Case Study: Home Automation

Problem Statement

The goal of this project is to design and implement a Home Automation System that enables remote management and control of various devices and gadgets within a house. The system is designed to support multiple rooms, each containing different devices, with the ability to track their status, operational time, and allow users to remotely control these devices.

Key Requirements

1. Multiple Rooms in the House:

The house can have multiple rooms, including but not limited to:
Kitchen
Living Area
Dining Area
Bedroom
Washroom
Corridors

2. Devices in Each Room:

Each room may contain various devices, such as:
Electronic Devices (e.g., televisions, lights, air conditioners)
Lights
Air Conditioners
Televisions
Showers

3. Add Devices to Rooms:

The system should allow users to add devices to any room.

4. Remote Control of Devices:

Users should be able to remotely turn devices on and off via the application.

5. Status Monitoring:

The system should provide the functionality to check the status of each device in each room, including whether the device is turned on or off.

6. Track Device Usage Time:

The system should keep track of the total time a device has been in its current state (on or off).

7. Scalability for Future Devices:

The system should be able to accommodate new device types as they are added in the future, without requiring major changes to the core structure.

GITHUB : THEBMPATIL (https://github.com/TheBMPatil/Java-Case-Study-Home-Automation)

:\Users\bhagv\.jdks\temurin-21.0.4\bin\java.exe "-javaagent:C:\Program Files\JetBrains\IntelliJ IDEA Community Edition 2024.3.1.1\lib\idea_rt.jar=54190:C:\Program Files\JetBrains\IntelliJ IDEA Community Edition 2024.3.1.1\bin" -Dfile.encoding=UTF-8 -Dsun.stdout.encoding=UTF-8 -Dsun.stderr.encoding=UTF-8 -classpath "D:\Bhagvat Data\IntellijProjects\Home Automation Case Study\out\production\Home Automation Case Study" com.bm.homeautomation.MainApp
Shree Ganesh...! :>

Welcome to Home Automation!
Please enter your password: 8408
Password validated. Access granted!
Welcome Home...
What do you want to do?
1. Home Management
2. Rooms Management
3. Device Management
0. Exit
1
What do you want to do?
1. Rename House
2. Update House Number
1
Old House Name: No Name
Enter new House Name: Firstbit Fam
House renamed successfully to: Firstbit Fam
What do you want to do?
1. Home Management
2. Rooms Management
3. Device Management
0. Exit
2
What do you want to do?
1. Add Rooms
2. Delete Rooms
3. List All Rooms

1
Which room do you want to add?
1: Hall 2: Kitchen   3: Living Area   4: Dining Area   5: Bedroom   6: Washroom 7: Corridors   0: Cancel
1
Enter Room ID: 1
Room added successfully: ID 1, Type Hall
Which room do you want to add?
1: Hall 2: Kitchen   3: Living Area   4: Dining Area   5: Bedroom   6: Washroom 7: Corridors   0: Cancel
2
Enter Room ID: 2
Room added successfully: ID 2, Type Kitchen
Which room do you want to add?
1: Hall 2: Kitchen   3: Living Area   4: Dining Area   5: Bedroom   6: Washroom 7: Corridors   0: Cancel
3
Enter Room ID: 33
Room added successfully: ID 33, Type LivingArea

Which room do you want to add?
1: Hall 2: Kitchen   3: Living Area   4: Dining Area   5: Bedroom   6: Washroom 7: Corridors   0: Cancel
4
Enter Room ID: 4
Room added successfully: ID 4, Type DiningRoom
Which room do you want to add?
1: Hall 2: Kitchen   3: Living Area   4: Dining Area   5: Bedroom   6: Washroom 7: Corridors   0: Cancel
5
Enter Room ID: 5
Room added successfully: ID 5, Type BedRoom
Which room do you want to add?
1: Hall 2: Kitchen   3: Living Area   4: Dining Area   5: Bedroom   6: Washroom 7: Corridors   0: Cancel
6
Enter Room ID: 5
Room ID already exists. Please use a unique ID.
What do you want to do?
1. Home Management
2. Rooms Management
3. Device Management
0. Exit
2
What do you want to do?
1. Add Rooms
2. Delete Rooms
3. List All Rooms
1
Which room do you want to add?
1: Hall 2: Kitchen   3: Living Area   4: Dining Area   5: Bedroom   6: Washroom 7: Corridors   0: Cancel
6
Enter Room ID: 6
Room added successfully: ID 6, Type WashRoom
Which room do you want to add?
1: Hall 2: Kitchen   3: Living Area   4: Dining Area   5: Bedroom   6: Washroom 7: Corridors   0: Cancel
7
Enter Room ID: 7
Room added successfully: ID 7, Type Corridors
Which room do you want to add?
1: Hall 2: Kitchen   3: Living Area   4: Dining Area   5: Bedroom   6: Washroom 7: Corridors   0: Cancel
8
Please enter a number between 0 and 7.
0
Room addition cancelled.
What do you want to do?
1. Home Management
2. Rooms Management
3. Device Management
0. Exit
3

