Sri Lanka Institute of Information Technology

Software Architecture - SE3030

Assignment 01 : Micro-kernel Architecture

SafetyNet – Industrial Workspace Automation System

Y3.S2.SE.WE.0201

Group Details

	Student Registration Number	Student Name
1	IT21318320	Silva T.U.D
2	IT21189944	Madusanka G.K.I
3	IT21223594	Thalangama T.P
4	IT21319174	Dissanayake M.G.T.W

Table of Contents

Table of Figures

Introduction

SafetyNet is a fully-fledged application built on top of the OSGi (Open Service Gateway Initiative) framework. The system has been built using Java and follows the microkernel architecture, which highlights the features and behaviors of the observer design pattern.

The problem which motivated the implementation of SafetyNet was the absence of a comprehensive, automated industrial workplace management solution that not only provides a solution for power management, including the integration of solar energy to promote environmental sustainability, but also automates the control of air conditioning (AC), lighting, and heating based on weather conditions, reducing the need of manual intervention. Also, as a whole, the system will provide an overall energy consumption report at the end of the day, enabling tracking of power consumption. In industrial settings, security is critical because of the significant number of employed employers. SafetyNet addresses this by including an emergency system designed to enhance workplace safety. Also, the automated door-locking system, integrated with a face recognition system, will ensure the entry of authorized people to the workplace by increasing security measures.

A key advantage of SafetyNet is its inter-module communication capability, which facilitates control over all connected systems by streamlining the operations and increasing efficiency.

In summary, SafetyNet will provide the ability to control the modules, namely power, solar, emergency control, lightning, AC, and heating based on weather, and face recognition as a single integrated system.

Assumptions

The system was implemented under following assumptions:

- The Emergency Control System will have a separate power supply system to be online 24/7.
- The workplace should consist of face recognition devices, smart automated door locking mechanisms, solar system, and emergency detection devices. (Please note that these modules will be changed as per the requirements to suit workplaces without the mentioned module as future enhancements.)

- At Least one authorized person should be there to receive notifications regarding power consumptions, and notifications regarding unauthorized people trying to get into the workplace.

Power Control System Overview

The purpose of the power management system is to have full control over the power distribution inside the workplace. This includes starting the power system and distributing power to the devices such as light bulbs, AC, heaters, face recognition devices. The main advantage of this power system is the generation of an automated call to activate the solar power generation after checking the weather conditions and light intensities with the help of the weather module. Then on the other hand the power monitor system traces and keeps track of power usages which then help to generate a report regarding the power consumptions. Overall this module helps to control and trace power consumptions and also helps to control solar power generation effectively.

Weather System Overview

The weather detection system is designed to manage comfort by controlling the temperature inside the workplace by adjusting AC and heater. It operates through a network of components managed by the Weather Service Publisher, which acts as the central module for weather data and decision-making. This service verifies power availability and monitors emergency notifications, ensuring safety and functionality. Heat and AC subscribers receive real-time temperature updates and adjust heating or cooling systems accordingly, while the Light Control Subscriber manages lighting based on light intensity. By integrating sensor data with automated control, the system not only enhances comfort of the employers but also optimizes energy consumption, promoting sustainability and convenience for users.

Emergency Control System Overview

The primary role of this system is to detect fire and gas leakages, deploying necessary counteractions and safety measures to mitigate emergency situations while ensuring worker safety. For fire detection, this system uses a Fire Detection Sensor (FireDetectionSensorSubscriber). Similarly, for gas leaks, it utilizes a Gas Detection Sensor (GasDetectionSensorSubscriber). When either one of these sensors detects an emergency situation (fire or gas), they activate the services published by the EmergencyServicePublisher module to inform the Emergency Service Publisher about the ongoing emergency situation. Then, the Emergency Service Publisher activates the emergency protocol to mitigate the emergency situation. In order to do this, the Emergency Service Publisher uses emergency override services made available to it by three other systems. These services allow the Emergency Service Publisher to override other systems' normal behavior and unlock all doors, turn off AC, heaters, lights, turn on emergency alarms, turn on red alarm lights, and activate safety systems such as fire suppression systems. To ensure that other systems don’t activate the subsystems that were deactivated by the emergency system while there’s an ongoing emergency, the Emergency Service Publisher has subscribed to the AlertEmergencyPublisher module. This module maintains the emergency state as a Boolean value. Other modules then subscribe to the AlertEmergencyPublisher module to verify the emergency state before activating their services. Other systems should check whether there’s an emergency before they start their subsystems to prevent override conflicts and hazard situations.

Access Control System Overview

The main purpose of this system is to authorize the access of the employee when entering the workplace and automate the door opening. To do this, first of all, this system needs to check the status of whether the power is on or off by another system PowerServicePublisher. Using the face detection method, the system authorizes access to the employee. For face detection, the system uses a Face Detection Sensor (FaceDetectionSubscriber). After detecting the face, using the Employee Detection System (EmployeeDetectionSystemPublisher) checks the validity of the employee. When the detected employee is a valid one then activate the DoorUnlock() service published by the AutomatedDoorSystemPublisher module and

SendNotification() service published by NotificationSystemPublisher module to notify the user about the detection status and open the door automatically. After opening the door, utilize the DoorLock() service to lock it within 5 seconds. Since face detection cannot be done in an emergency this system allows the EmergencyService system to override the doorUnlock() method during emergencies.

