GTU Department of Computer Engineering
CSE 222/505 - SPRING 2022
HOMEWORK 1 REPORT

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1.System Requirements

Test of this Street Simulation in accordance with the law, it will not sell any of your personal information to third-party companies.

In this Street Simulation, I have an Interface Class called by **Building** and there is 3 classes for for **Market, Office and Playground** also of course I have two classes called by **Street and Main.**

Minimum System Requirements:
RAM: 128 MB
Disk space: 124 MB for JRE; 2 MB for Java Update
Processor: Minimum Pentium 2 266 MHz processor
Java DK 10+

Building has

- **getLength()**
- **getHeight()**
- **getPosition()**
- **focus()**

Market class has

- **Opening time**
- **Closing time**
- **length**
- **position**
- **height**
- **Owner**
- **focus()**
- **Setters and Getters for all.**

Playground class has

- **length**
- **position**
- **height**
- **focus()**
- **Setters and Getters for all**

House class has

- Color
- Owner
- length
- position
- height
- NumberOfRooms
- Setters and Getters for all

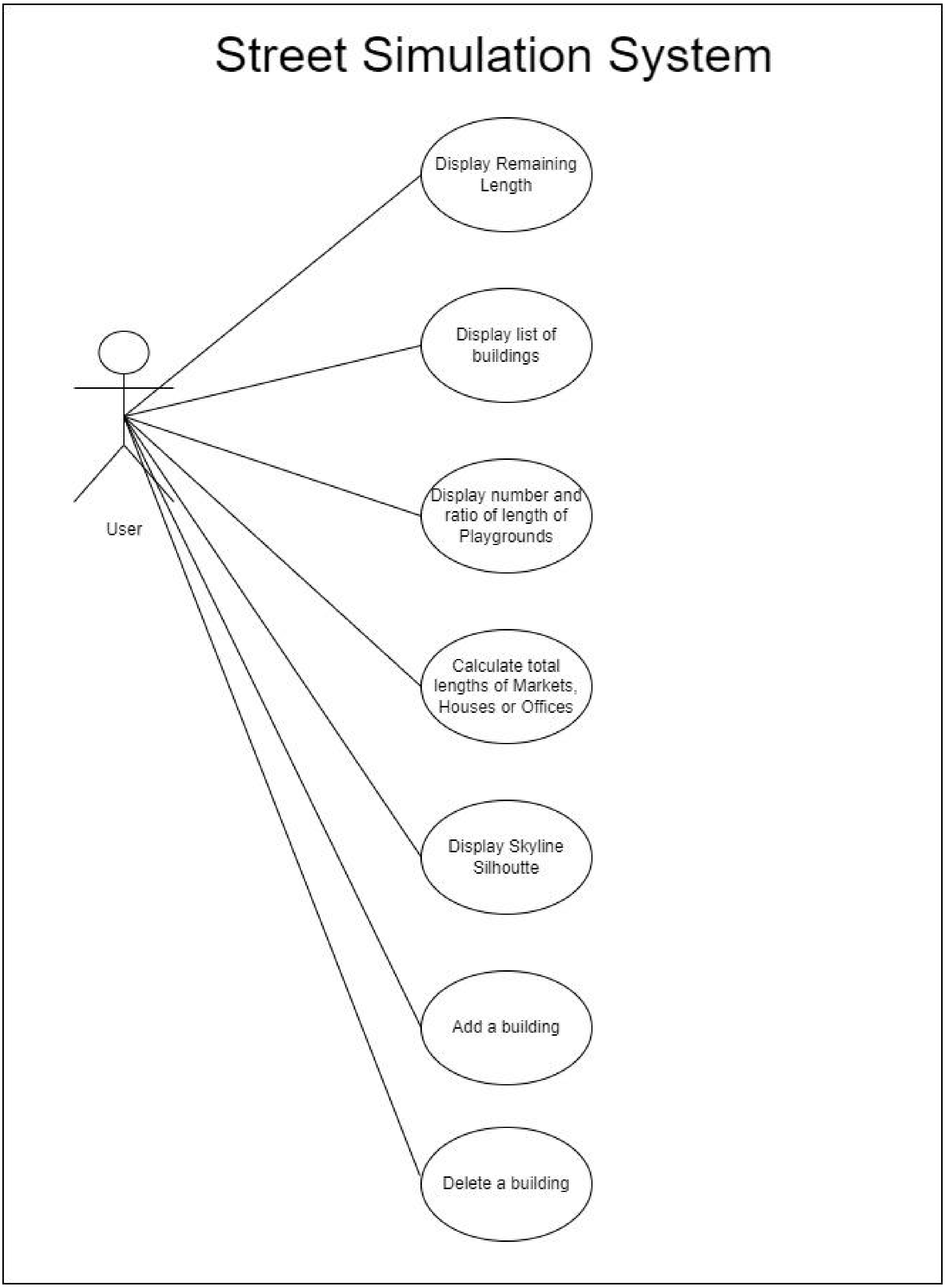
Office class has

- Owner
- JobType
- length
- position
- height
- Setters and Getters for all

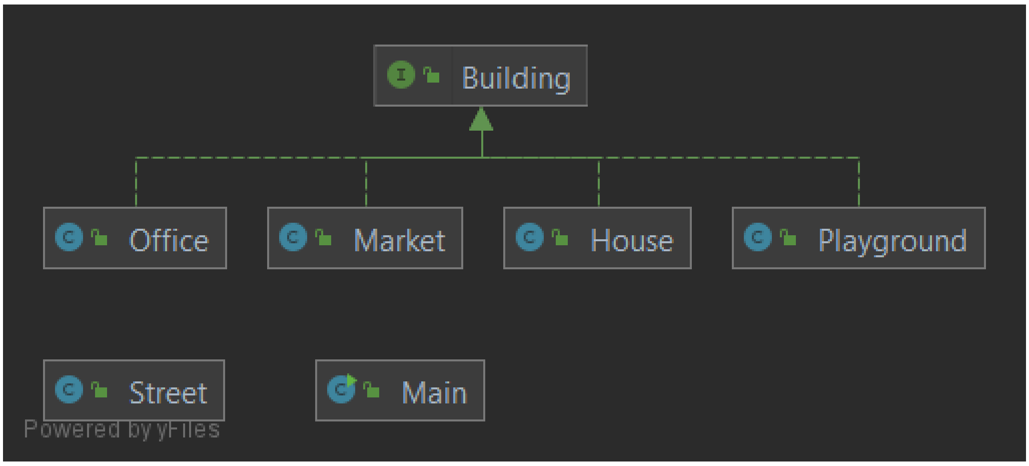
Street class has

- setTotalLength
- buildingsNumber
- buildingsLastIndex
- totalLength
- currentLength
- add
- displayRemainingLength()
- delete(int Index)
- displayBuildings()
- totalLengthOfSpecificBuildings()
- displayNumberAndRationOfPlaygrounds()
- displayRemainingLength()
- displayBuildings()
- totalLengthOfSpecificBuildings()
- displayNumberAndRationOfPlaygrounds()
- displaySkylineSilhouette()

2.Use Case Diagram


Street Simulation System
User
Display Remaining Length
Display list of buildings
Display number and ratio of length of Playgrounds
Calculate total lengths of Markets, Houses or Offices
Display Skyline Silhoutte
Add a building
Delete a building