Available Rooms:
Room ID: 1 Room type : Hall
Room ID: 2 Room type : Kitchen
Room ID: 33 Room type : LivingArea
Room ID: 4 Room type : DiningRoom
Room ID: 5 Room type : BedRoom
Room ID: 6 Room type : WashRoom
Room ID: 7 Room type : Corridors
Enter Room ID to access devices: 2
What do you want to do?
1 : Add new Device
2 : Remove Device
3 : Device specific options
0 : Exit
Enter your choice: 1
Adding new Device
Enter which device you want to add:
1 : AC 2 : Fridge   3 : Induction
4 : Light   5 : Music Player   6 : Oven
7 : Showers   8 : TV   9 : Washing Machine
0 : Cancel
1
Enter device ID: 1
AC added successfully with ID 1.
What do you want to do?
1 : Add new Device
2 : Remove Device
3 : Device specific options
0 : Exit
Enter your choice: 1
Adding new Device
Enter which device you want to add:
1 : AC 2 : Fridge   3 : Induction
4 : Light   5 : Music Player   6 : Oven
7 : Showers   8 : TV   9 : Washing Machine
0 : Cancel
2
Enter device ID: 2
Fridge added successfully with ID 2.
What do you want to do?
1 : Add new Device
2 : Remove Device
3 : Device specific options
0 : Exit
Enter your choice: 1
Adding new Device
Enter which device you want to add:
1 : AC 2 : Fridge   3 : Induction
4 : Light   5 : Music Player   6 : Oven
7 : Showers   8 : TV   9 : Washing Machine
0 : Cancel
3
Enter device ID: 3
Induction added successfully with ID 3.

What do you want to do?
1 : Add new Device
2 : Remove Device
3 : Device specific options
0 : Exit
Enter your choice: 1
Adding new Device
Enter which device you want to add:
1 : AC 2 : Fridge   3 : Induction
4 : Light   5 : Music Player   6 : Oven
7 : Showers   8 : TV   9 : Washing Machine
0 : Cancel
4
Enter device ID: 4
Light added successfully with ID 4.
What do you want to do?
1 : Add new Device
2 : Remove Device
3 : Device specific options
0 : Exit
Enter your choice: 1
Adding new Device
Enter which device you want to add:
1 : AC 2 : Fridge   3 : Induction
4 : Light   5 : Music Player   6 : Oven
7 : Showers   8 : TV   9 : Washing Machine
0 : Cancel
5
Enter device ID: 5
MusicPlayer added successfully with ID 5.
What do you want to do?
1 : Add new Device
2 : Remove Device
3 : Device specific options
0 : Exit
Enter your choice: 1
Adding new Device
Enter which device you want to add:
1 : AC 2 : Fridge   3 : Induction
4 : Light   5 : Music Player   6 : Oven
7 : Showers   8 : TV   9 : Washing Machine
0 : Cancel
6
Enter device ID: 6
Oven added successfully with ID 6.
What do you want to do?
1 : Add new Device
2 : Remove Device
3 : Device specific options
0 : Exit
Enter your choice: 1
Adding new Device
Enter which device you want to add:
1 : AC 2 : Fridge   3 : Induction

4 : Light   5 : Music Player   6 : Oven
7 : Showers   8 : TV   9 : Washing Machine
0 : Cancel
7
Enter device ID: 7
Showers added successfully with ID 7.
What do you want to do?
1 : Add new Device
2 : Remove Device
3 : Device specific options
0 : Exit
Enter your choice: 1
Adding new Device
Enter which device you want to add:
1 : AC 2 : Fridge   3 : Induction
4 : Light   5 : Music Player   6 : Oven
7 : Showers   8 : TV   9 : Washing Machine
0 : Cancel
8
Enter device ID: 8
TV added successfully with ID 8.
What do you want to do?
1 : Add new Device
2 : Remove Device
3 : Device specific options
0 : Exit
Enter your choice: 1
Adding new Device
Enter which device you want to add:
1 : AC 2 : Fridge   3 : Induction
4 : Light   5 : Music Player   6 : Oven
7 : Showers   8 : TV   9 : Washing Machine
0 : Cancel
9
Enter device ID: 9
WashingMachine added successfully with ID 9.
What do you want to do?
1 : Add new Device
2 : Remove Device
3 : Device specific options
0 : Exit
Enter your choice: 1
Adding new Device
Enter which device you want to add:
1 : AC 2 : Fridge   3 : Induction
4 : Light   5 : Music Player   6 : Oven
7 : Showers   8 : TV   9 : Washing Machine
0 : Cancel
9
Enter device ID: 9
Device ID already exists. Please use a unique ID.
What do you want to do?
1 : Add new Device
2 : Remove Device