System Overview Diagram

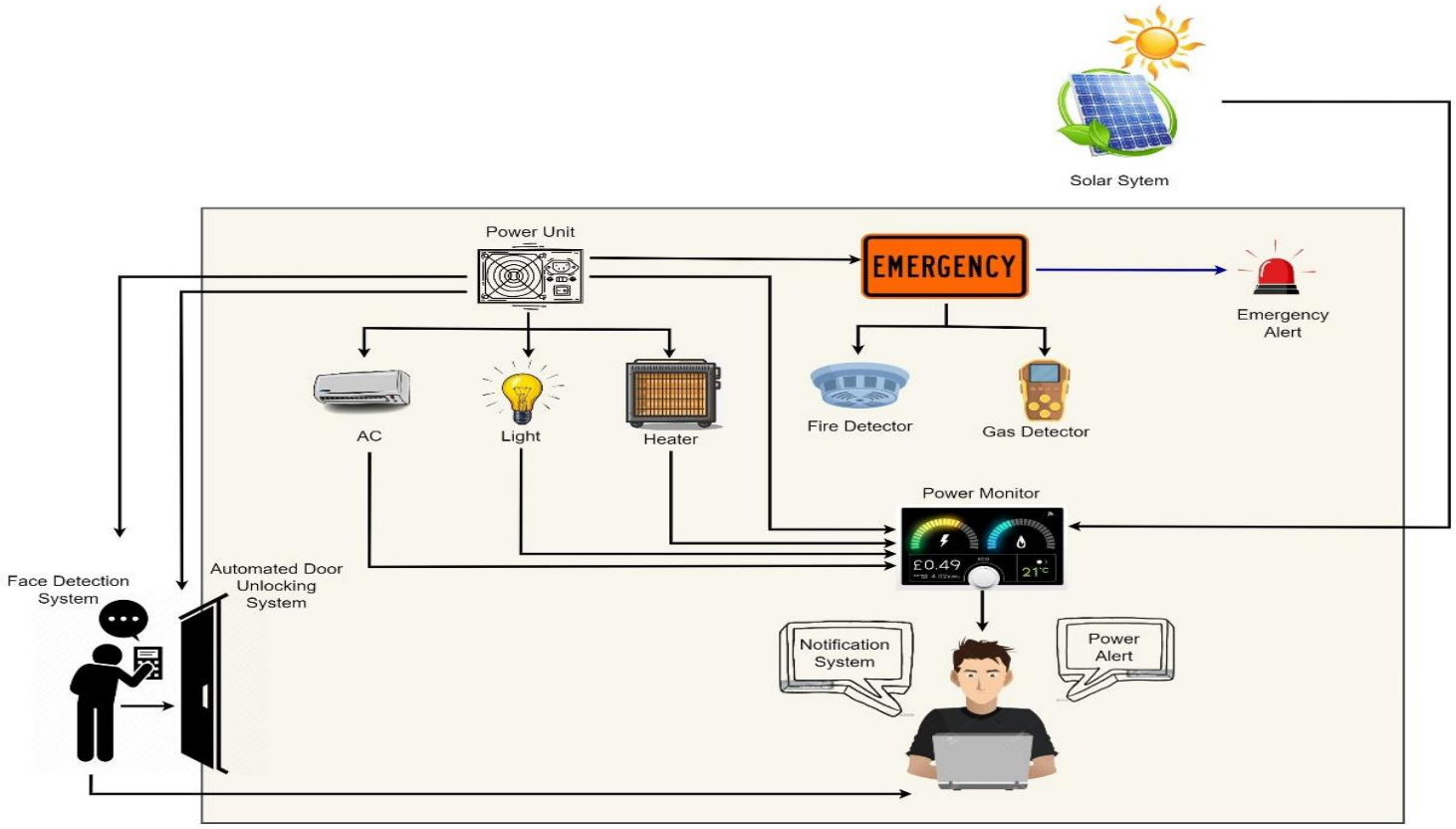


Figure 1: System Overview Diagram

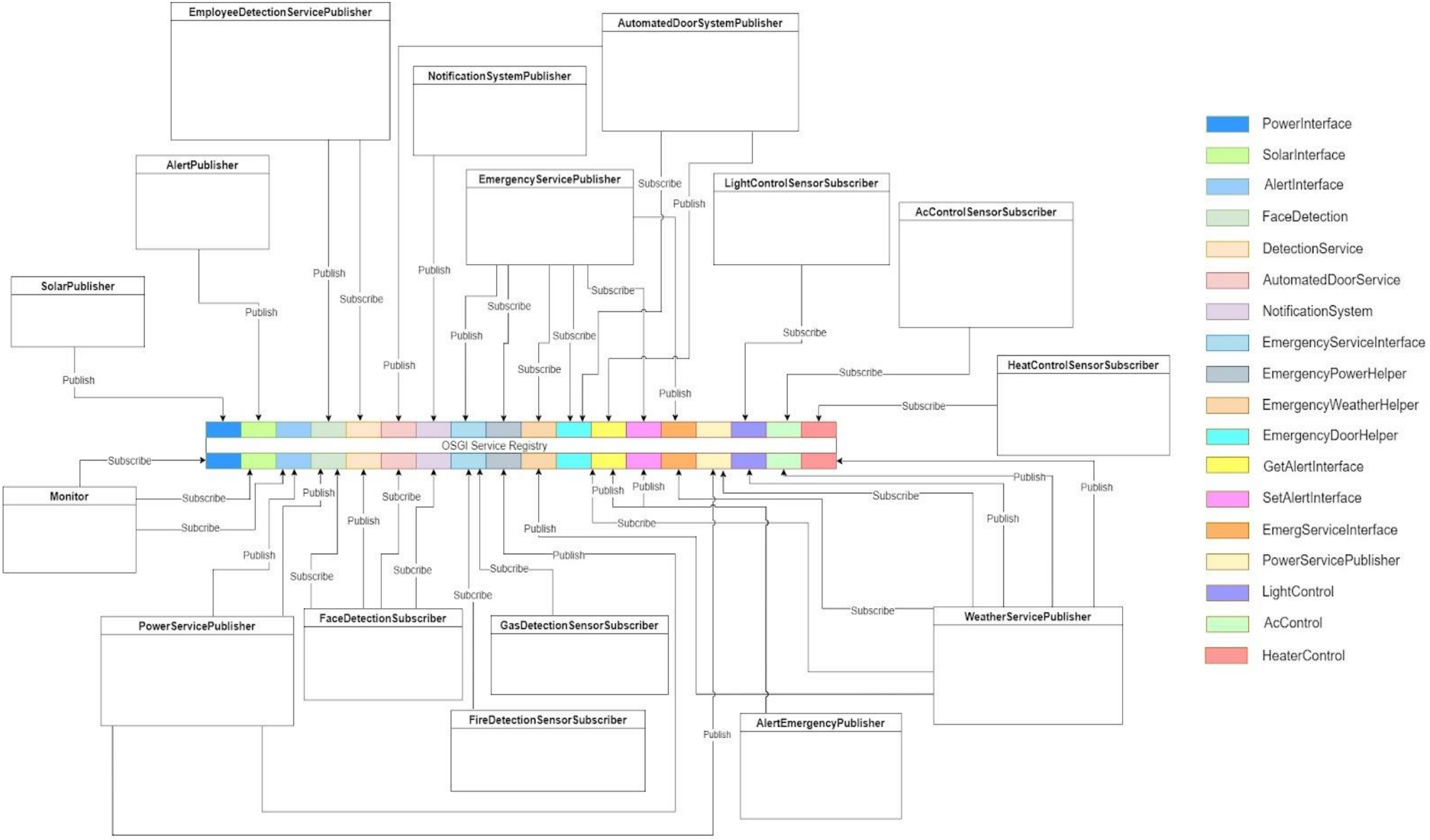


Figure 2: Component Diagram

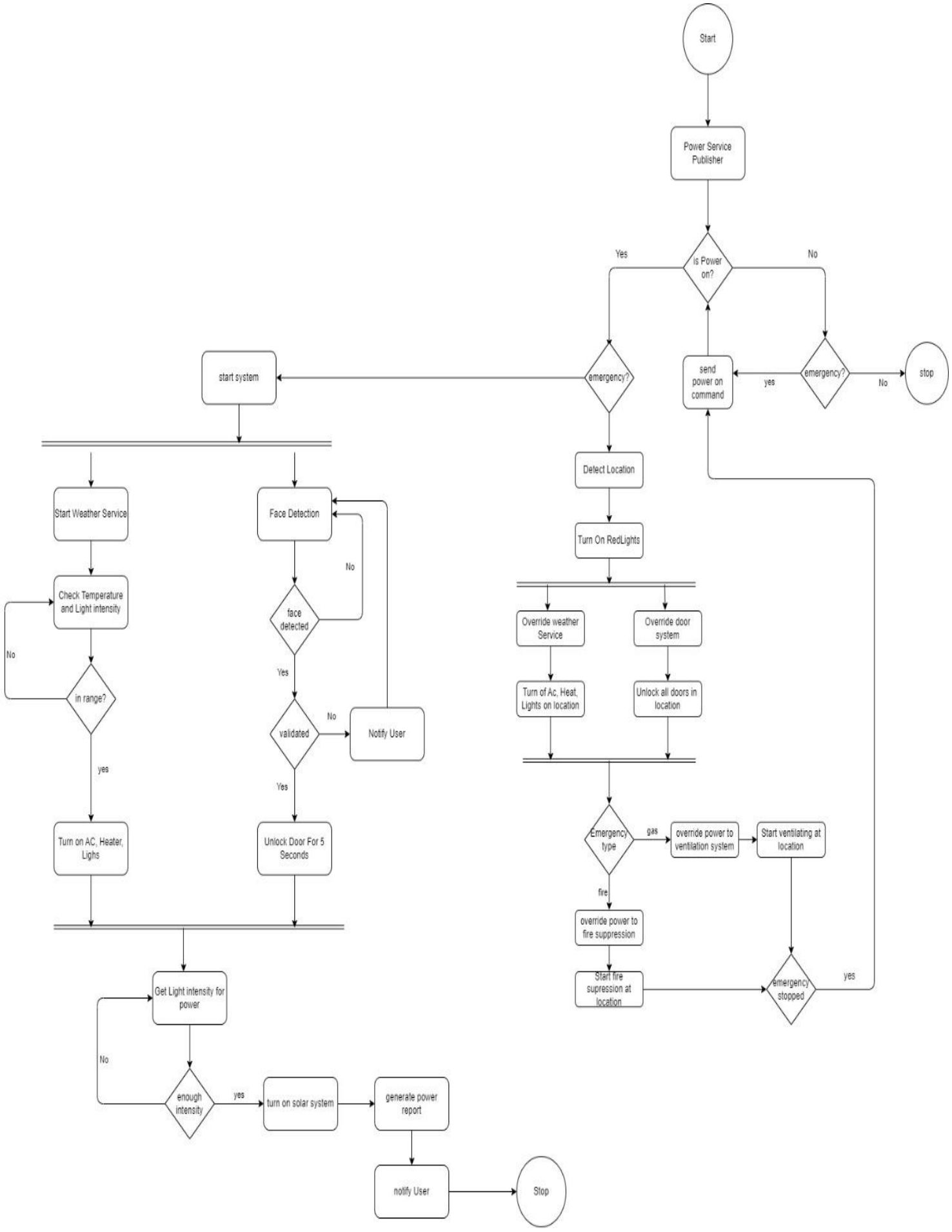


Figure 3: System Flow

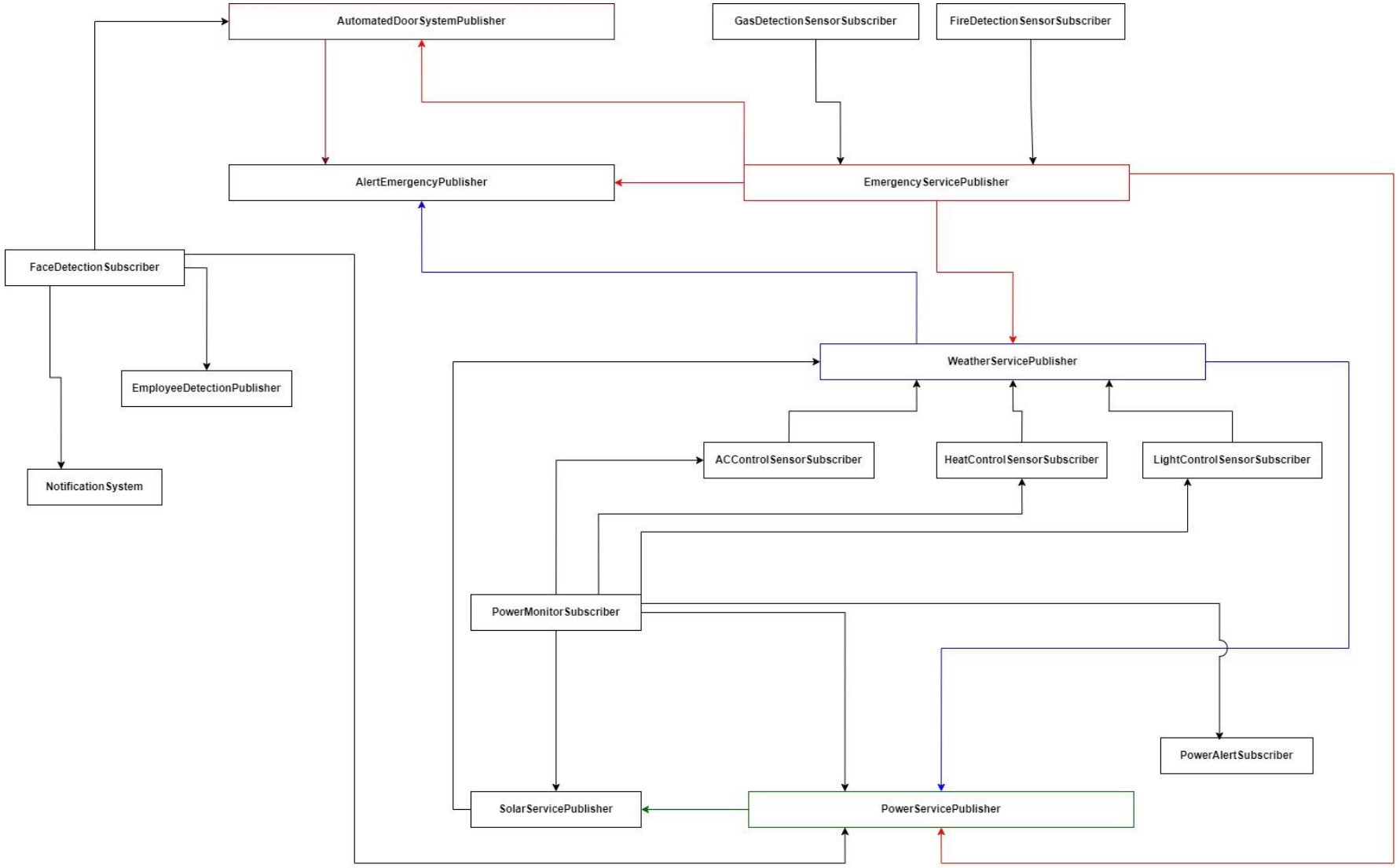


Figure 4: Dependency Diagram

Exported and Imported Services

Module Name	Imported Packages	Exported Packages
EmergencyServicePublisher	com.sa.safetynet.accesscontroller.autodoorsystem com.sa.safetynet.alert com.sa.safetynet.power com.sa.safetynet.weather	com.sa.safetynet.emergency.service
FireDectionSensorSubscriber	com.sa.safetynet.emergency.service	com.sa.safetynet.emergency.fire.sensor
GasDetectionSensorSubscriber	com.sa.safetynet.emergency.service	com.sa.safetynet.emergency.gas.sensor
FaceDetectionSubscriber	com.sa.safetynet.power com.sa.safetynet.accesscontroller.autodoorsystem com.sa.safetynet.accesscontroller.empdetection com.sa.safetynet.accesscontroller.notificationsystem	com.sa.safetynet.accesscontroller.facedetection
EmployeeDetectionPublisher		com.sa.safetynet.accesscontroller.empdetection
AutomatedDoorSystemPublisher	com.sa.safetynet.alert	com.sa.safetynet.accesscontroller.autodoorsystem
NotificationSystem		com.sa.safetynet.accesscontroller.notificationsystem
AlertEmergencyPublisher		com.sa.safetynet.alert

ACControlSensorSubscriber	com.sa.safetynet.weather	com.sa.safetynet.weather.accontrolsensorsubscriber
HeatControlSensorSubscriber	com.sa.safetynet.weather	com.sa.safetynet.weather.heatcontrolsensorsubscriber
LightControlSensorSubscriber	com.sa.safetynet.weather	com.sa.safetynet.weather.lightcontrolsensorsubscriber
WeathersServicePublisher	com.sa.safetynet.alert com.sa.safetynet.power	com.sa.safetynet.weather
PowerAlertSubscriber		com.sa.safetynet.power.alert
PowerMonitorSubscriber	com.sa.safetynet.power com.sa.safetynet.power.alert com.sa.safetynet.power.solar com.sa.safetynet.weather com.sa.safetynet.weather.accontrolsensorsubscriber com.sa.safetynet.weather.heatcontrolsensorsubscriber com.sa.safetynet.weather.lightcontrolsensorsubscriber	com.sa.safetynet.power.monitor
PowerServicePublisher	com.sa.safetynet.power.solar	com.sa.safetynet.power
SolarServicePublisher		com.sa.safetynet.power.solar

Manifest Implementation

PowerServicePublisher

Manifest-Version: 1.0