3.Class Diagrams

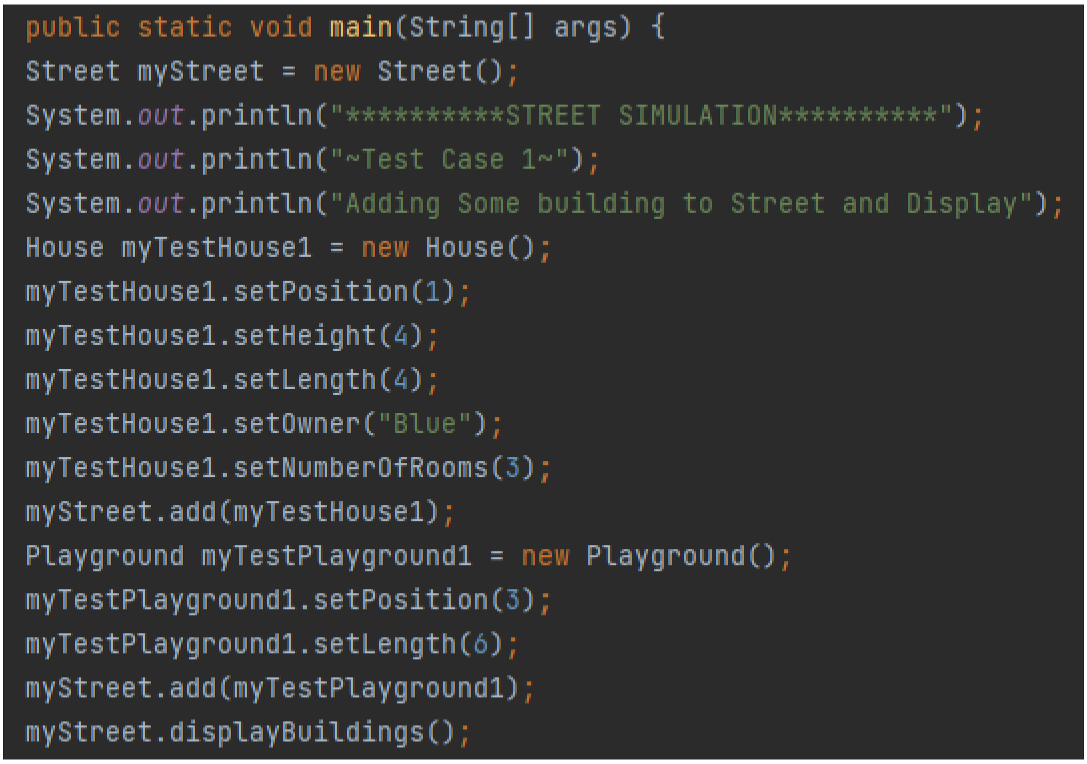


4.Problem Solution Approach

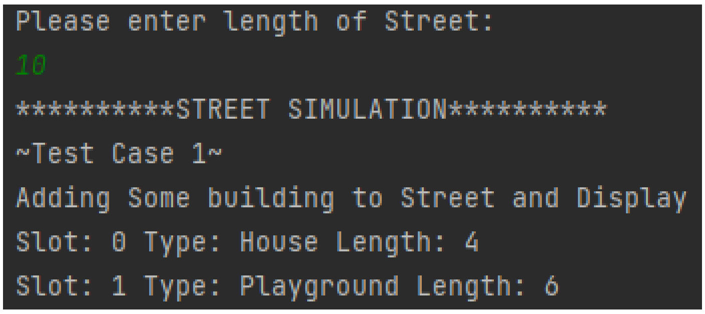
The first problem that I dealing with is about calculate function of total length of street occupied by the markets, houses or offices. When I coded my application firstly, I make a function for every building type but there was a lot code duplication so I made it generic and that makes one function. It is always better code reusability.
The second problem is about Playground because of Homework Pdf. When you read the PDF. When you read the pdf for the first time, it means that the playground is a different structure. You think so but it is meaningless for OOP because everything is same so I think a lot to what will I do. Finally, I implementing Playground using Building Interface.

5.Test Cases, Running Command and Results

Case 1-

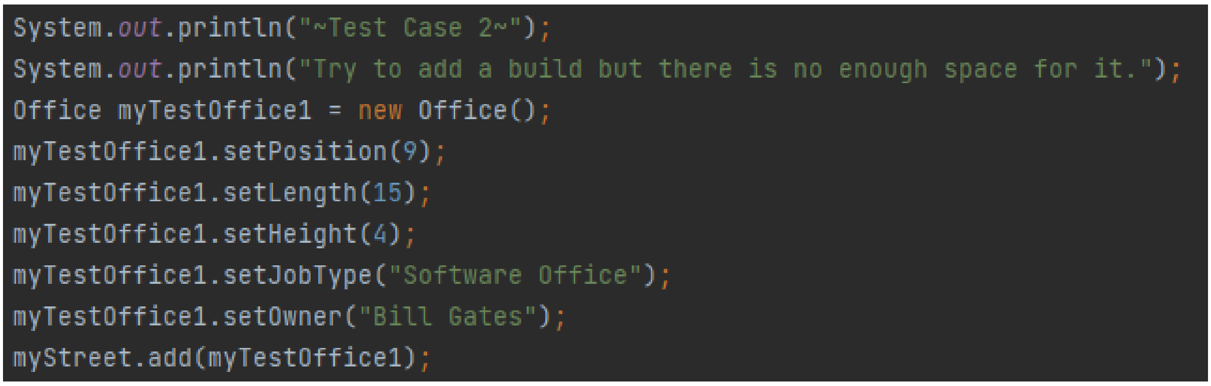


```
public static void main(String[] args) {
Street myStreet = new Street();
System.out.println("**********STREET SIMULATION**********");
System.out.println("~Test Case 1~");
System.out.println("Adding Some building to Street and Display");
House myTestHouse1 = new House();
myTestHouse1.setPosition(1);
myTestHouse1.setHeight(4);
myTestHouse1.setLength(4);
myTestHouse1.setOwner("Blue");
myTestHouse1.setNumberOfRooms(3);
myStreet.add(myTestHouse1);
Playground myTestPlayground1 = new Playground();
myTestPlayground1.setPosition(3);
myTestPlayground1.setLength(6);
myStreet.add(myTestPlayground1);
myStreet.displayBuildings();
```