3 : Device specific options
0 : Exit
Enter your choice: 3
Available Devices:
Device ID: 1 Device type : AC
Device ID: 2 Device type : Fridge
Device ID: 3 Device type : Induction
Device ID: 4 Device type : Light
Device ID: 5 Device type : MusicPlayer
Device ID: 6 Device type : Oven
Device ID: 7 Device type : Showers
Device ID: 8 Device type : TV
Device ID: 9 Device type : WashingMachine
Enter Device ID to access options: 1
Device name : AC
1 : Check Device status
2 : Check Device Active time
3 : Check Device Status and turn it ON or OFF
4 : Special Options
0 : Exit
Enter your choice: 1
Device is OFF
Available Devices:
Device ID: 1 Device type : AC
Device ID: 2 Device type : Fridge
Device ID: 3 Device type : Induction
Device ID: 4 Device type : Light
Device ID: 5 Device type : MusicPlayer
Device ID: 6 Device type : Oven
Device ID: 7 Device type : Showers
Device ID: 8 Device type : TV
Device ID: 9 Device type : WashingMachine
Enter Device ID to access options: 1
Device name : AC
1 : Check Device status
2 : Check Device Active time
3 : Check Device Status and turn it ON or OFF
4 : Special Options
0 : Exit
Enter your choice: 2
Device is OFF for: 0 Mins.
Available Devices:
Device ID: 1 Device type : AC
Device ID: 2 Device type : Fridge
Device ID: 3 Device type : Induction
Device ID: 4 Device type : Light
Device ID: 5 Device type : MusicPlayer
Device ID: 6 Device type : Oven
Device ID: 7 Device type : Showers
Device ID: 8 Device type : TV
Device ID: 9 Device type : WashingMachine
Enter Device ID to access options: 1
Device name : AC
1 : Check Device status

2 : Check Device Active time
3 : Check Device Status and turn it ON or OFF
4 : Special Options
0 : Exit
Enter your choice: 3
com.bm.devices.classes.AC is OFF for: 0 minutes
Do you want to turn it ON? (Yes: 1 / No: 2)
1
com.bm.devices.classes.AC turned on.
Available Devices:
Device ID: 1 Device type : AC
Device ID: 2 Device type : Fridge
Device ID: 3 Device type : Induction
Device ID: 4 Device type : Light
Device ID: 5 Device type : MusicPlayer
Device ID: 6 Device type : Oven
Device ID: 7 Device type : Showers
Device ID: 8 Device type : TV
Device ID: 9 Device type : WashingMachine
Enter Device ID to access options: 1
Device name : AC
1 : Check Device status
2 : Check Device Active time
3 : Check Device Status and turn it ON or OFF
4 : Special Options
0 : Exit
Enter your choice: 4

Special Operations for the AC:
1. Increase Temperature
2. Decrease Temperature
3. Change Mode
0. Exit Special Operations
Enter your choice:
1
Temperature increased to: 25.0°C

Special Operations for the AC:
1. Increase Temperature
2. Decrease Temperature
3. Change Mode
0. Exit Special Operations
Enter your choice:
1
Temperature increased to: 26.0°C

Special Operations for the AC:
1. Increase Temperature
2. Decrease Temperature
3. Change Mode
0. Exit Special Operations
Enter your choice:
2
Temperature decreased to: 25.0°C

Special Operations for the AC:
1. Increase Temperature
2. Decrease Temperature
3. Change Mode
0. Exit Special Operations
Enter your choice:
2
Temperature decreased to: 24.0°C

Special Operations for the AC:
1. Increase Temperature
2. Decrease Temperature
3. Change Mode
0. Exit Special Operations
Enter your choice:
2
Temperature decreased to: 23.0°C

Special Operations for the AC:
1. Increase Temperature
2. Decrease Temperature
3. Change Mode
0. Exit Special Operations
Enter your choice:
2
Temperature decreased to: 22.0°C

Special Operations for the AC:
1. Increase Temperature
2. Decrease Temperature
3. Change Mode
0. Exit Special Operations
Enter your choice:
1
Temperature increased to: 23.0°C

Special Operations for the AC:
1. Increase Temperature
2. Decrease Temperature
3. Change Mode
0. Exit Special Operations
Enter your choice:
1
Temperature increased to: 24.0°C

Special Operations for the AC:
1. Increase Temperature
2. Decrease Temperature
3. Change Mode
0. Exit Special Operations
Enter your choice:
1
Temperature increased to: 25.0°C

Special Operations for the AC:
1. Increase Temperature
2. Decrease Temperature
3. Change Mode
0. Exit Special Operations
Enter your choice:
1
Temperature increased to: 26.0°C

Special Operations for the AC:
1. Increase Temperature
2. Decrease Temperature
3. Change Mode
0. Exit Special Operations
Enter your choice:
1
Temperature increased to: 27.0°C

Special Operations for the AC:
1. Increase Temperature
2. Decrease Temperature
3. Change Mode
0. Exit Special Operations
Enter your choice:
3
Available Modes:
1. Cooling
2. Heating
3. Fan Only
4. Dry Mode
Enter the mode number to select:
1
Mode changed to: Cooling

Special Operations for the AC:
1. Increase Temperature
2. Decrease Temperature
3. Change Mode
0. Exit Special Operations
Enter your choice:
3
Available Modes:
1. Cooling
2. Heating
3. Fan Only
4. Dry Mode
Enter the mode number to select:
4
Mode changed to: Dry Mode

Special Operations for the AC:
1. Increase Temperature
2. Decrease Temperature

3. Change Mode
0. Exit Special Operations
Enter your choice:
0
Exiting special operations...
Available Devices:
Device ID: 1 Device type : AC
Device ID: 2 Device type : Fridge
Device ID: 3 Device type : Induction
Device ID: 4 Device type : Light
Device ID: 5 Device type : MusicPlayer
Device ID: 6 Device type : Oven
Device ID: 7 Device type : Showers
Device ID: 8 Device type : TV
Device ID: 9 Device type : WashingMachine
Enter Device ID to access options: 2
Device name : Fridge
1 : Check Device status
2 : Check Device Active time
3 : Check Device Status and turn it ON or OFF
4 : Special Options
0 : Exit
Enter your choice: 4