Bundle-ManifestVersion: 2

Bundle-Name: PowerService

Bundle-SymbolicName: PowerPublisherService

Bundle-Version: 1.0.0.qualifier

Bundle-Activator: com.sa.safetynet.power.powerservice.PowerServiceActivator

Import-Package: org.osgi.framework;version="1.3.0"

Export-Package: com.sa.safetynet.power.powerservice

Bundle-RequiredExecutionEnvironment: JavaSE-18

PowerAlertSubscriber

Manifest-Version: 1.0

Bundle-ManifestVersion: 2

Bundle-Name: com.sa.safetynet.power.alert.PowerAlertSubscriber

Bundle-SymbolicName: PowerAlertSubscriber

Bundle-Version: 1.0.0.qualifier

Bundle-Activator: com.sa.safetynet.power.alert.PowerAlertActivator

Bundle-RequiredExecutionEnvironment: JavaSE-18

Automatic-Module-Name: PowerAlertSubscriber

Import-Package: org.osgi.framework;version="1.3.0"

Export-Package: com.sa.safetynet.power.alert

AlertEmergencyPublisher

Manifest-Version: 1.0

Bundle-ManifestVersion: 2

Bundle-Name: AlertEmergencyPublisher

Bundle-SymbolicName: AlertEmergencyPublisher

Bundle-Version: 1.0.0.qualifier

Export-Package: com.sa.safetynet.alert

Bundle-Activator: com.sa.safetynet.alert.AlertActivator

Automatic-Module-Name: AlertEmergencyPublisher
Bundle-RequiredExecutionEnvironment: JavaSE-18
Import-Package: org.osgi.framework;version="1.3.0"

WeatherServicePublisher

Manifest-Version: 1.0
Bundle-ManifestVersion: 2
Bundle-Name: Weather
Bundle-SymbolicName: WeathersServicePublisher
Bundle-Version: 1.0.0.qualifier
Export-Package: com.sa.safetynet.weather
Bundle-Activator: com.sa.safetynet.weather.Activator
Bundle-Vendor: SA
Bundle-RequiredExecutionEnvironment: JavaSE-18
Automatic-Module-Name: com.sa.safetynet.weather
Import-Package: com.sa.safetynet.alert,
 com.sa.safetynet.power.powerservice,
 org.osgi.framework;version="1.3.0"

SolarServicePublisher

Manifest-Version: 1.0
Bundle-ManifestVersion: 2
Bundle-Name: com.sa.safetynet.power.solar.SolarServiceSubscriber
Bundle-SymbolicName: SolarServicePublisher
Bundle-Version: 1.0.0.qualifier
Bundle-Activator: com.sa.safetynet.power.solar.SolarServiceActivator
Bundle-RequiredExecutionEnvironment: JavaSE-18
Automatic-Module-Name: SolarServiceSubscriber
Import-Package: com.sa.safetynet.power.alert,
 com.sa.safetynet.weather,
 org.osgi.framework;version="1.3.0"
Export-Package: com.sa.safetynet.power.solar