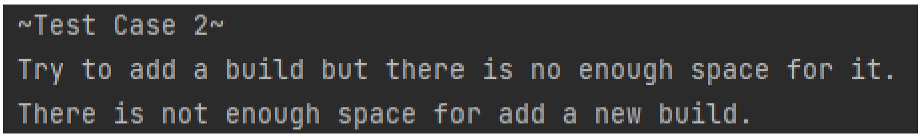


```
Please enter length of Street:
10
**********STREET SIMULATION**********
~Test Case 1~
Adding Some building to Street and Display
Slot: 0 Type: House Length: 4
Slot: 1 Type: Playground Length: 6
```

Case 2-

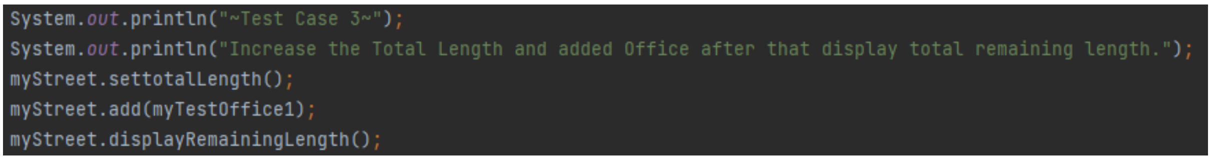


```
System.out.println("~Test Case 2~");
System.out.println("Try to add a build but there is no enough space for it.");
Office myTestOffice1 = new Office();
myTestOffice1.setPosition(9);
myTestOffice1.setLength(15);
myTestOffice1.setHeight(4);
myTestOffice1.setJobType("Software Office");
myTestOffice1.setOwner("Bill Gates");
myStreet.add(myTestOffice1);
```

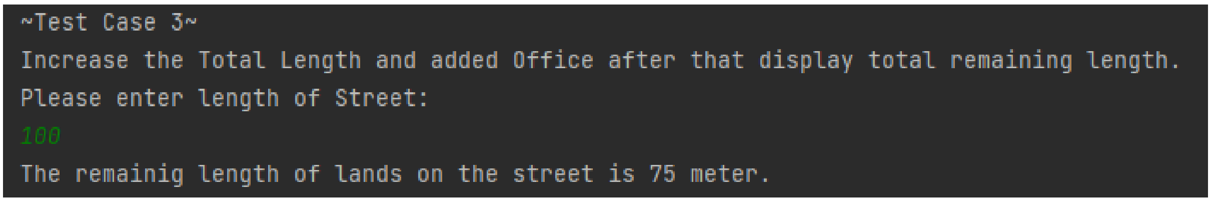


```
~Test Case 2~
Try to add a build but there is no enough space for it.
There is not enough space for add a new build.
```

Case 3-

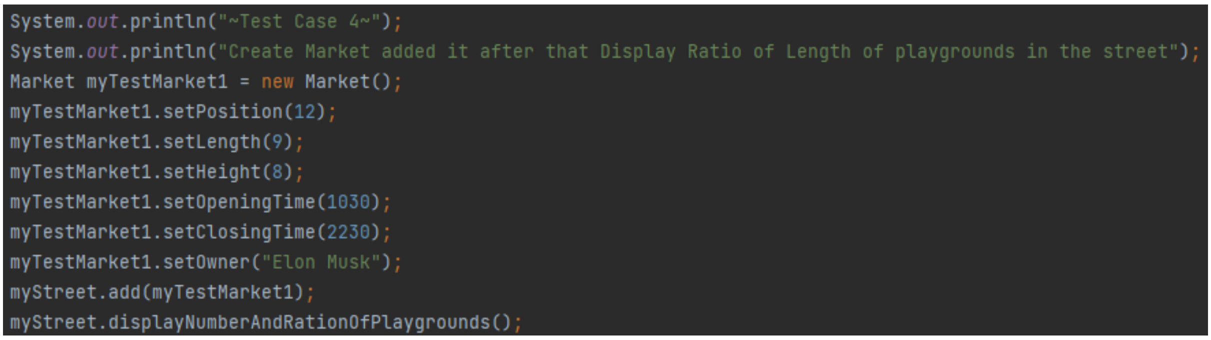


```
System.out.println("~Test Case 3~");
System.out.println("Increase the Total Length and added Office after that display total remaining length.");
myStreet.settotalLength();
myStreet.add(myTestOffice1);
myStreet.displayRemainingLength();
```

