.2.

1.2 Requirement#2

Configure the system to enable the customer set a schedule

1.2.1In this step, the customer interacts with the graphical control panel to configure the schedule for the sensors to be activated (or deactivated).

1.2.2Sensors can be activated (or deactivated) manually or

1.2.3 set the *from_time* and *to_time* during which the sensors should be activated.

1.2.4 Times can be set differently for each section of the building. Please note that a customer has to enter the correct password to be able to configure the settings and activate or deactivate the sensors**.**

1.3 Requirement#3

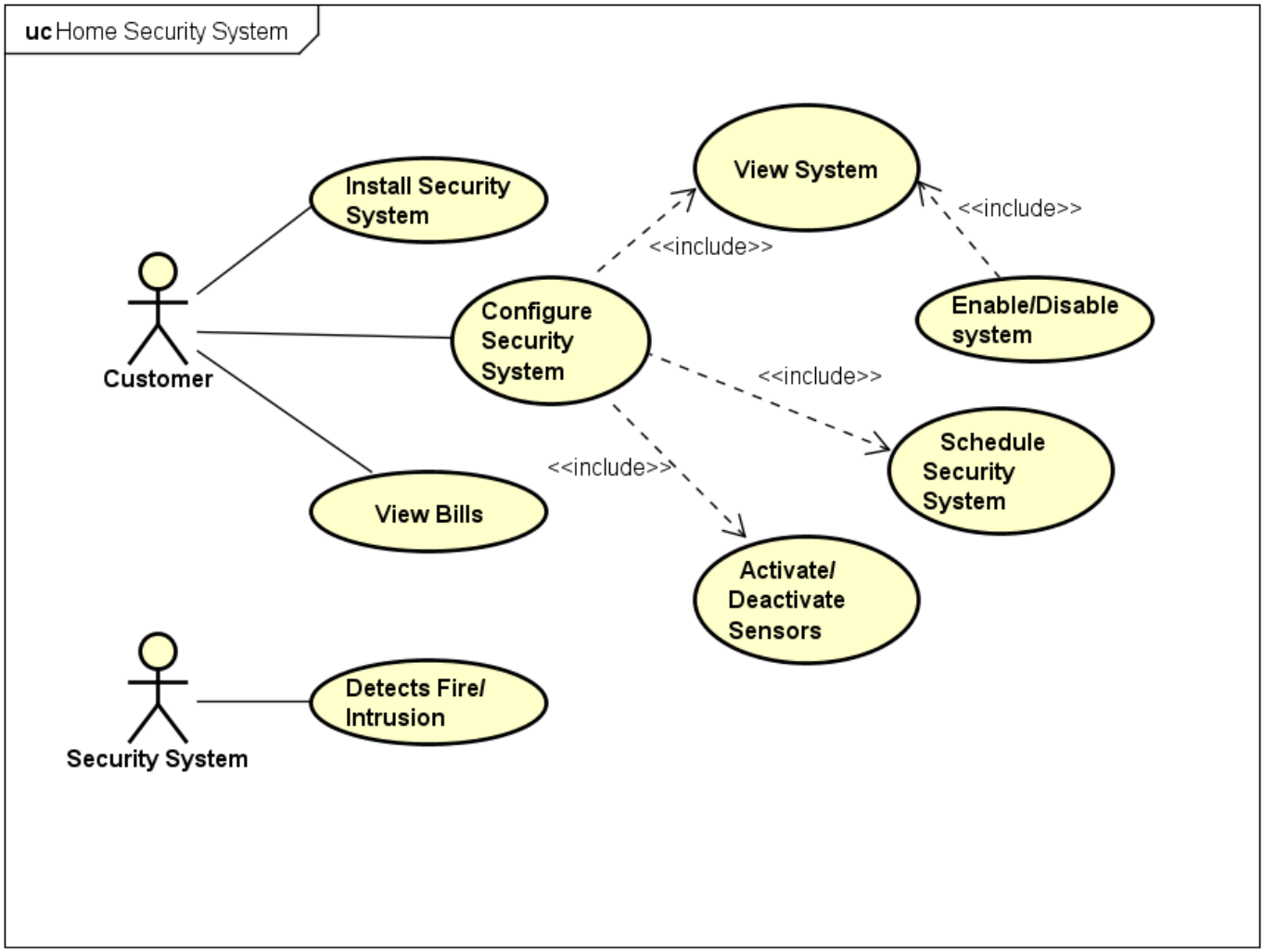
Generate a Bill for the Customer

Based on the selections made by the customer, a bill is generated. The bill shows the initial installation charges and the monthly service fees. The bill should clearly itemize the different services. For example, it should include the customer information, installation charges, monthly service charges etc.

1.4 Requirement#4

Simulating a break-in and a fire

2.Use Case Diagram



3. Main Use Cases

3.1 UC#1

Use-Case: (Goal): *View System*

Actors: customer

Purpose and Description: *Customer wants to view the configuration, enable/disable system and shows the bill*

Type: *Primary*

Cross-references:

Scenario Details (Typical course of events):

Actor Action	System Response
1. Logs in	2. Password OK
3. Enables the system.	4. The system is enabled
5. Selects configuration option accordingly	6. Displays appropriate selection
7. Selects view the bill option	8. Displays the bill
9. Selects view current system status/configuration.	9. Displays the status of the system.

Alternative Courses:

Line3: Customer can disable the system.

Line4: The system is disabled.

3.2 UC#2

Use-Case: (Goal): *Schedule the security system.*

Actors: *Customer*

Purpose and Description: *Customer wants to activate/deactivate the sensors & set the schedule for the same.*

Type: *Primary, Essential*

Cross-references: *UC-1*

Scenario Details (Typical course of events):

Actor Action	System Response
1.Customer enters the password in the system	2.Password OK. Displays menu of choices
3.Chooses scheduling mode.	4.Accepts the choice.
5.Chooses sections to schedule fire sensors.	6.Accepts the choice & shows selected fire sensors.
7.Chooses same/ different schedules for different sensors by entering from-*time* and *to-time*	8. Validates time schedule & shows successful configuration.
9.Chooses sections to schedule motion sensors.	
11. Chooses same/different schedules for different sensors by entering *from-time* and *to-time.*	10.Accepts the choice & shows selected motion sensors.
	12. Validates time schedule & shows successful configuration.