ACControlSensorSubscriber

Manifest-Version: 1.0

Bundle-ManifestVersion: 2

Bundle-Name: ACControlSensorSubscriber

Bundle-SymbolicName: ACControlSensorSubscriber

Bundle-Version: 1.0.0.qualifier

Bundle-Activator: com.sa.safetynet.weather.accontrolsensorsubscriber.Activator

Bundle-RequiredExecutionEnvironment: JavaSE-18

Automatic-Module-Name: ACControlSensorSubscriber

Import-Package: com.sa.safetynet.weather,

org.osgi.framework;version="1.3.0"

Export-Package: com.sa.safetynet.weather.accontrolsensorsubscriber

HeatControlSensorSubscriber

Manifest-Version: 1.0

Bundle-ManifestVersion: 2

Bundle-Name: HeatControlSensorSubscriber

Bundle-SymbolicName: HeatControlSensorSubscriber

Bundle-Version: 1.0.0.qualifier

Bundle-Activator: com.sa.safetynet.weather.heatcontrolsensorsubscriber.Activator

Bundle-RequiredExecutionEnvironment: JavaSE-18

Automatic-Module-Name: HeatControlSensorSubscriber

Import-Package: com.sa.safetynet.weather,

org.osgi.framework;version="1.3.0"

Export-Package: com.sa.safetynet.weather.heatcontrolsensorsubscriber

LightControlSensorSubscriber

Manifest-Version: 1.0

Bundle-ManifestVersion: 2

Bundle-Name: LightControlSensorSubscriber

Bundle-SymbolicName: LightControlSensorSubscriber

Bundle-Version: 1.0.0.qualifier

Bundle-Activator: com.sa.safetynet.weather.lightcontrolsensorsubscriber.Activator

Bundle-RequiredExecutionEnvironment: JavaSE-18

Automatic-Module-Name: LightControlSensorSubscriber
Import-Package: com.sa.safetynet.weather,
org.osgi.framework;version="1.3.0"
Export-Package: com.sa.safetynet.weather.lightcontrolsensorsubscriber

AutomatedDoorSystemPublisher

Manifest-Version: 1.0
Bundle-ManifestVersion: 2
Bundle-Name: com.sa.safetynet.accesscontroller.autodoorsystem
Bundle-SymbolicName: AutomatedDoorSystemPublisher
Bundle-Version: 1.0.0.qualifier
Bundle-Activator:
com.sa.safetynet.accesscontroller.autodoorsystem.AutomatedDoorActivator
Export-Package: com.sa.safetynet.accesscontroller.autodoorsystem
Import-Package: com.sa.safetynet.alert,
org.osgi.framework;version="1.3.0"
Bundle-RequiredExecutionEnvironment: JavaSE-18

EmployeeDetectionPublisher

Manifest-Version: 1.0
Bundle-ManifestVersion: 2
Bundle-Name: com.sa.safetynet.accesscontroller.empdetection
Bundle-SymbolicName: EmployeeDetectionPublisher
Bundle-Version: 1.0.0.qualifier
Bundle-Activator:
com.sa.safetynet.accesscontroller.empdetection.EmployeeDetectionActivator
Export-Package: com.sa.safetynet.accesscontroller.empdetection
Import-Package: org.osgi.framework;version="1.3.0"
Bundle-RequiredExecutionEnvironment: JavaSE-18

NotificationSystem

Manifest-Version: 1.0
Bundle-ManifestVersion: 2
Bundle-Name: com.sa.safetynet.accesscontroller.notificationsystem

Bundle-SymbolicName: NotificationSystem
Bundle-Version: 1.0.0.qualifier
Bundle-Activator:
com.sa.safetynet.accesscontroller.notificationsystem.NotificationSystemActivator
Export-Package: com.sa.safetynet.accesscontroller.notificationsystem
Import-Package: org.osgi.framework;version="1.3.0"
Bundle-RequiredExecutionEnvironment: JavaSE-18

FaceDetectionSubscriber

Manifest-Version: 1.0
Bundle-ManifestVersion: 2
Bundle-Name: com.sa.safetynet.accesscontroller.facedetection
Bundle-SymbolicName: FaceDetectionSubscriber
Bundle-Version: 1.0.0.qualifier
Bundle-Activator: com.sa.safetynet.accesscontroller.facedetection.FaceDetectionActivator
Export-Package: com.sa.safetynet.accesscontroller.facedetection
Import-Package: com.sa.safetynet.accesscontroller.autodoorsystem,
 com.sa.safetynet.accesscontroller.empdetection,
 com.sa.safetynet.accesscontroller.notificationsystem,
 com.sa.safetynet.power.powerservice,
 org.osgi.framework;version="1.3.0"
Bundle-RequiredExecutionEnvironment: JavaSE-18

PowerMonitorSubscriber

Manifest-Version: 1.0
Bundle-ManifestVersion: 2
Bundle-Name: com.sa.safetynet.power.monitor.PowerMonitorSubscriber
Bundle-SymbolicName: PowerMonitorSubscriber
Bundle-Version: 1.0.0.qualifier
Bundle-Activator: com.sa.safetynet.power.monitor.PowerMonitorActivator
Export-Package: com.sa.safetynet.power.monitor
Bundle-RequiredExecutionEnvironment: JavaSE-18
Automatic-Module-Name: PowerMonitorSubscriber
Import-Package: com.sa.safetynet.power.alert,

com.sa.safetynet.power.powerservice,
com.sa.safetynet.power.solar,
com.sa.safetynet.weather.accontrolsensorsubscriber,
com.sa.safetynet.weather.heatcontrolsensorsubscriber,
com.sa.safetynet.weather.lightcontrolsensorsubscriber,
org.osgi.framework;version="1.3.0"

EmergencyServicePublisher

Manifest-Version: 1.0
Bundle-ManifestVersion: 2
Bundle-Name: EmergencyService
Bundle-SymbolicName: EmergencyServicePublisher
Bundle-Version: 1.0.0.qualifier
Export-Package: com.sa.safetynet.emergency.service
Bundle-Activator: com.sa.safetynet.emergency.service.EmergencyServiceActivator
Bundle-RequiredExecutionEnvironment: JavaSE-18
Automatic-Module-Name: EmergencyService
Import-Package: com.sa.safetynet.alert,
com.sa.safetynet.power.powerservice,
com.sa.safetynet.weather,
org.osgi.framework;version="1.3.0"

FireDetectionSensorSubscriber

Manifest-Version: 1.0
Bundle-ManifestVersion: 2
Bundle-Name: FireDectionSensor
Bundle-SymbolicName: FireDetectionSensorSubscriber
Bundle-Version: 1.0.0.qualifier
Bundle-Activator: com.sa.safetynet.emergency.fire.sensor.SensorActivator
Bundle-RequiredExecutionEnvironment: JavaSE-18
Automatic-Module-Name: FireDectionSensor
Import-Package: com.sa.safetynet.emergency.service,
org.osgi.framework;version="1.3.0"
Export-Package: com.sa.safetynet.emergency.fire.sensor

GasDetectionSensorSubscriber

Manifest-Version: 1.0

Bundle-ManifestVersion: 2

Bundle-Name: GasDetectionSensor

Bundle-SymbolicName: GasDetectionSensorSubscriber

Bundle-Version: 1.0.0.qualifier

Bundle-Activator: com.sa.safetynet.emergency.gas.sensor.SensorActivator

Bundle-RequiredExecutionEnvironment: JavaSE-18

Automatic-Module-Name: GasDetectionSensor

Import-Package: com.sa.safetynet.emergency.service,

org.osgi.framework;version="1.3.0"

Export-Package: com.sa.safetynet.emergency.gas.sensor

Commands

Bundle ID	Module Name
2	ACControlSensorSubscriber_1.0.0.qualifier
3	AlertEmergencyPublisher_1.0.0.qualifier
4	AutomatedDoorSystemPublisher_1.0.0.qualifier
5	EmergencyServicePublisher_1.0.0.qualifier
6	EmployeeDetectionPublisher_1.0.0.qualifier
7	FaceDetectionSubscriber_1.0.0.qualifier
8	FireDetectionSensorSubscriber_1.0.0.qualifier
9	GasDetectionSensorSubscriber_1.0.0.qualifier
10	HeatControlSensorSubscriber_1.0.0.qualifier
11	LightControlSensorSubscriber_1.0.0.qualifier
12	NotificationSystem_1.0.0.qualifier
13	PowerAlertSubscriber_1.0.0.qualifier
14	PowerMonitorSubscriber_1.0.0.qualifier
15	PowerPublisherService_1.0.0.qualifier
16	SolarServicePublisher_1.0.0.qualifier
17	WeathersServicePublisher_1.0.0.qualifier