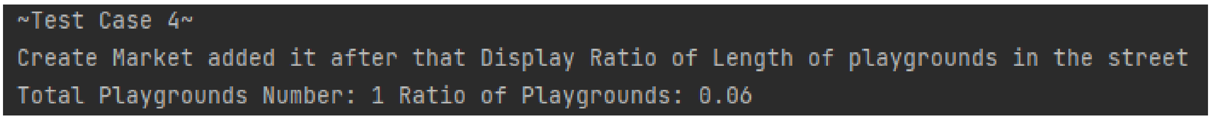


```
~Test Case 3~
Increase the Total Length and added Office after that display total remaining length.
Please enter length of Street:
100
The remainig length of lands on the street is 75 meter.
```

Case 4-

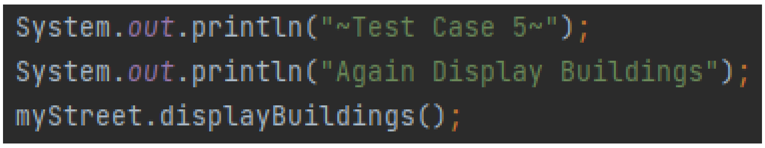


```
System.out.println("~Test Case 4~");
System.out.println("Create Market added it after that Display Ratio of Length of playgrounds in the street");
Market myTestMarket1 = new Market();
myTestMarket1.setPosition(12);
myTestMarket1.setLength(9);
myTestMarket1.setHeight(8);
myTestMarket1.setOpeningTime(1030);
myTestMarket1.setClosingTime(2230);
myTestMarket1.setOwner("Elon Musk");
myStreet.add(myTestMarket1);
myStreet.displayNumberAndRationOfPlaygrounds();
```

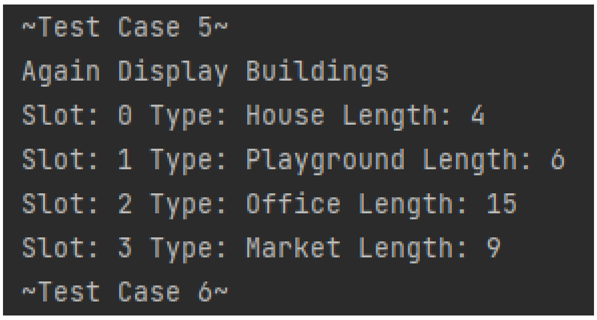


```
~Test Case 4~
Create Market added it after that Display Ratio of Length of playgrounds in the street
Total Playgrounds Number: 1 Ratio of Playgrounds: 0.06
```

Case 5-

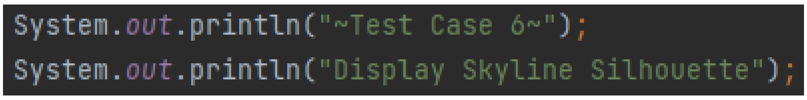


```
System.out.println("~Test Case 5~");
System.out.println("Again Display Buildings");
myStreet.displayBuildings();
```

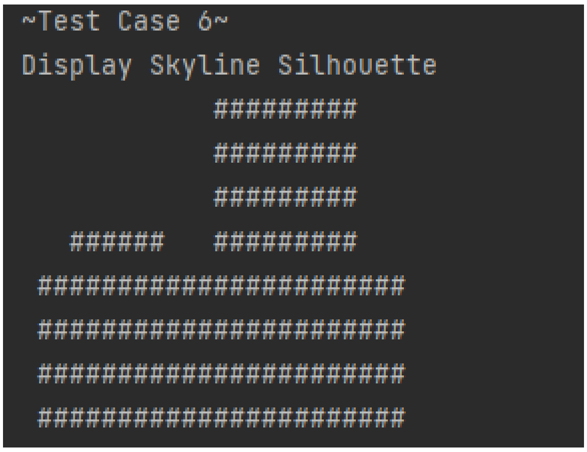


```
~Test Case 5~
Again Display Buildings
Slot: 0 Type: House Length: 4
Slot: 1 Type: Playground Length: 6
Slot: 2 Type: Office Length: 15
Slot: 3 Type: Market Length: 9
~Test Case 6~
```