Special Operations for the Fridge:
1. Increase Temperature
2. Decrease Temperature
3. Change Mode
0. Exit Special Operations
Enter your choice:
1
Current temperature: 5.0°C
Temperature increased to: 6.0°C

Special Operations for the Fridge:
1. Increase Temperature
2. Decrease Temperature
3. Change Mode
0. Exit Special Operations
Enter your choice:
3
Available Modes:
1. Fridge Mode
2. Freezer Mode
3. Power Freeze Mode
4. Power Cool Mode
5. Vacation Mode
6. Eco Mode
Enter the mode number to select:
4
Mode changed to: Power Cool Mode
Temperature set to: 2.0°C

Special Operations for the Fridge:

1. Increase Temperature
2. Decrease Temperature
3. Change Mode
0. Exit Special Operations
Enter your choice:
0
Exiting special operations...
Available Devices:
Device ID: 1 Device type : AC
Device ID: 2 Device type : Fridge
Device ID: 3 Device type : Induction
Device ID: 4 Device type : Light
Device ID: 5 Device type : MusicPlayer
Device ID: 6 Device type : Oven
Device ID: 7 Device type : Showers
Device ID: 8 Device type : TV
Device ID: 9 Device type : WashingMachine
Enter Device ID to access options: 3
Device name : Induction
1 : Check Device status
2 : Check Device Active time
3 : Check Device Status and turn it ON or OFF
4 : Special Options
0 : Exit
Enter your choice: 4
Special Operations Menu:
1. Increase Temperature
2. Decrease Temperature
3. Change Mode
4. Exit Special Operations
Enter your choice:
3
Current mode: Off | Current temperature: 0
Select a mode:
0: Off
1: Boil
2: Simmer
3: Fry
4: Warm
1
Mode changed to: Boil | Temperature set to: 8000
com.bm.devices.classes.Induction turned on.
Do you want to change the mode again? Enter 1 for Yes, 2 for No:
2
Special Operations Menu:
1. Increase Temperature
2. Decrease Temperature
3. Change Mode
4. Exit Special Operations
Enter your choice:
4
Exiting special operations...
Available Devices:
Device ID: 1 Device type : AC

Device ID: 2 Device type : Fridge
Device ID: 3 Device type : Induction
Device ID: 4 Device type : Light
Device ID: 5 Device type : MusicPlayer
Device ID: 6 Device type : Oven
Device ID: 7 Device type : Showers
Device ID: 8 Device type : TV
Device ID: 9 Device type : WashingMachine
Enter Device ID to access options: 4
Device name : Light
1 : Check Device status
2 : Check Device Active time
3 : Check Device Status and turn it ON or OFF
4 : Special Options
0 : Exit
Enter your choice: 4

Special Operations for the Light:
1. Increase Brightness
2. Decrease Brightness
3. View Current Brightness
0. Exit Special Operations
Enter your choice:
3
Current brightness: 50%

Special Operations for the Light:
1. Increase Brightness
2. Decrease Brightness
3. View Current Brightness
0. Exit Special Operations
Enter your choice:
0
Exiting special operations...
Available Devices:
Device ID: 1 Device type : AC
Device ID: 2 Device type : Fridge
Device ID: 3 Device type : Induction
Device ID: 4 Device type : Light
Device ID: 5 Device type : MusicPlayer
Device ID: 6 Device type : Oven
Device ID: 7 Device type : Showers
Device ID: 8 Device type : TV
Device ID: 9 Device type : WashingMachine
Enter Device ID to access options: 5
Device name : MusicPlayer
1 : Check Device status
2 : Check Device Active time
3 : Check Device Status and turn it ON or OFF
4 : Special Options
0 : Exit
Enter your choice: 4
Special operations for the Music Player:
1) Increase volume

2) Decrease volume
3) Change mode
4) Display current status
0) Exit
Invalid input. Please enter a valid number.
3
Current Mode: Normal
Choose Mode:
1) Normal
2) Bass Boost
3) Treble Boost
4) Surround
0) Cancel
2
Current Mode: Bass Boost
Choose Mode:
1) Normal
2) Bass Boost
3) Treble Boost
4) Surround
0) Cancel
0
Mode change canceled.
Mode set to: Bass Boost
Special operations for the Music Player:
1) Increase volume
2) Decrease volume
3) Change mode
4) Display current status
0) Exit
4
Music Player Status:
- Power: Off
- Volume: 10
- Mode: Bass Boost
Special operations for the Music Player:
1) Increase volume
2) Decrease volume
3) Change mode
4) Display current status
0) Exit
0
Exiting special operations.
Available Devices:
Device ID: 1 Device type : AC
Device ID: 2 Device type : Fridge
Device ID: 3 Device type : Induction
Device ID: 4 Device type : Light
Device ID: 5 Device type : MusicPlayer
Device ID: 6 Device type : Oven
Device ID: 7 Device type : Showers
Device ID: 8 Device type : TV
Device ID: 9 Device type : WashingMachine
Enter Device ID to access options: 6