Alternative Courses:

Line 6: Unable to take the action, check sensor's connection/ call the support (650-200-7576).

Line 8: Not a valid schedule (schedule duration-0:00), please enter correct time.

Line 10: Unable to take the action, check sensor's connection/ call the support (650-200-7576).

Line 12: Not a valid schedule (schedule duration-0:00), please enter correct time.

3.3 UC#3

Use-Case: (Goal): *Activate/ Deactivate Sensors*

Actors: *Customer*

Purpose and Description: *Customer wants to activate/deactivate the sensors manually.*

Type: *Primary, Essential*

Cross-references: *UC-1*

Scenario Details (Typical course of events):

Actor Action	System Response
1. Customer enters the password in the system	2. Password OK. Displays menu of choices
3. Chooses manual mode.	
5. Chooses sections to activate/ deactivate the fire sensors.	4. Accepts the choice.
	6. Accepts the choice & shows successful activation/ deactivation of fire sensors.
7. Chooses sections to activate/ deactivate motion sensors.	8. Accepts the choice & shows successful activation/ deactivation of motion sensors.

Alternative Courses:

Line 6: Unable to take the action, check sensor's connection/ call the support (650-441-2345).

Line 8: Unable to take the action, check sensor's connection/ call the support (650-441-2345).

3.4 UC#4

Use-Case: (Goal): *View Bills*

Actors: Customer

Purpose and Description: *The customer wants to view the bill which shows customer's information, installation charges and monthly service charges.*

Type: *Primary, Essential*

Cross-references: UC-1

Scenario Details (Typical course of events):

Actor Action	System Response
1. Clicks on view bill button.	2. Accepts and displays the options.
3. Selects Intrusion Detection System billing for recent month.	4. Shows the total cost for Intrusion Detection system.
5. Selects Fire Detection System billing for recent month.	6. Shows the total cost for Fire Detection system.

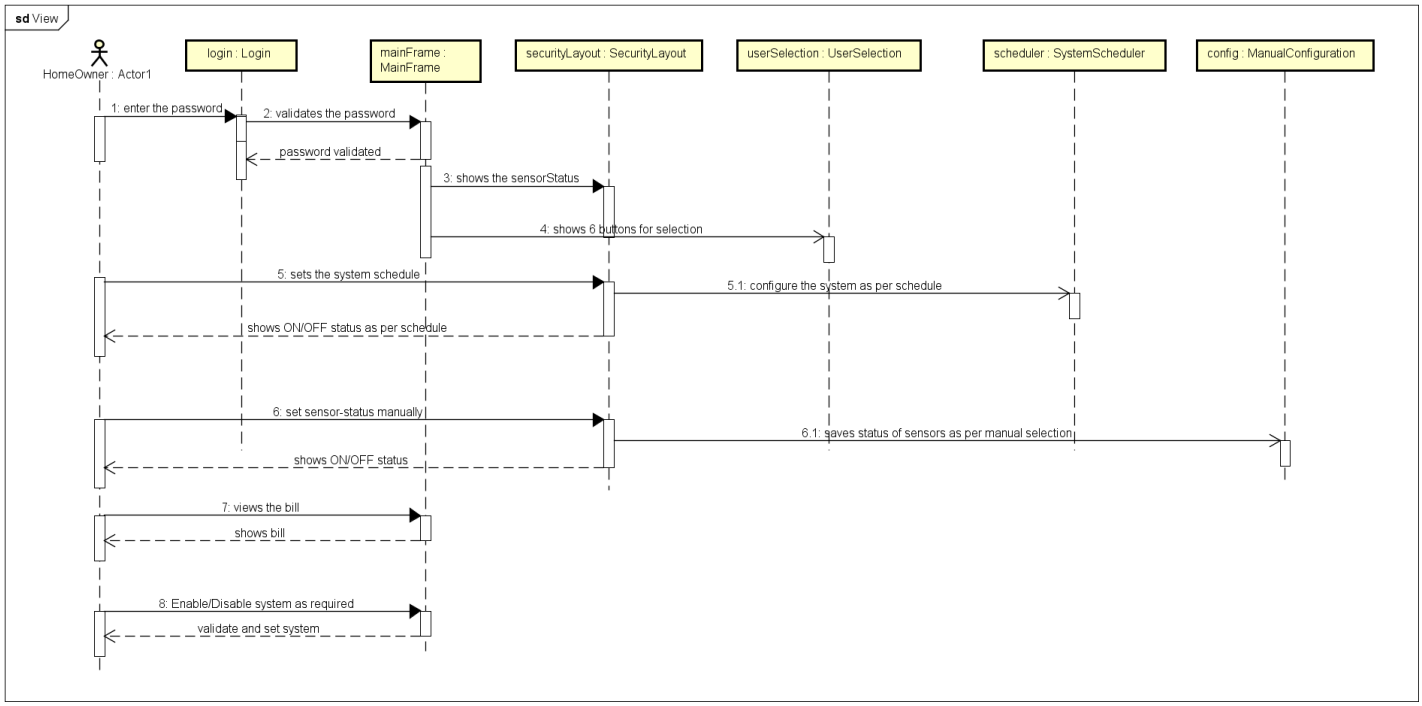
Alternative Courses:

Line 4: Monthly bill is not generated! The total cost may not reflect the actual amount.