Step 1 -> Run Configurations

Step 2 -> ss

Step 3 -> start 15

Step 4 -> start 13

Step 5 -> start 3

Step 6 -> start 17

Step 7 -> start 16

Step 8 -> start 2

Step 9 -> start 10

Step 10 -> start 11

Step 11 -> start 4

Step 12 -> start 6

Step 13 -> start 12

Step 14 -> start 7

Step 15 -> start 14

Step 16 -> start 5

Step 17 -> start 8

Step 18 -> start 9

Step 19 -> stop 9

Step 20 -> stop 8

Step 21 -> stop 5

Step 22 -> stop 14

Step 23 -> stop 7

Step 24 -> stop 12

Step 25 -> stop 6

Step 26 -> stop 4

Step 27 -> stop 11

Step 28 -> stop 10

Step 29 -> stop 2

Step 30 -> stop 16

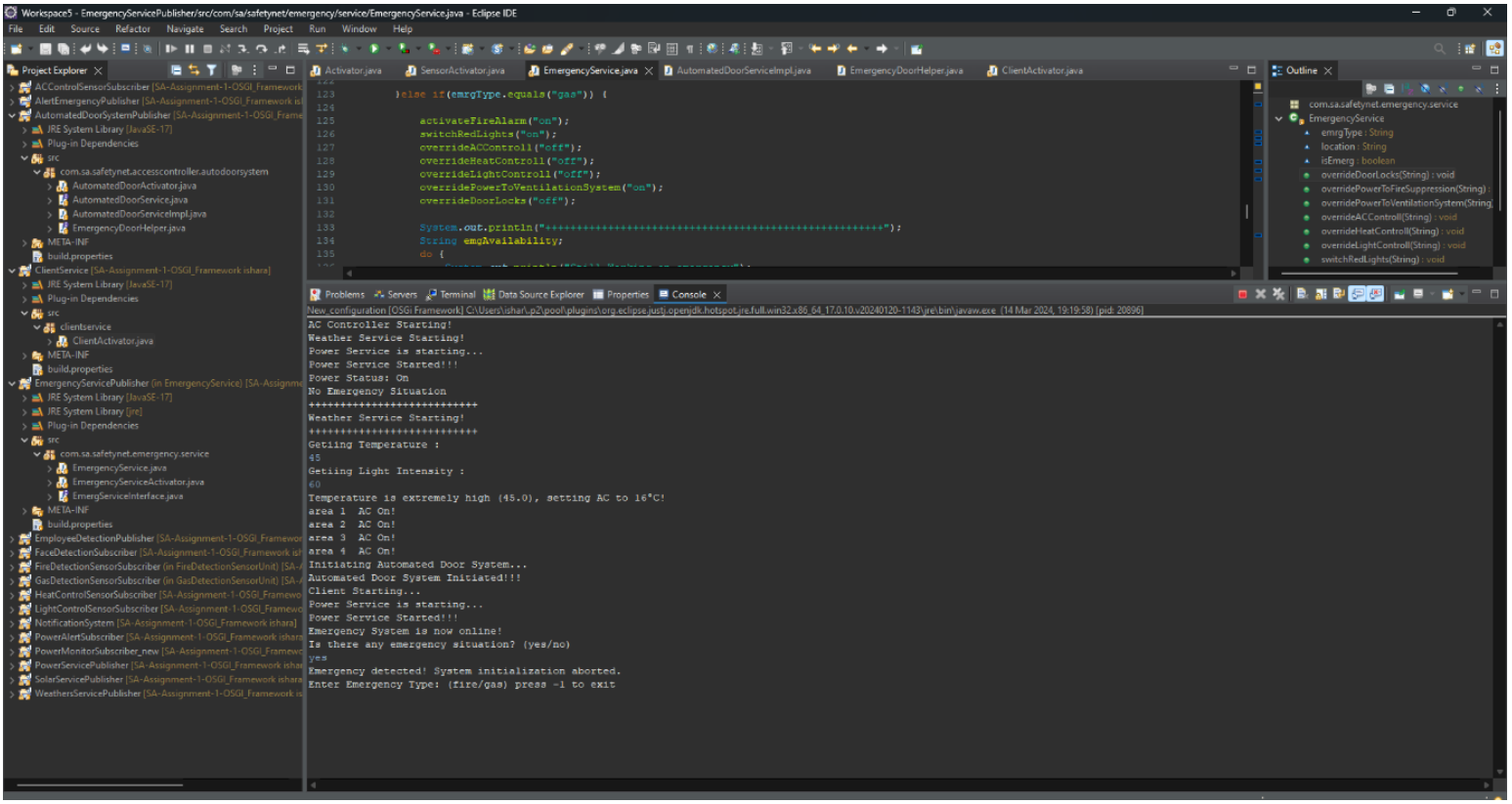
Step 31 -> stop 17

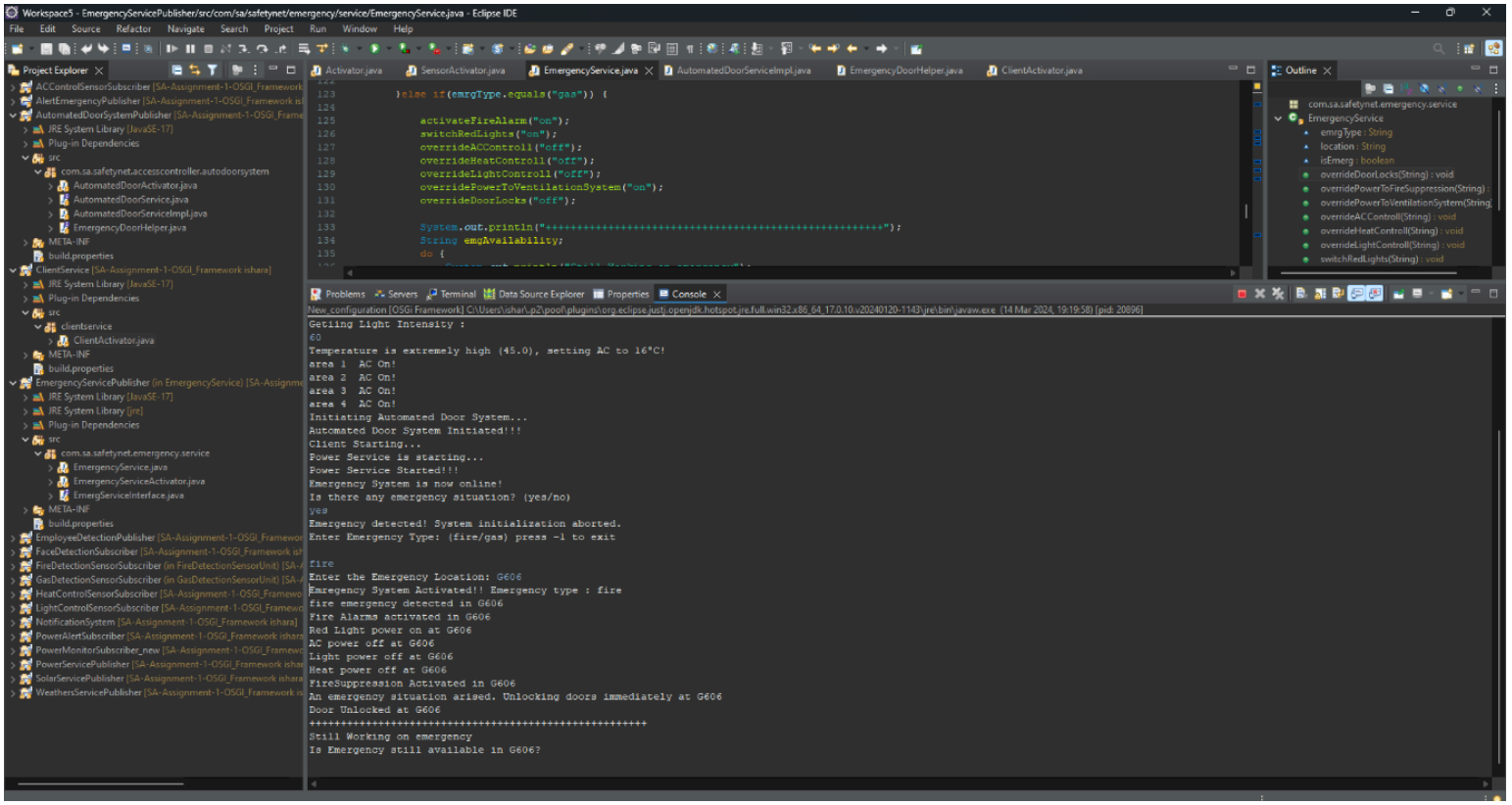
Step 32 -> stop 3

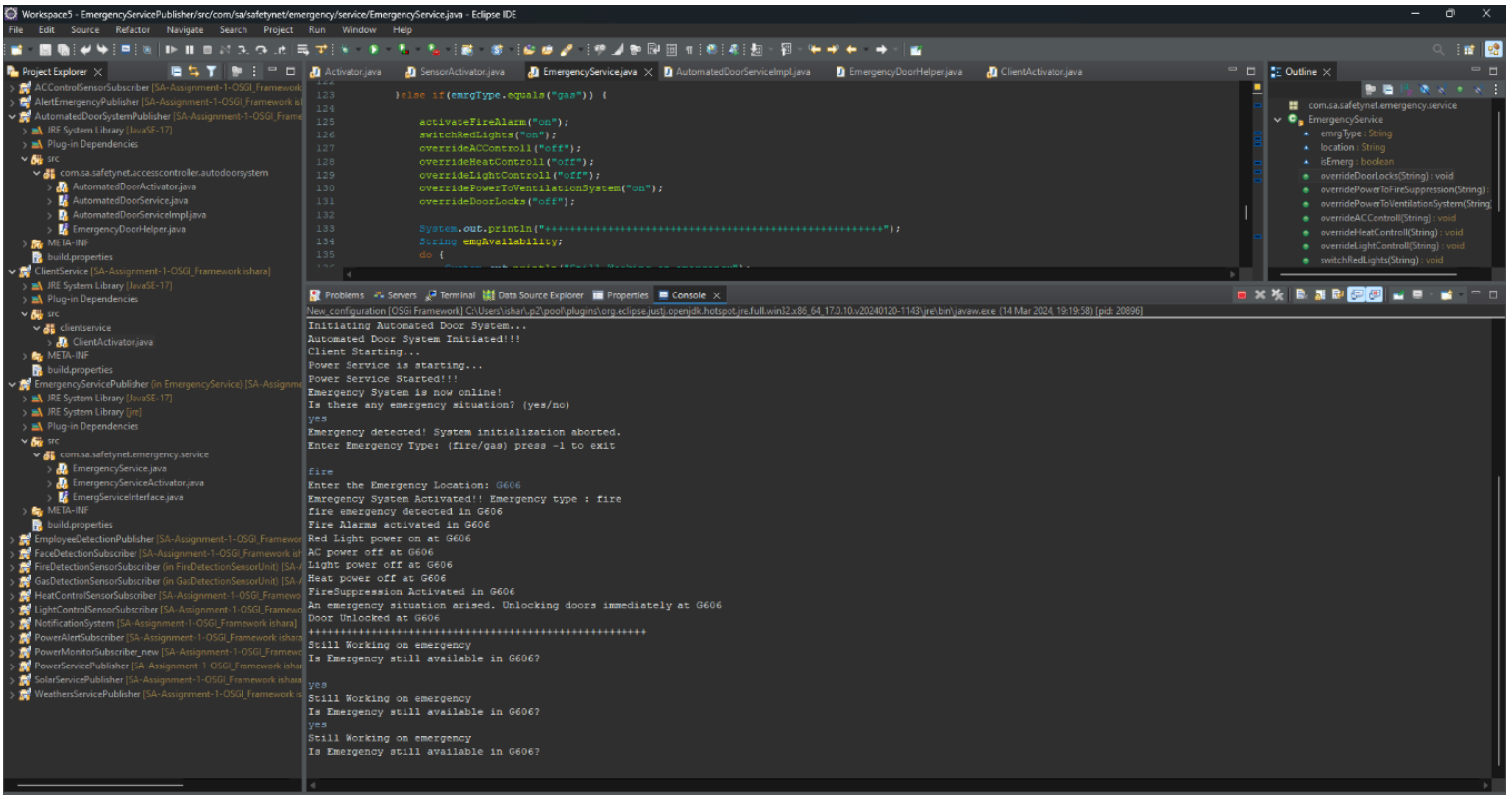
Step 33 -> stop 13

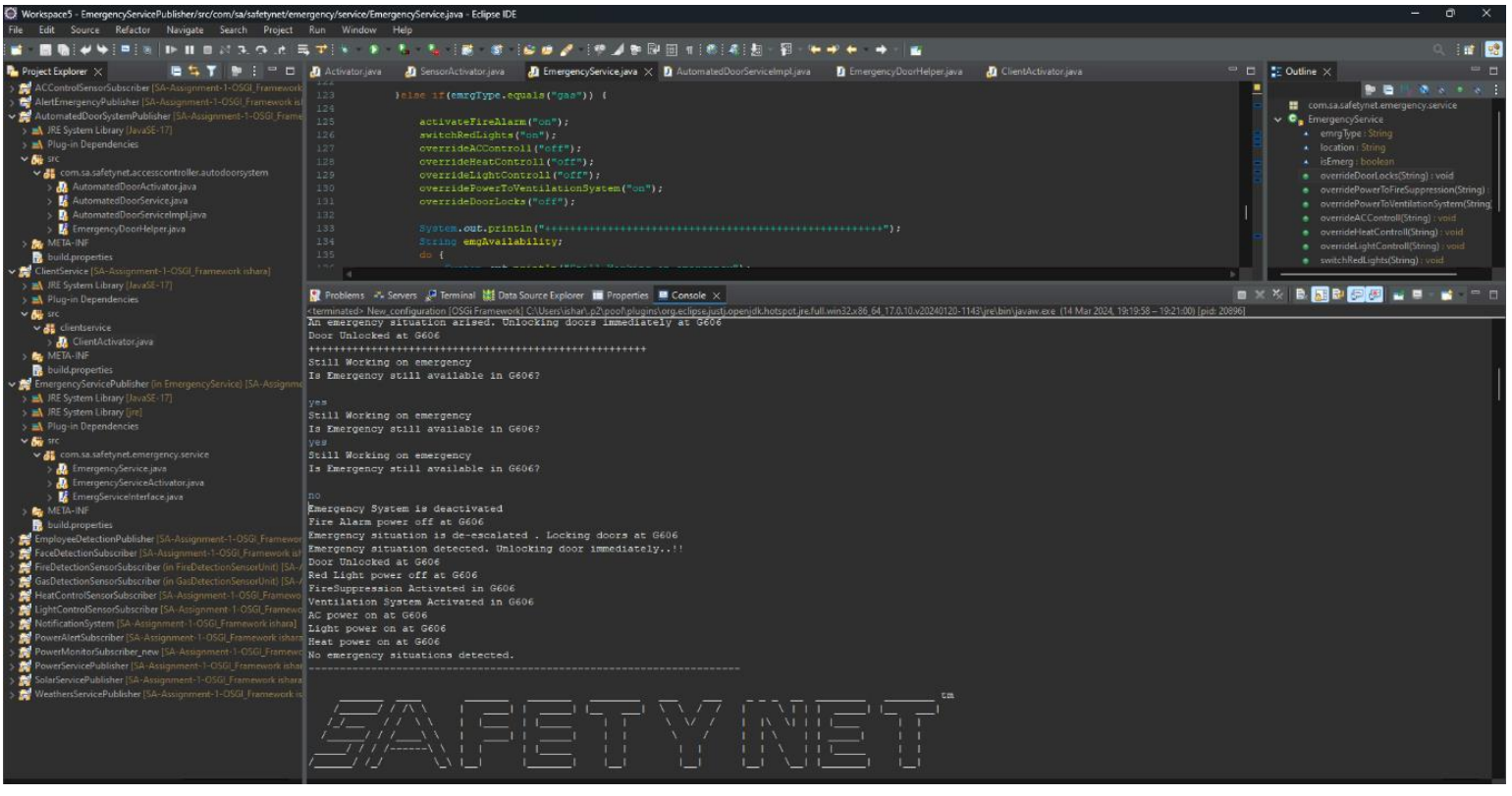
Step 34 -> stop 15

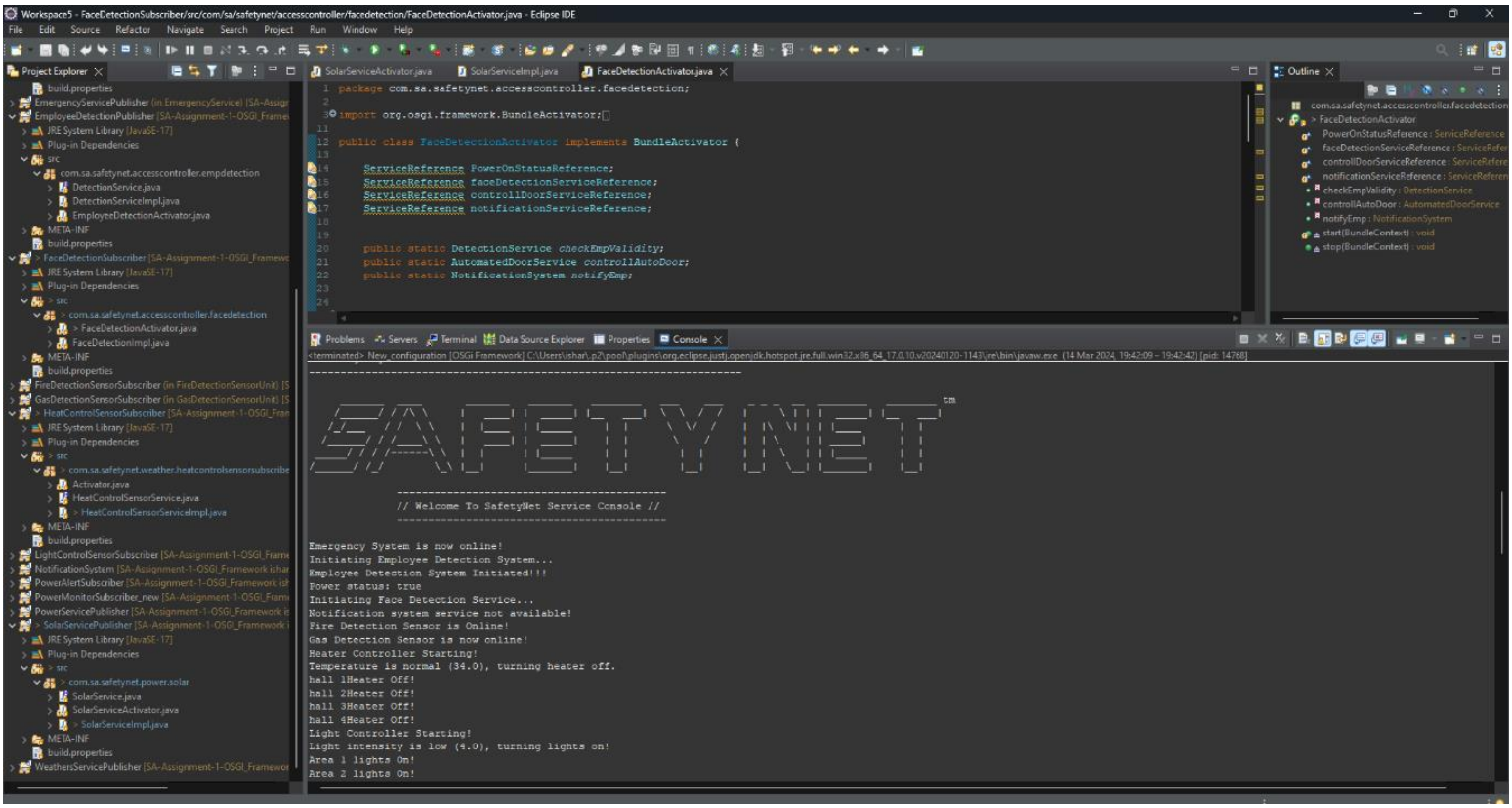
Sample Screenshots

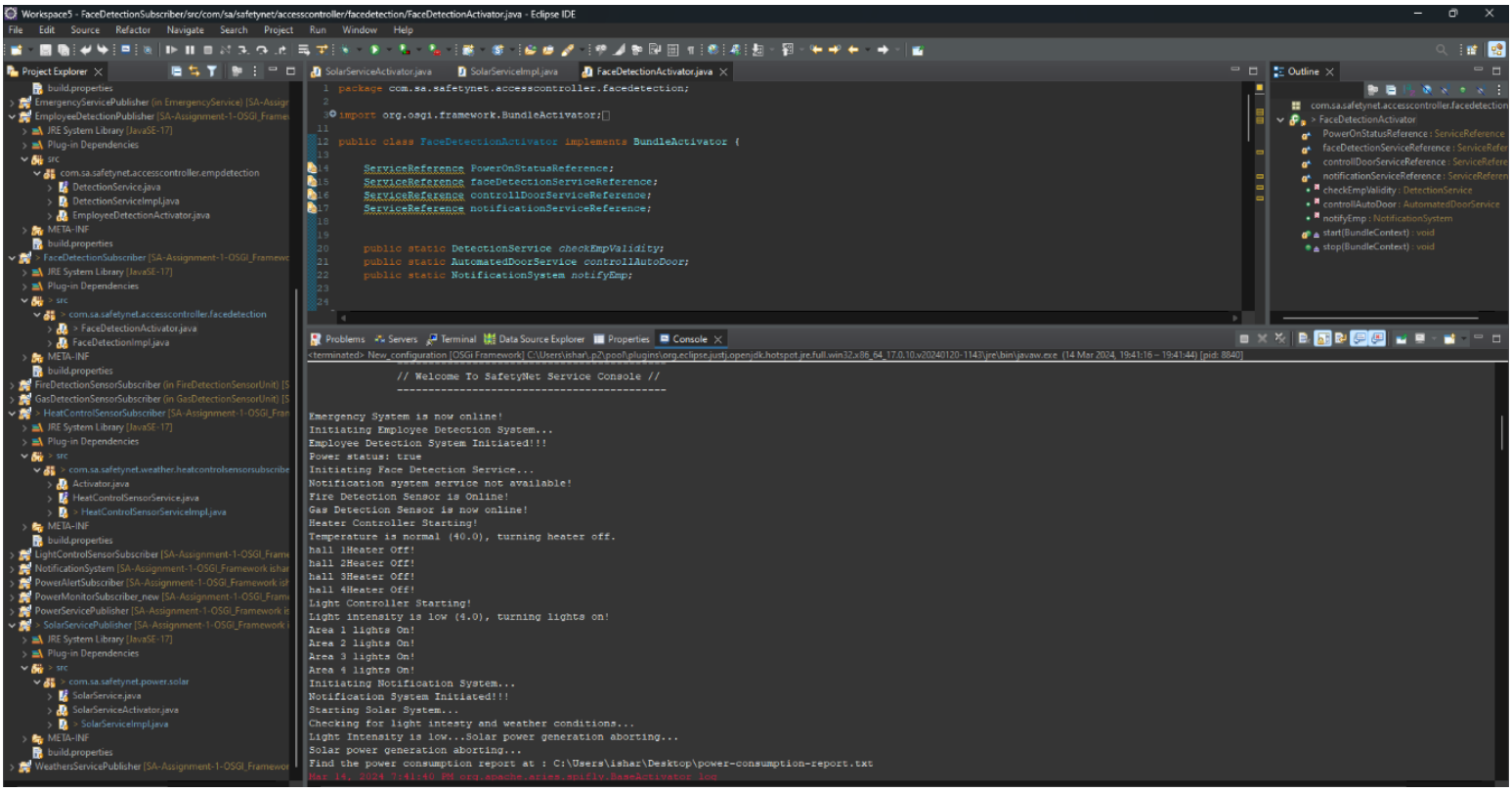


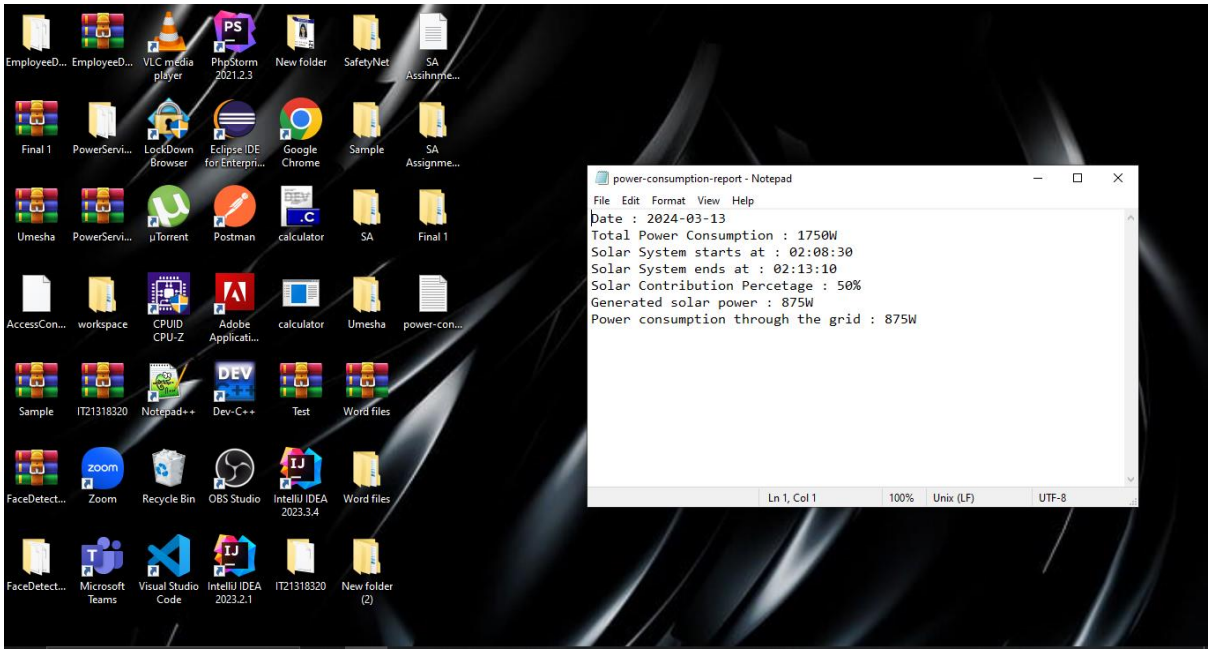



Workspace5 - EmergencyServicePublisher/src/com/sa/safetynet/emergency/service/EmergencyService.java - Eclipse IDE
File Edit Source Refactor Navigate Search Project Run Window Help
Project Explorer
Activator.java
SensorActivator.java
EmergencyService.java
AutomatedDoorServiceImpl.java
EmergencyDoorHelper.java
ClientActivator.java
Outline
}else if(emrgType.equals("gas")) {
activateFireAlarm("on");
switchRedLights("on");
overrideACControll("off");
overrideHeatControll("off");
overrideLightControll("off");
overrideDoorLocks("off");
System.out.println("++");
String emgAvailability;
do {
Problems Servers Terminal Data Source Explorer Properties Console
New_configuration [OSGi Framework] C:\Users\ishar\.p2\pool\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_17.0.10.v20240120-1143\jre\bin\javaw.exe (14 Mar 2024, 19:19:58) [pid: 20896]
Initiating Automated Door System...
Automated Door System Initiated!!!
Client Starting...
Power Service is starting...
Power Service Started!!!
Emergency System is now online!
Is there any emergency situation? (yes/no)
yes
Emergency detected! System initialization aborted.
Enter Emergency Type: (fire/gas) press -1 to exit
fire
Enter the Emergency Location: G606
Emregency System Activated!! Emergency type : fire
Fire emergency detected in G606