Device name : Oven
1 : Check Device status
2 : Check Device Active time
3 : Check Device Status and turn it ON or OFF
4 : Special Options
0 : Exit
Enter your choice: 4
Special Operations Menu for Oven:
1. Increase Temperature
2. Decrease Temperature
3. Change Mode
4. Exit Special Operations
Enter your choice:
3
Current mode: Off | Current temperature: 0
Select a mode:
0: Off
1: Bake
2: Broil
3: Roast
4: Warm
4
Mode changed to: Warm | Temperature set to: 100
com.bm.devices.classes.Oven turned on.
Do you want to change the mode again? Enter 1 for Yes, 2 for No:
2
Special Operations Menu for Oven:
1. Increase Temperature
2. Decrease Temperature
3. Change Mode
4. Exit Special Operations
Enter your choice:
4
Exiting special operations...
Available Devices:
Device ID: 1 Device type : AC
Device ID: 2 Device type : Fridge
Device ID: 3 Device type : Induction
Device ID: 4 Device type : Light
Device ID: 5 Device type : MusicPlayer
Device ID: 6 Device type : Oven
Device ID: 7 Device type : Showers
Device ID: 8 Device type : TV
Device ID: 9 Device type : WashingMachine
Enter Device ID to access options: 7
Device name : Showers
1 : Check Device status
2 : Check Device Active time
3 : Check Device Status and turn it ON or OFF
4 : Special Options
0 : Exit
Enter your choice: 1
Device is OFF
Available Devices:

Device ID: 1 Device type : AC
Device ID: 2 Device type : Fridge
Device ID: 3 Device type : Induction
Device ID: 4 Device type : Light
Device ID: 5 Device type : MusicPlayer
Device ID: 6 Device type : Oven
Device ID: 7 Device type : Showers
Device ID: 8 Device type : TV
Device ID: 9 Device type : WashingMachine
Enter Device ID to access options: 7
Device name : Showers
1 : Check Device status
2 : Check Device Active time
3 : Check Device Status and turn it ON or OFF
4 : Special Options
0 : Exit
Enter your choice: 3
com.bm.devices.classes.Showers is OFF for: 0 minutes
Do you want to turn it ON? (Yes: 1 / No: 2)
Invalid input. Please enter a valid number.
1
com.bm.devices.classes.Showers turned on.
Available Devices:
Device ID: 1 Device type : AC
Device ID: 2 Device type : Fridge
Device ID: 3 Device type : Induction
Device ID: 4 Device type : Light
Device ID: 5 Device type : MusicPlayer
Device ID: 6 Device type : Oven
Device ID: 7 Device type : Showers
Device ID: 8 Device type : TV
Device ID: 9 Device type : WashingMachine
Enter Device ID to access options: 7
Device name : Showers
1 : Check Device status
2 : Check Device Active time
3 : Check Device Status and turn it ON or OFF
4 : Special Options
0 : Exit
Enter your choice: 4
Special operations for Showers:
1) Increase Temperature
2) Decrease Temperature
3) Change Mode
4) Increase Water Flow
5) Decrease Water Flow
6) Display Current Status
0) Exit
3
Current Mode: Rain
Choose Mode:
1) Rain
2) Jet
3) Mist

4) Massage
0) Cancel
3
Current Mode: Mist
Choose Mode:
1) Rain
2) Jet
3) Mist
4) Massage
0) Cancel
4
Current Mode: Massage
Choose Mode:
1) Rain
2) Jet
3) Mist
4) Massage
0) Cancel
0
Mode change canceled.
Mode set to: Massage
Special operations for Showers:
1) Increase Temperature
2) Decrease Temperature
3) Change Mode
4) Increase Water Flow
5) Decrease Water Flow
6) Display Current Status
0) Exit
4
Current Water Flow: 5 liters/min
Water flow increased to: 6 liters/min
Special operations for Showers:
1) Increase Temperature
2) Decrease Temperature
3) Change Mode
4) Increase Water Flow
5) Decrease Water Flow
6) Display Current Status
0) Exit
4
Current Water Flow: 6 liters/min
Water flow increased to: 7 liters/min
Special operations for Showers:
1) Increase Temperature
2) Decrease Temperature
3) Change Mode
4) Increase Water Flow
5) Decrease Water Flow
6) Display Current Status
0) Exit
4
Current Water Flow: 7 liters/min
Water flow increased to: 8 liters/min

Special operations for Showers:
1) Increase Temperature
2) Decrease Temperature
3) Change Mode
4) Increase Water Flow
5) Decrease Water Flow
6) Display Current Status
0) Exit
6
Shower Status:
- Power: On
- Temperature: 30°C
- Water Flow: 8 liters/min
- Mode: Massage
Special operations for Showers:
1) Increase Temperature
2) Decrease Temperature
3) Change Mode
4) Increase Water Flow
5) Decrease Water Flow
6) Display Current Status
0) Exit
0
Exiting special operations.
Available Devices:
Device ID: 1 Device type : AC
Device ID: 2 Device type : Fridge
Device ID: 3 Device type : Induction
Device ID: 4 Device type : Light
Device ID: 5 Device type : MusicPlayer
Device ID: 6 Device type : Oven
Device ID: 7 Device type : Showers
Device ID: 8 Device type : TV
Device ID: 9 Device type : WashingMachine
Enter Device ID to access options: 9
Device name : WashingMachine
1 : Check Device status
2 : Check Device Active time
3 : Check Device Status and turn it ON or OFF
4 : Special Options
0 : Exit
Enter your choice: 3
com.bm.devices.classes.WashingMachine is OFF for: 0 minutes
Do you want to turn it ON? (Yes: 1 / No: 2)
1
com.bm.devices.classes.WashingMachine turned on.
Available Devices:
Device ID: 1 Device type : AC
Device ID: 2 Device type : Fridge
Device ID: 3 Device type : Induction
Device ID: 4 Device type : Light
Device ID: 5 Device type : MusicPlayer
Device ID: 6 Device type : Oven
Device ID: 7 Device type : Showers