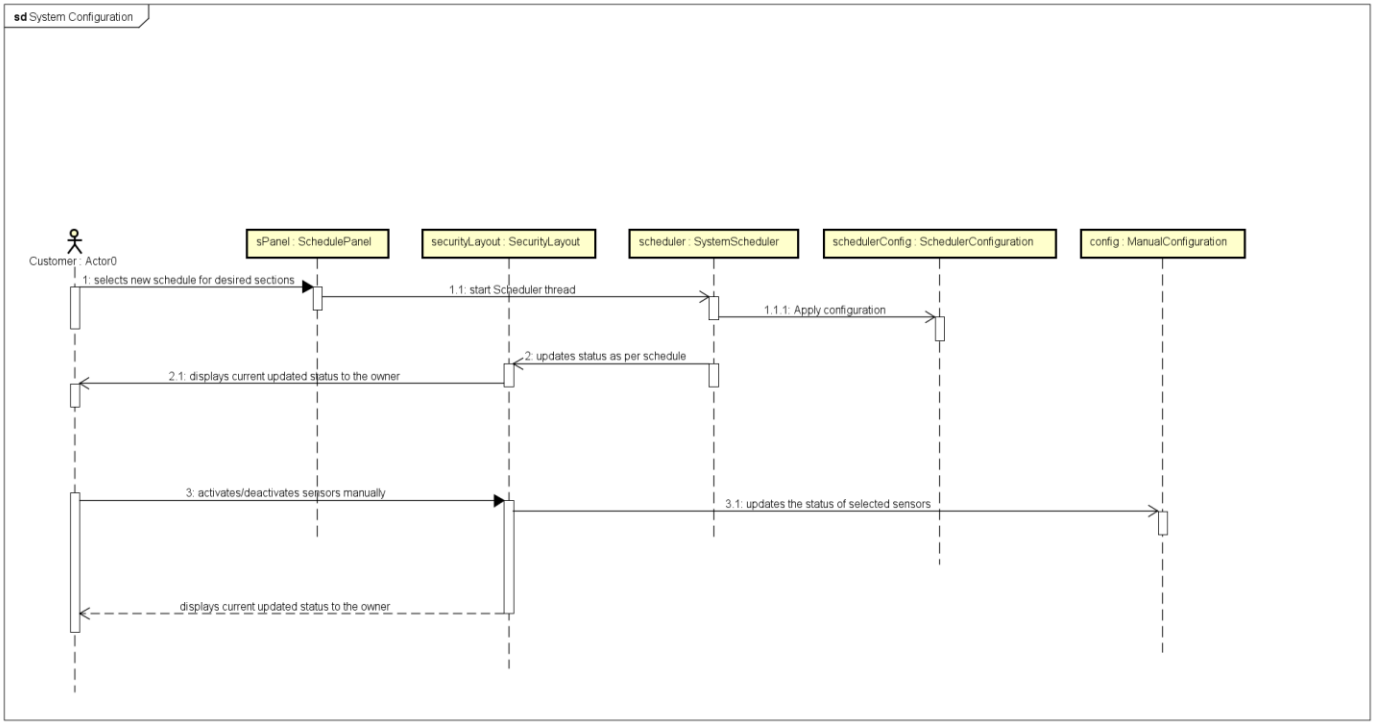
Line 6: Monthly bill is not generated! The total cost may not reflect the actual amount.