Fire Alarms activated in G606
Red Light power on at G606
AC power off at G606
Light power off at G606
Heat power off at G606
FireSuppression Activated in G606
An emergency situation arised. Unlocking doors immediately at G606
Door Unlocked at G606
++
Still Working on emergency
Is Emergency still available in G606?
yes
Still Working on emergency
Is Emergency still available in G606?
yes
Still Working on emergency
Is Emergency still available in G606?


Workspace5 - EmergencyServicePublisher/src/com/sa/safetynet/emergency/service/EmergencyService.java - Eclipse IDE
File Edit Source Refactor Navigate Search Project Run Window Help
Project Explorer
Activator.java
SensorActivator.java
EmergencyService.java
AutomatedDoorServiceImpl.java
EmergencyDoorHelper.java
ClientActivator.java
Outline
}else if(emrgType.equals("gas")) {
activateFireAlarm("on");
switchRedLights("on");
overrideACControll("off");
overrideHeatControll("off");
overrideLightControll("off");
overrideDoorLocks("off");
System.out.println("++");
String emgAvailability;
do {
Problems Servers Terminal Data Source Explorer Properties Console
<terminated> New_configuration [OSGi Framework] C:\Users\ishar\.p2\pool\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_17.0.10.v20240120-1143\jre\bin\javaw.exe (14 Mar 2024, 19:19:58 – 19:21:00) [pid: 20896]
An emergency situation arised. Unlocking doors immediately at G606
Door Unlocked at G606
++
Still Working on emergency
Is Emergency still available in G606?
yes
Still Working on emergency
Is Emergency still available in G606?
yes
Still Working on emergency
Is Emergency still available in G606?
no
Emergency System is deactivated
Fire Alarm power off at G606
Emergency situation is de-escalated . Locking doors at G606
Emergency situation detected. Unlocking door immediately..!!
Door Unlocked at G606
Red Light power off at G606
FireSuppression Activated in G606
Ventilation System Activated in G606
AC power on at G606
Light power on at G606
Heat power on at G606
No emergency situations detected.


Workspace5 - FaceDetectionSubscriber/src/com/sa/safetynet/accesscontroller/facedetection/FaceDetectionActivator.java - Eclipse IDE
File Edit Source Refactor Navigate Search Project Run Window Help
Project Explorer
SolarServiceActivator.java
SolarServiceImpl.java