Case 6-

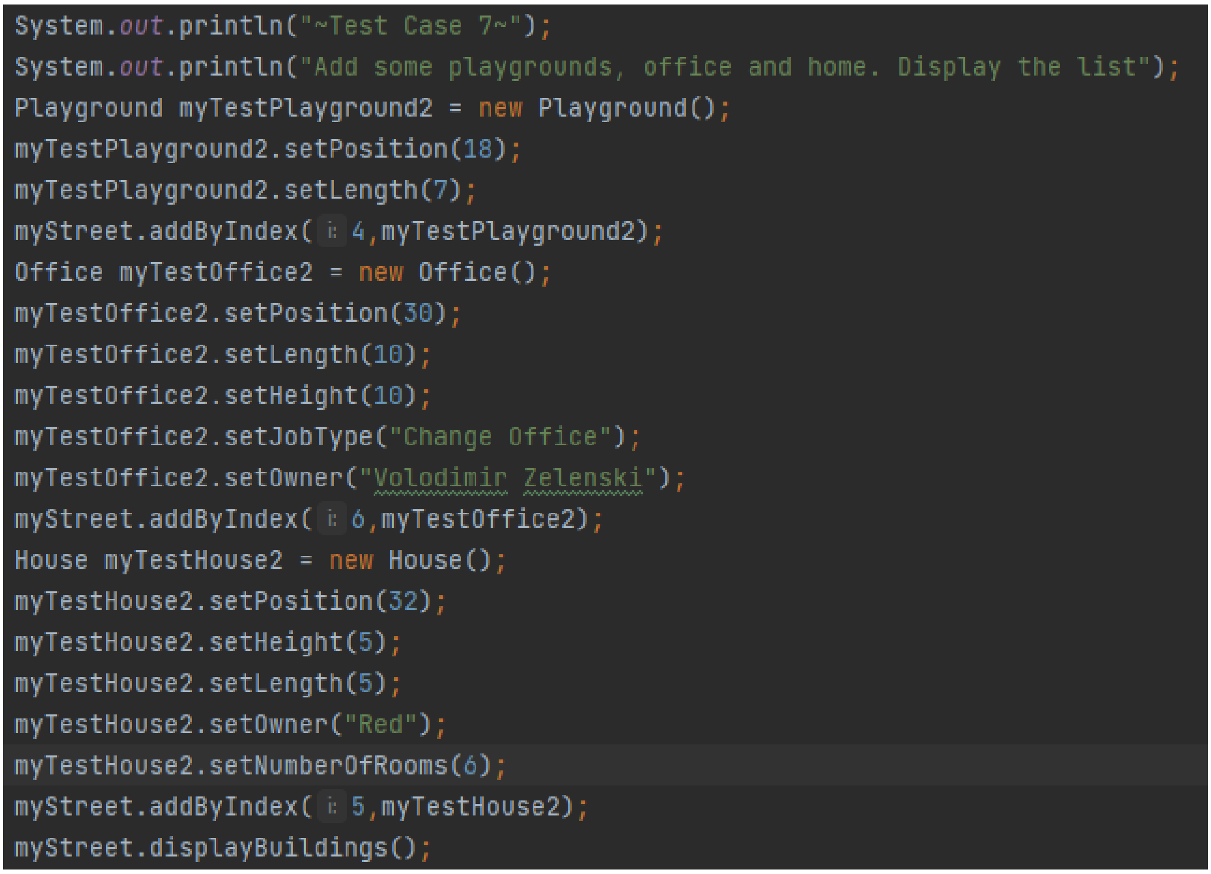


```
System.out.println("~Test Case 6~");
System.out.println("Display Skyline Silhouette");
```