4.Sequence Diagram

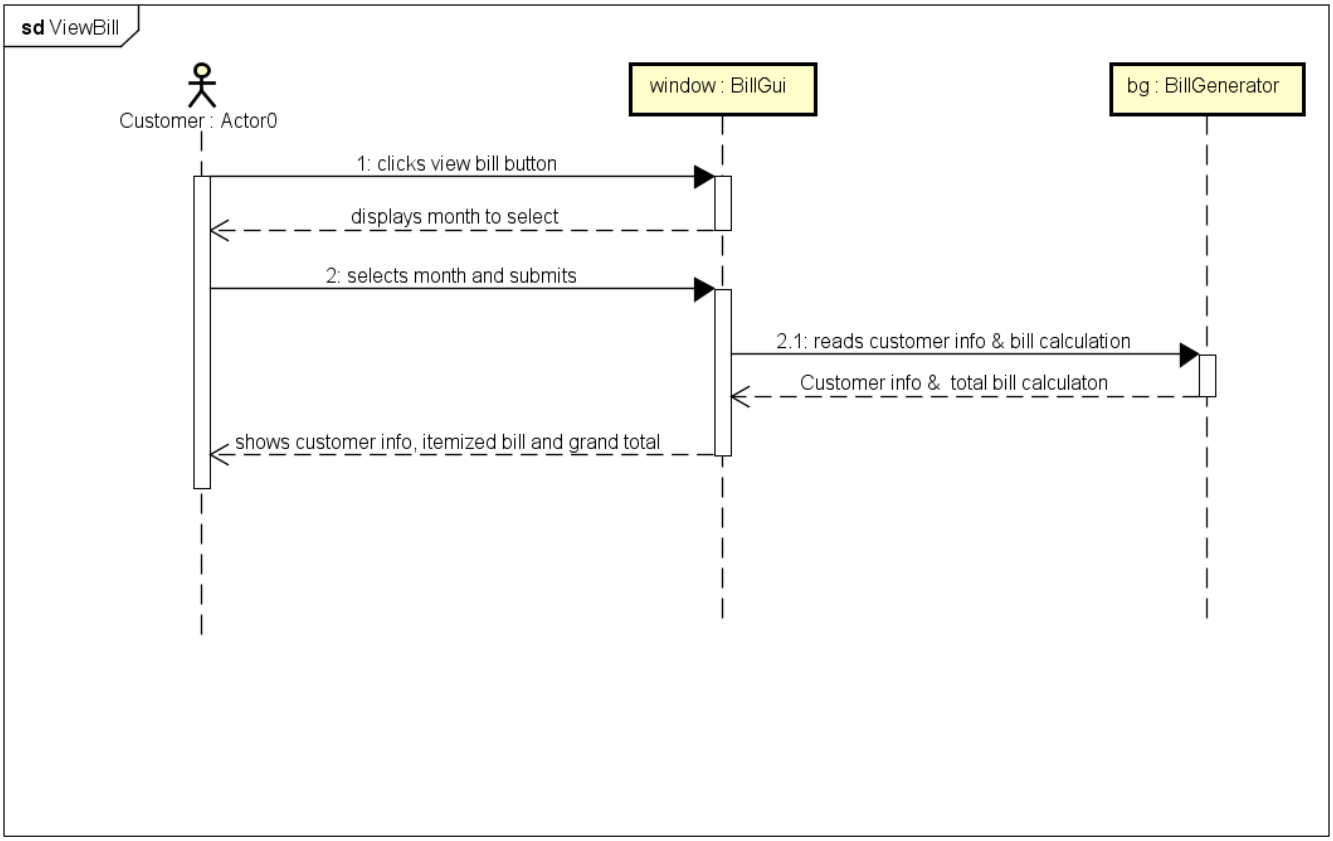
4.1#1 View System



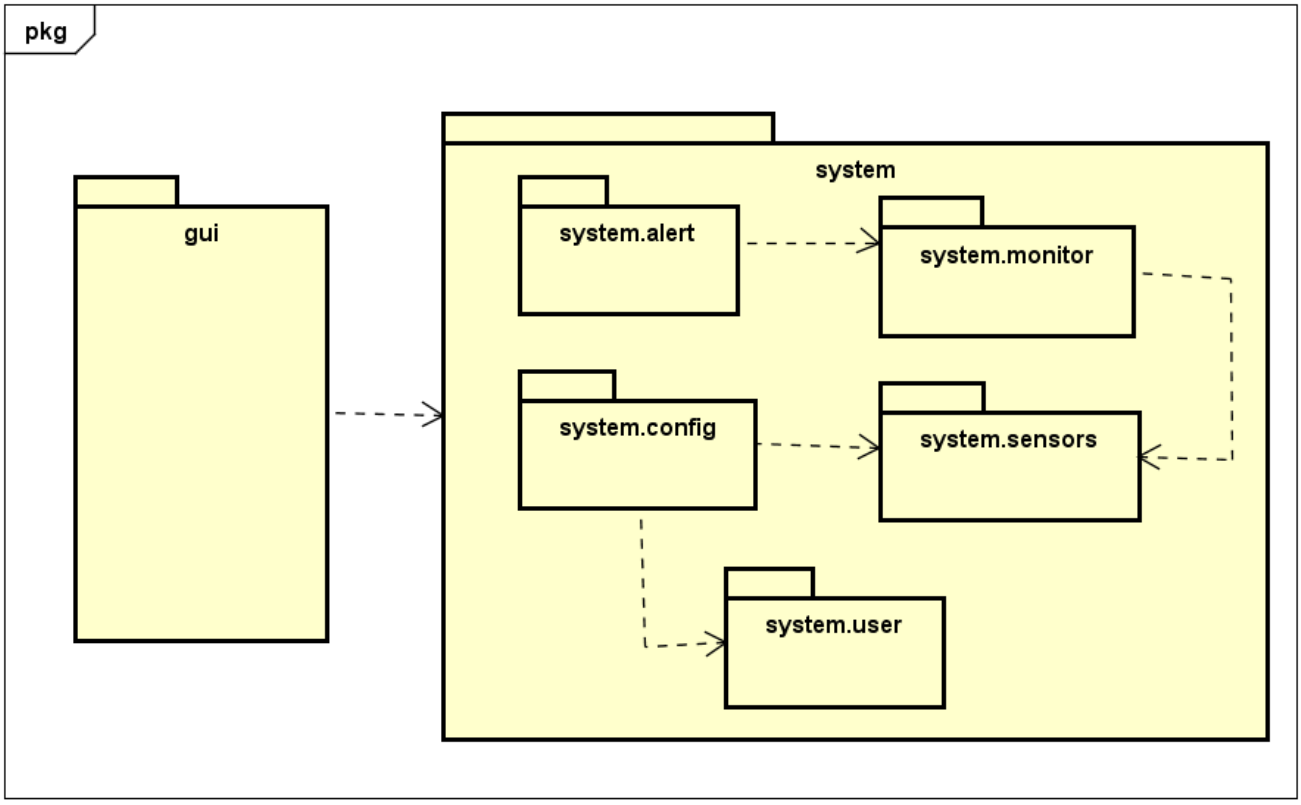
4.2#2 Configure System



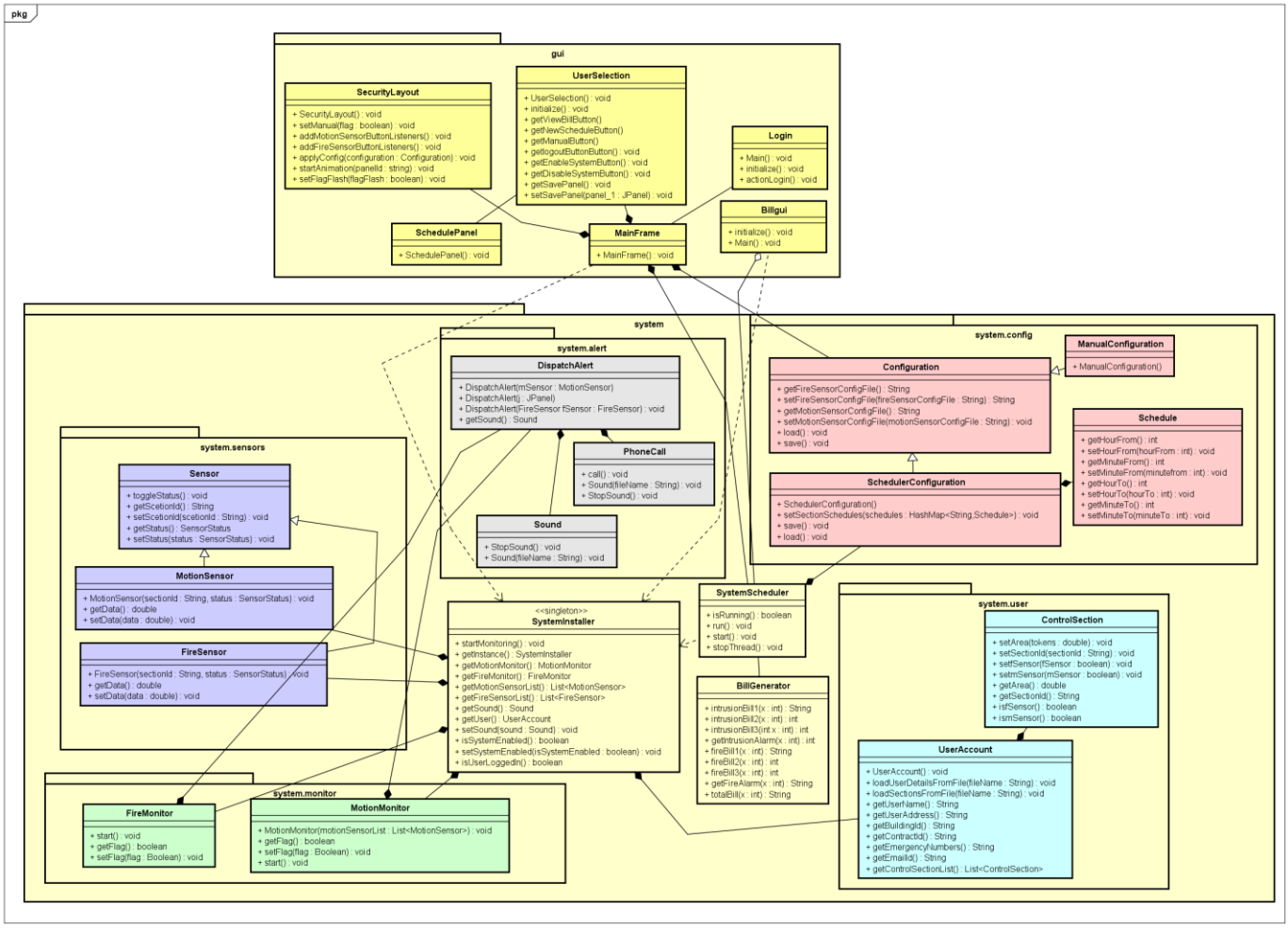
4.3#3 View Bill



5.Package Diagram and Logical Partitioning



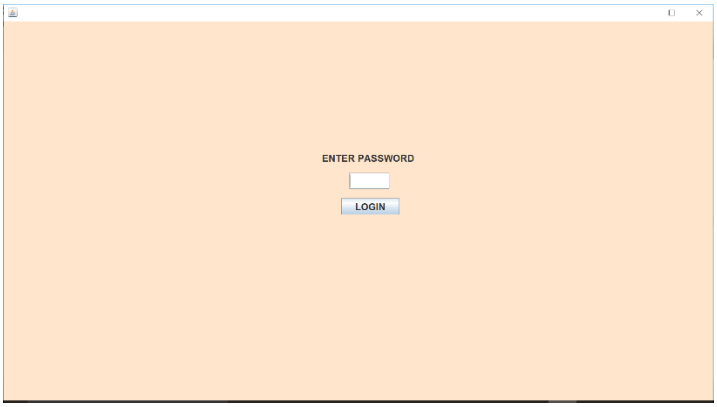
6.Class Diagram



7.FUNCTIONALITIES COVERED