FaceDetectionActivator.java
package com.sa.safetynet.accesscontroller.facedetection;
import org.osgi.framework.BundleActivator;
public class FaceDetectionActivator implements BundleActivator {
ServiceReference PowerOnStatusReference;
ServiceReference faceDetectionServiceReference;
ServiceReference controllDoorServiceReference;
ServiceReference notificationServiceReference;
public static DetectionService checkEmpValidity;
public static AutomatedDoorService controllAutoDoor;
public static NotificationSystem notifyEmp;
Outline
com.sa.safetynet.accesscontroller.facedetection
FaceDetectionActivator
PowerOnStatusReference : ServiceReference
faceDetectionServiceReference : ServiceRefer
controllDoorServiceReference : ServiceRefere
notificationServiceReference : ServiceReferen
checkEmpValidity : DetectionService
controllAutoDoor : AutomatedDoorService
notifyEmp : NotificationSystem
start(BundleContext) : void
stop(BundleContext) : void
Problems Servers Terminal Data Source Explorer Properties Console
<terminated> New_configuration [OSGi Framework] C:\Users\ishar\.p2\pool\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_17.0.10.v20240120-1143\jre\bin\javaw.exe (14 Mar 2024, 19:42:09 – 19:42:42) [pid: 14768]
// Welcome To SafetyNet Service Console //
Emergency System is now online!
Initiating Employee Detection System...
Employee Detection System Initiated!!!
Power status: true
Initiating Face Detection Service...
Notification system service not available!
Fire Detection Sensor is Online!
Gas Detection Sensor is now online!
Heater Controller Starting!
Temperature is normal (34.0), turning heater off.
hall 1Heater Off!
hall 2Heater Off!
hall 3Heater Off!
hall 4Heater Off!
Light Controller Starting!
Light intensity is low (4.0), turning lights on!
Area 1 lights On!
Area 2 lights On!


Workspace5 - FaceDetectionSubscriber/src/com/sa/safetynet/accesscontroller/facedetection/FaceDetectionActivator.java - Eclipse IDE
File Edit Source Refactor Navigate Search Project Run Window Help
Project Explorer
SolarServiceActivator.java
SolarServiceImpl.java
FaceDetectionActivator.java
package com.sa.safetynet.accesscontroller.facedetection;
import org.osgi.framework.BundleActivator;
public class FaceDetectionActivator implements BundleActivator {