Device ID: 8 Device type : TV
Device ID: 9 Device type : WashingMachine
Enter Device ID to access options: 9
Device name : WashingMachine
1 : Check Device status
2 : Check Device Active time
3 : Check Device Status and turn it ON or OFF
4 : Special Options
0 : Exit
Enter your choice: 4
Special operations for Washing Machine:
1) Increase Water Flow
2) Decrease Water Flow
3) Increase Temperature
4) Decrease Temperature
5) Change Washing Mode
6) Display Current Status
0) Exit
5
Current Washing Mode: Normal
Choose Washing Mode:
1) Normal
2) Delicate
3) Heavy
4) Quick Wash
0) Cancel
3
Current Washing Mode: Heavy
Choose Washing Mode:
1) Normal
2) Delicate
3) Heavy
4) Quick Wash
0) Cancel
0
Mode change canceled.
Washing mode set to: Heavy
Special operations for Washing Machine:
1) Increase Water Flow
2) Decrease Water Flow
3) Increase Temperature
4) Decrease Temperature
5) Change Washing Mode
6) Display Current Status
0) Exit
6
Washing Machine Status:
- Power: On
- Water Flow: 5 liters/min
- Temperature: 30°C
- Washing Mode: Heavy
Special operations for Washing Machine:
1) Increase Water Flow
2) Decrease Water Flow

3) Increase Temperature
4) Decrease Temperature
5) Change Washing Mode
6) Display Current Status
0) Exit
0
Exiting special operations.
Available Devices:
Device ID: 1 Device type : AC
Device ID: 2 Device type : Fridge
Device ID: 3 Device type : Induction
Device ID: 4 Device type : Light
Device ID: 5 Device type : MusicPlayer
Device ID: 6 Device type : Oven
Device ID: 7 Device type : Showers
Device ID: 8 Device type : TV
Device ID: 9 Device type : WashingMachine
Enter Device ID to access options: 0
Invalid Device ID. Please try again.
What do you want to do?
1 : Add new Device
2 : Remove Device
3 : Device specific options
0 : Exit
Enter your choice: 0
Exiting the program...
What do you want to do?
1. Home Management
2. Rooms Management
3. Device Management
0. Exit
1
What do you want to do?
1. Rename House
2. Update House Number
2
Old House Number: 123
Enter new House Number: 12
House number updated successfully to: 12
What do you want to do?
1. Home Management
2. Rooms Management
3. Device Management
0. Exit
2
What do you want to do?
1. Add Rooms
2. Delete Rooms
3. List All Rooms
2
Available rooms:
Room ID: 1, Type: Hall
Room ID: 2, Type: Kitchen
Room ID: 33, Type: LivingArea

Room ID: 4, Type: DiningRoom
Room ID: 5, Type: BedRoom
Room ID: 6, Type: WashRoom
Room ID: 7, Type: Corridors
Enter Room ID to delete: 33
Room with ID 33 deleted successfully.
What do you want to do?
1. Home Management
2. Rooms Management
3. Device Management
0. Exit
2
What do you want to do?
1. Add Rooms
2. Delete Rooms
3. List All Rooms
2
Available rooms:
Room ID: 1, Type: Hall
Room ID: 2, Type: Kitchen
Room ID: 4, Type: DiningRoom
Room ID: 5, Type: BedRoom
Room ID: 6, Type: WashRoom
Room ID: 7, Type: Corridors
Enter Room ID to delete: 0
Room with ID 0 not found.
What do you want to do?
1. Home Management
2. Rooms Management
3. Device Management
0. Exit
3
Available Rooms:
Room ID: 1 Room type : Hall
Room ID: 2 Room type : Kitchen
Room ID: 4 Room type : DiningRoom
Room ID: 5 Room type : BedRoom
Room ID: 6 Room type : WashRoom
Room ID: 7 Room type : Corridors
Enter Room ID to access devices: 1
What do you want to do?
1 : Add new Device
2 : Remove Device
3 : Device specific options
0 : Exit
Enter your choice: 1
Adding new Device
Enter which device you want to add:
1 : AC 2 : Fridge   3 : Induction
4 : Light   5 : Music Player   6 : Oven
7 : Showers   8 : TV   9 : Washing Machine
0 : Cancel
0
Device addition cancelled.