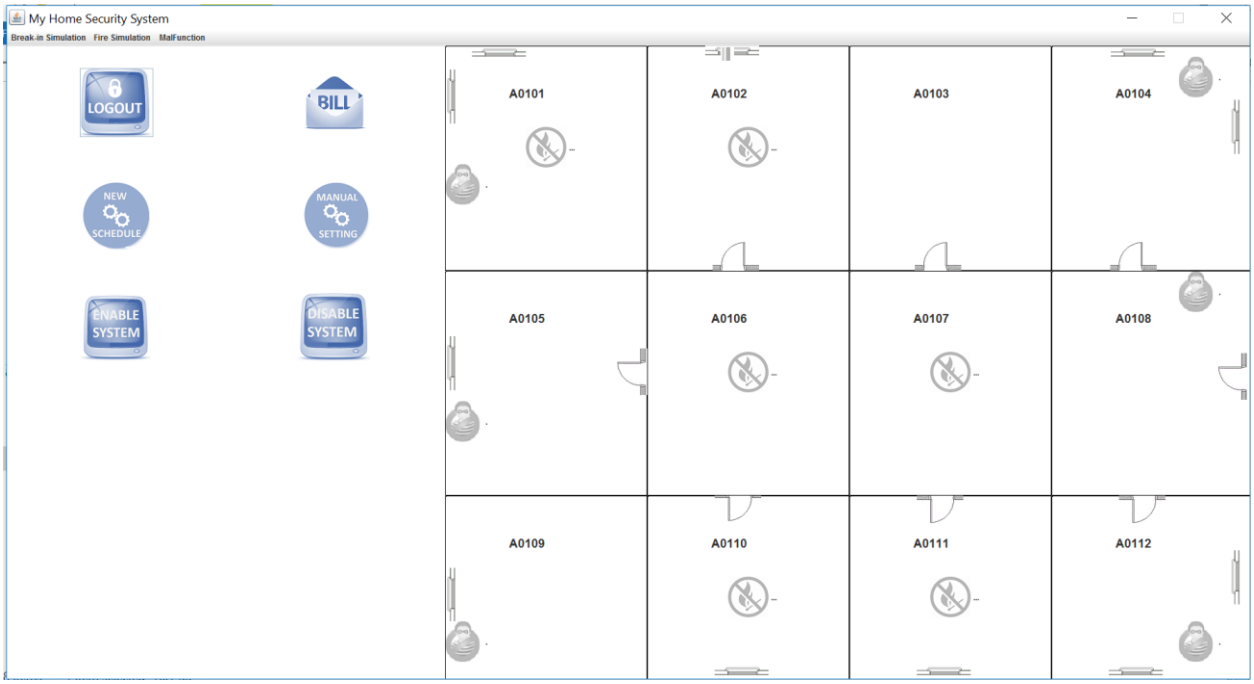
7.1 Installed System

The SystemInstaller class takes user data & textual display the building and the sections with ids from the database along with sensor requirements and installs the system. User enters master password and get access to the application. (covers requirement 1.1)