ServiceReference PowerOnStatusReference;
ServiceReference faceDetectionServiceReference;
ServiceReference controllDoorServiceReference;
ServiceReference notificationServiceReference;
public static DetectionService checkEmpValidity;
public static AutomatedDoorService controllAutoDoor;
public static NotificationSystem notifyEmp;
Outline
com.sa.safetynet.accesscontroller.facedetection
FaceDetectionActivator
PowerOnStatusReference : ServiceReference
faceDetectionServiceReference : ServiceRefer
controllDoorServiceReference : ServiceRefere
notificationServiceReference : ServiceReferen
checkEmpValidity : DetectionService
controllAutoDoor : AutomatedDoorService
notifyEmp : NotificationSystem
start(BundleContext) : void
stop(BundleContext) : void
Problems Servers Terminal Data Source Explorer Properties Console
<terminated> New_configuration [OSGi Framework] C:\Users\ishar\.p2\pool\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_17.0.10.v20240120-1143\jre\bin\javaw.exe (14 Mar 2024, 19:41:16 – 19:41:44) [pid: 8840]
// Welcome To SafetyNet Service Console //
Emergency System is now online!
Initiating Employee Detection System...
Employee Detection System Initiated!!!
Power status: true
Initiating Face Detection Service...
Notification system service not available!
Fire Detection Sensor is Online!
Gas Detection Sensor is now online!
Heater Controller Starting!
Temperature is normal (40.0), turning heater off.
hall 1Heater Off!
hall 2Heater Off!
hall 3Heater Off!
hall 4Heater Off!
Light Controller Starting!
Light intensity is low (4.0), turning lights on!
Area 1 lights On!
Area 2 lights On!
Area 3 lights On!
Area 4 lights On!
Initiating Notification System...
Notification System Initiated!!!
Starting Solar System...
Checking for light intesty and weather conditions...
Light Intensity is low...Solar power generation aborting...
Solar power generation aborting...
Find the power consumption report at : C:\Users\ishar\Desktop\power-consumption-report.txt


power-consumption-report - Notepad
File Edit Format View Help
Date : 2024-03-13
Total Power Consumption : 1750W
Solar System starts at : 02:08:30
Solar System ends at : 02:13:10
Solar Contribution Percetage : 50%
Generated solar power : 875W
Power consumption through the grid : 875W
Ln 1, Col 1
100%
Unix (LF)
UTF-8