What do you want to do?
1 : Add new Device
2 : Remove Device
3 : Device specific options
0 : Exit
Enter your choice: 2
Removing an existing device
No devices found in this room to remove.
What do you want to do?
1 : Add new Device
2 : Remove Device
3 : Device specific options
0 : Exit
Enter your choice: 0
Exiting the program...
What do you want to do?
1. Home Management
2. Rooms Management
3. Device Management
0. Exit
3
Available Rooms:
Room ID: 1 Room type : Hall
Room ID: 2 Room type : Kitchen
Room ID: 4 Room type : DiningRoom
Room ID: 5 Room type : BedRoom
Room ID: 6 Room type : WashRoom
Room ID: 7 Room type : Corridors
Enter Room ID to access devices: 2
What do you want to do?
1 : Add new Device
2 : Remove Device
3 : Device specific options
0 : Exit
Enter your choice: 2
Removing an existing device
Devices in the room:
1: AC
2: Fridge
3: Induction
4: Light
5: MusicPlayer
6: Oven
7: Showers
8: TV
9: WashingMachine
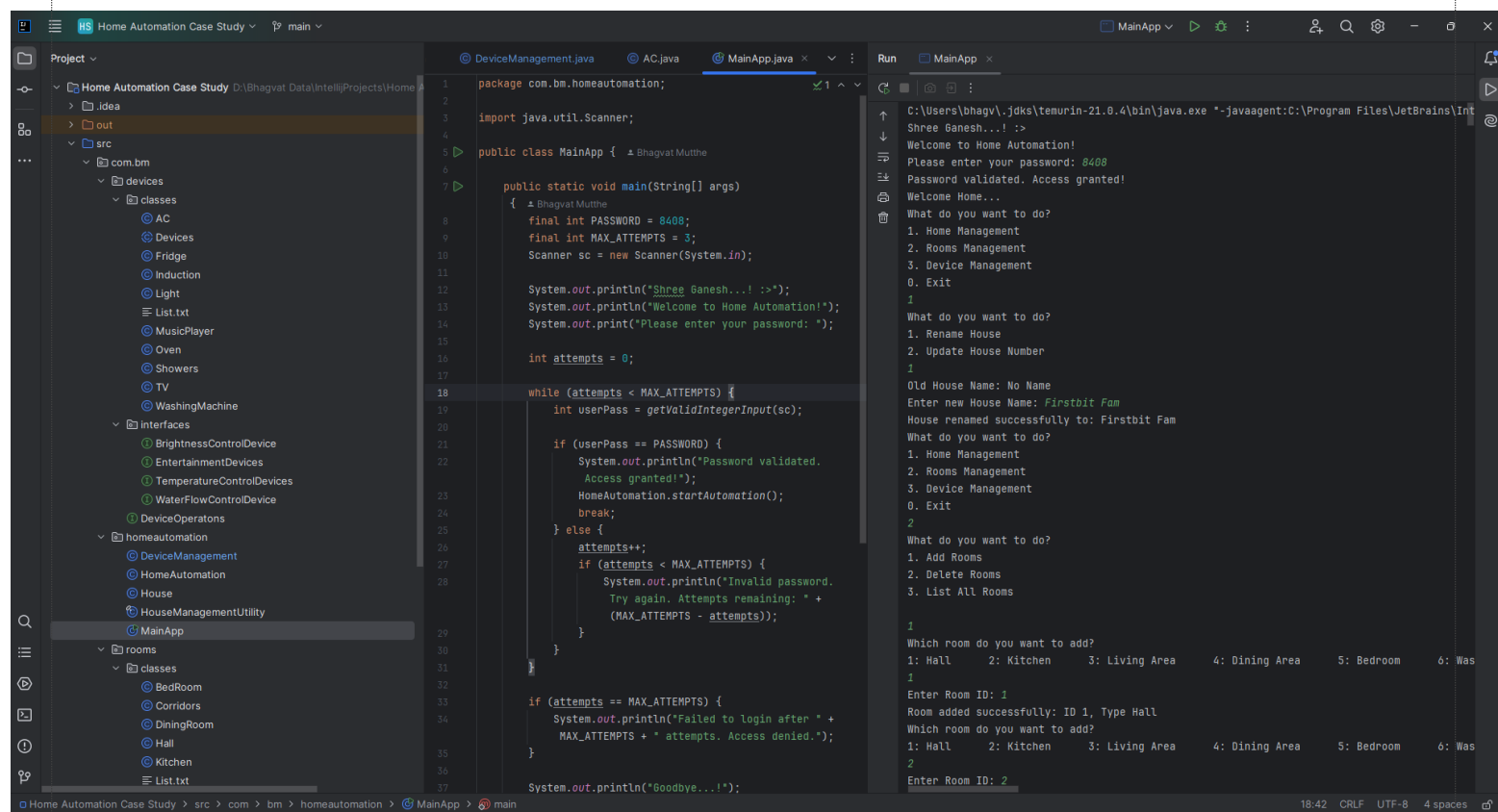Enter the number of the device you want to remove (0 to cancel):
8
TV removed successfully.
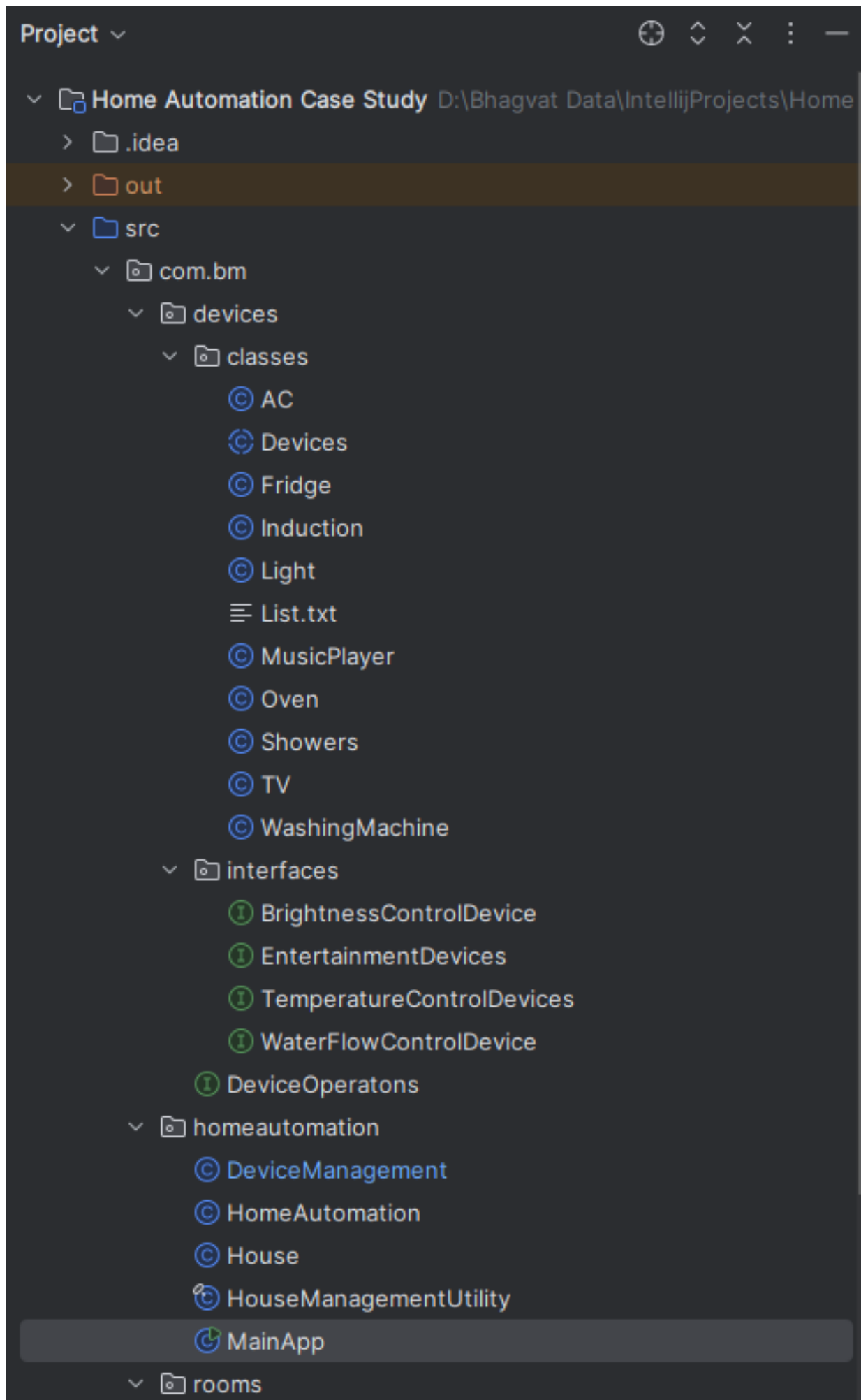What do you want to do?
1 : Add new Device
2 : Remove Device
3 : Device specific options
0 : Exit