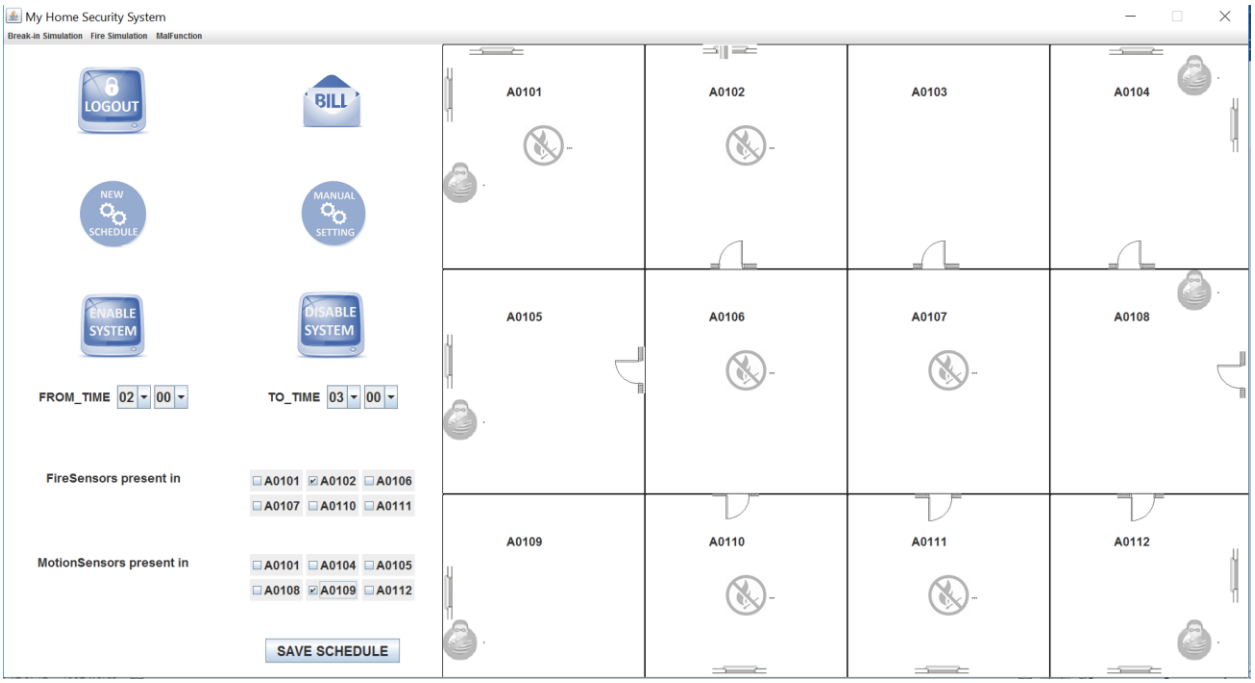
7.2 Shows System Status & Options:

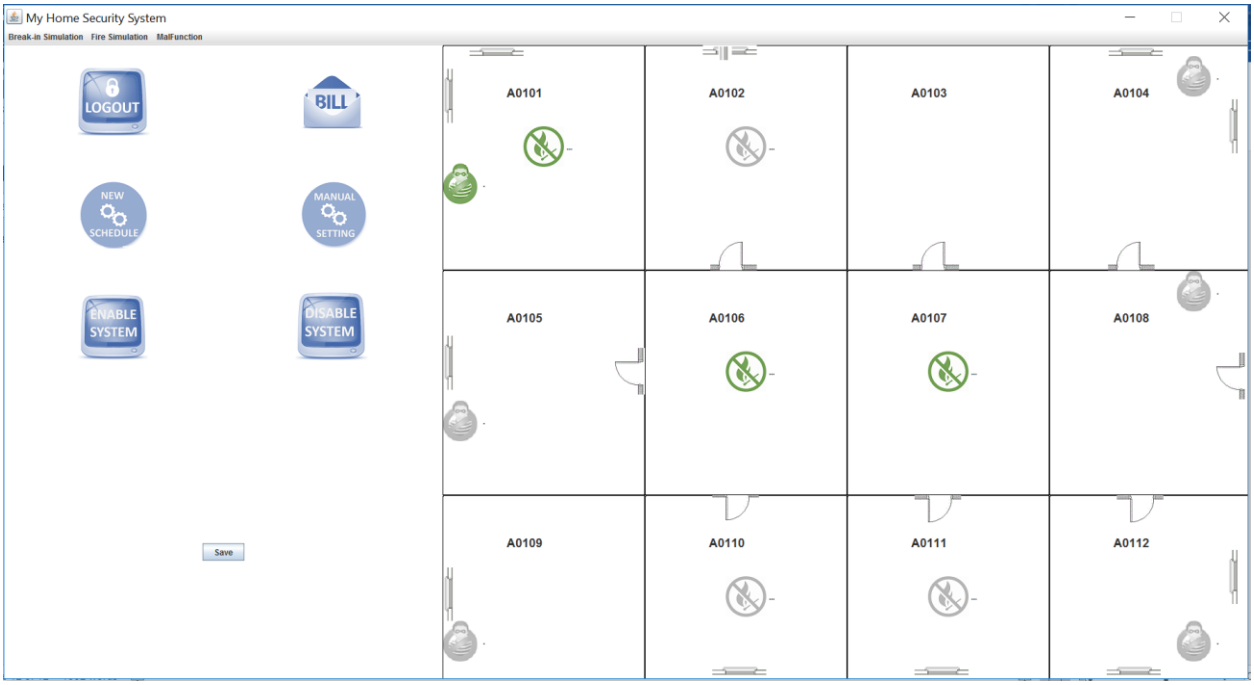
The MainFrame class avails the system frame to user showing current system status in the right panel and prospective system handling options in the left panel.



7.3 Allows Manual setting/schedule

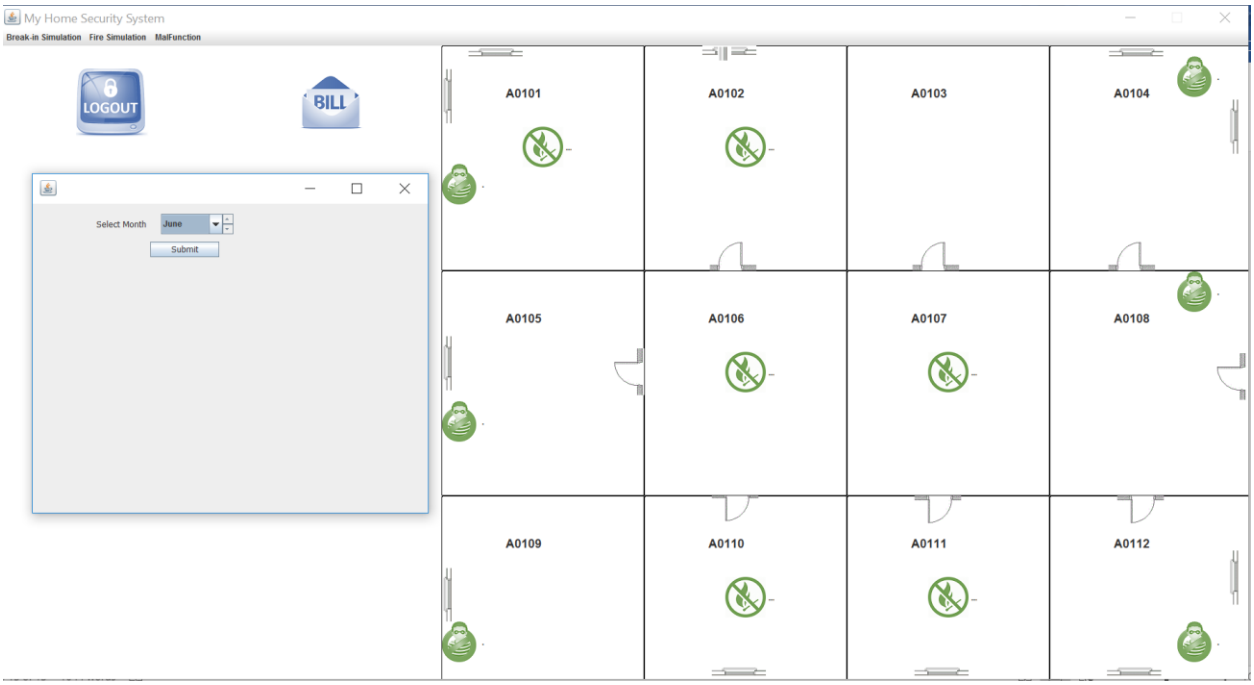
The SystemScheduler class allows user to activate or deactivate sensors manually or with schedule. Scheduling can be selected specific to section. The selected status /schedule is stored in the database and persisted.(requirement 1.2 covered)



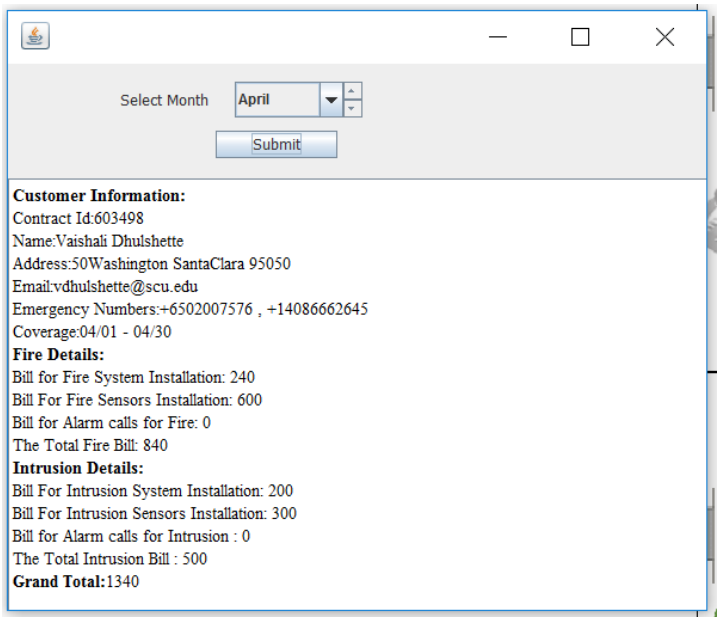


7.4 Shows Itemized Bill

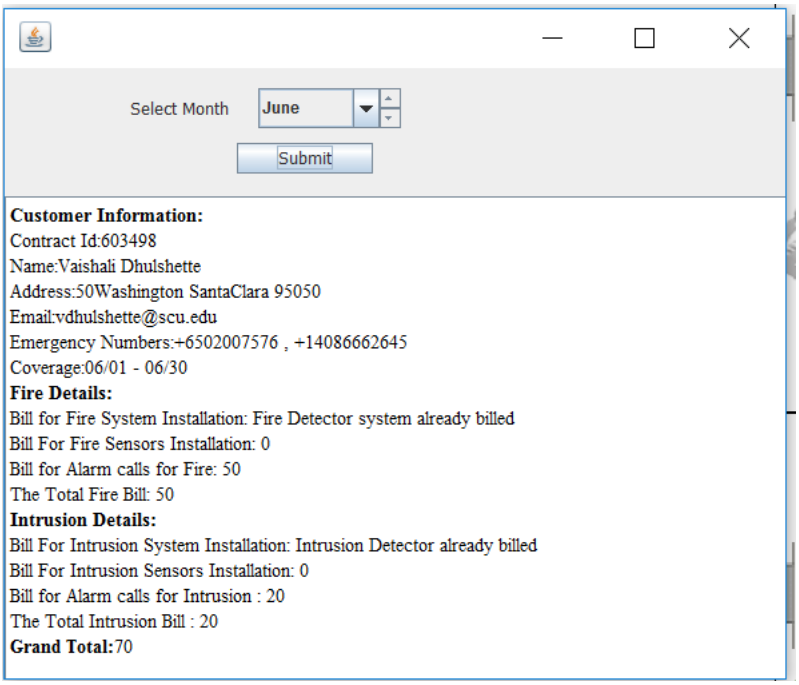
Application avails the itemized bill when user click on bill button. The BillGenerator and BillGui classes use the SystemInstaller to read user data and reads the database to get the service call details and then applied charges. (requirement 1.3 is covered) **Gives monthly charges**