Enter your choice: 0
Exiting the program...
What do you want to do?
1. Home Management
2. Rooms Management
3. Device Management
0. Exit
0
Exiting the program...
Goodbye...!

Process finished with exit code 0

Project ∨   ⊕ ⌃ ✕ ⋮ —

∨ ▢ **Home Automation Case Study** D:\Bhagvat Data\IntellijProjects\Home
  › ▢ .idea
  › ▢ out
  ∨ ▢ src
    ∨ ▢ com.bm
      ∨ ▢ devices
        ∨ ▢ classes
            © AC
            © Devices
            © Fridge
            © Induction
            © Light
            ≡ List.txt
            © MusicPlayer
            © Oven
            © Showers
            © TV
            © WashingMachine
        ∨ ▢ interfaces
            ① BrightnessControlDevice
            ① EntertainmentDevices
            ① TemperatureControlDevices
            ① WaterFlowControlDevice
          ① DeviceOperatons
      ∨ ▢ homeautomation
          © DeviceManagement
          © HomeAutomation
          © House
          © HouseManagementUtility
          © MainApp
        ∨ ▢ rooms

- ∨ 📁 rooms
  - ∨ 📁 classes
    - © BedRoom
    - © Corridors
    - © DiningRoom
    - © Hall
    - © Kitchen
    - ≡ List.txt
    - © LivingArea
    - © Rooms
    - © WashRoom
  - ∨ 📁 interfaces
    - Ⓘ BedRoomMIF
    - Ⓘ CorridorsMIF
    - Ⓘ DiningRoomMIF
    - Ⓘ HallMIF
    - Ⓘ KitchenMIF
    - Ⓘ LivingAreaMIF
    - Ⓘ WashRoomMIF