Itemized billing covering Installation bill:



Itemized bill fetching service call logs from database & generating bill:



7.5 Simulates a break-in and a fire

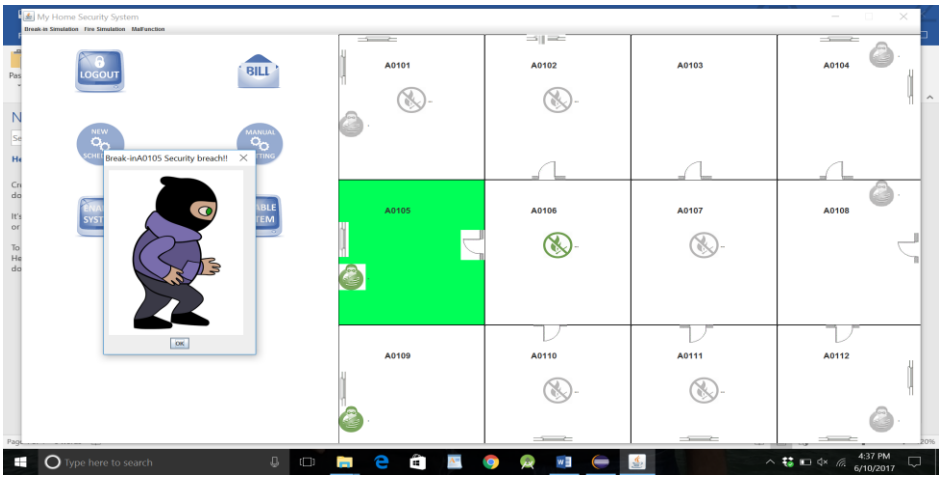
The break-in /fire is simulated by selecting the checkbox menu which avails all the sections in which the sensor is installed. As soon as checkbox is selected for any of the sensors which is in ON status below are the system actions:

colors will start flashing in that section.

A friendly image pops up confirming type of breach

Alarm sound is started (different for each fire and intrusion.

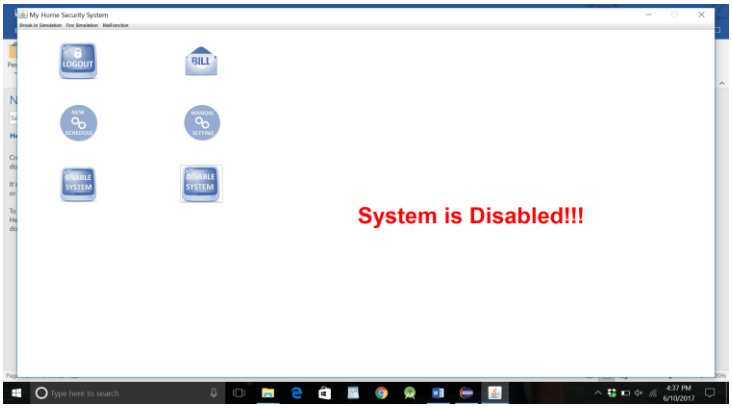
A phone call to the configured number by the system.

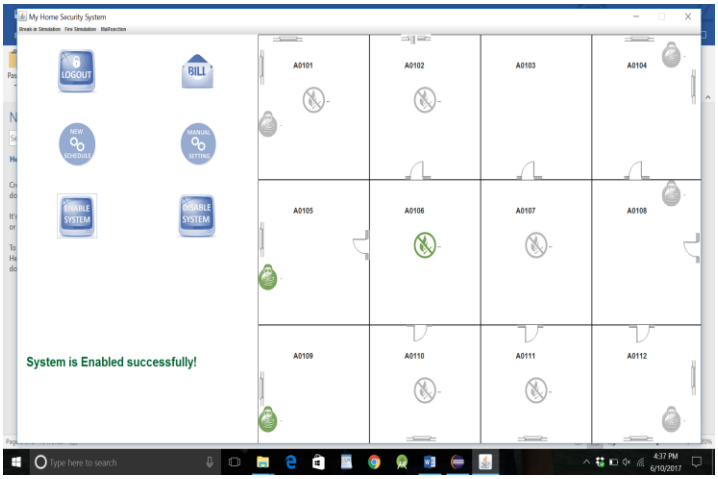


7.6 Disable /Enable system:

User can disable system as per his wish or to disarm the system in case of alarm. When everything is taken care, he can enable system.

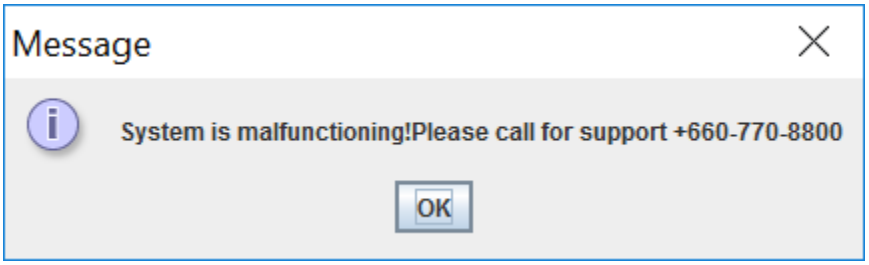
The system remembers the status of sensors while disabling and same is persisted when system is enabled again.





7.7 Malfunction Simulation:

The menu option makes one of sensors data null and shows user that system is malfunctioning and he/she can call support for hardware fix.



8.JavaDocs

https://drive.google.com/open?id=0B8eVjCfGvOWGdVh3VDVpRG43S2c

9.External Libraries Used

Jcalender-1.4.jar

Twilio-7.11.0-jar-with-dependencies.jar