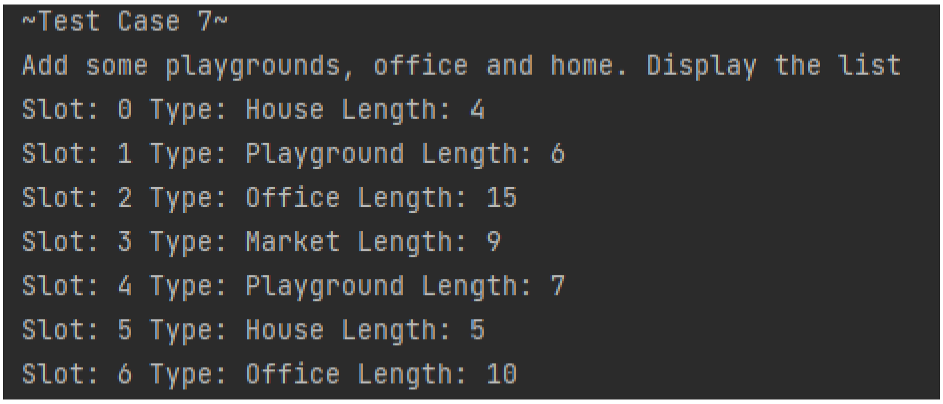


```
~Test Case 6~
Display Skyline Silhouette
            #########
            #########
            #########
   ######   #########
 #######################
 #######################
 #######################
 #######################
```

Case 7-

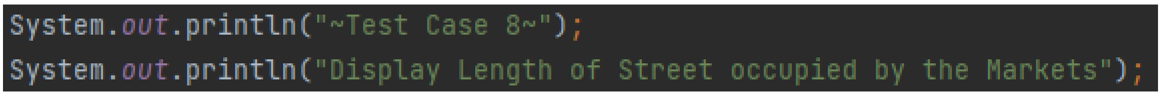


```
System.out.println("~Test Case 7~");
System.out.println("Add some playgrounds, office and home. Display the list");
Playground myTestPlayground2 = new Playground();
myTestPlayground2.setPosition(18);
myTestPlayground2.setLength(7);
myStreet.addByIndex( i: 4,myTestPlayground2);
Office myTestOffice2 = new Office();
myTestOffice2.setPosition(30);
myTestOffice2.setLength(10);
myTestOffice2.setHeight(10);
myTestOffice2.setJobType("Change Office");
myTestOffice2.setOwner("Volodimir Zelenski");
myStreet.addByIndex( i: 6,myTestOffice2);
House myTestHouse2 = new House();
myTestHouse2.setPosition(32);
myTestHouse2.setHeight(5);
myTestHouse2.setLength(5);
myTestHouse2.setOwner("Red");
myTestHouse2.setNumberOfRooms(6);
myStreet.addByIndex( i: 5,myTestHouse2);
myStreet.displayBuildings();
```

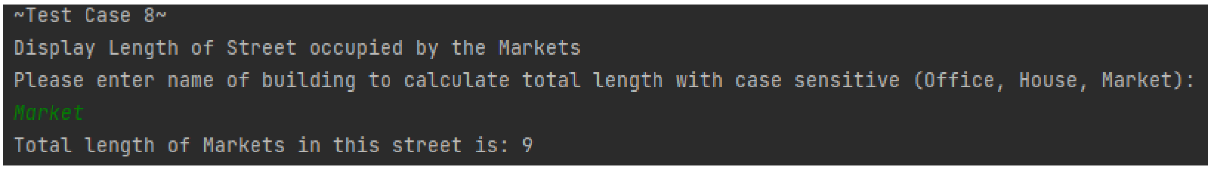


```
~Test Case 7~
Add some playgrounds, office and home. Display the list
Slot: 0 Type: House Length: 4
Slot: 1 Type: Playground Length: 6
Slot: 2 Type: Office Length: 15
Slot: 3 Type: Market Length: 9
Slot: 4 Type: Playground Length: 7
Slot: 5 Type: House Length: 5
Slot: 6 Type: Office Length: 10
```

Case 8-

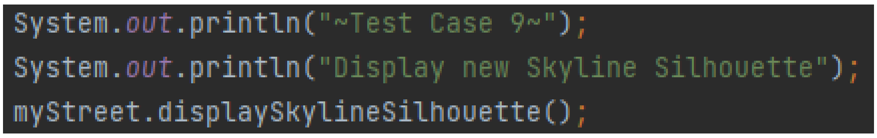


```
System.out.println("~Test Case 8~");
System.out.println("Display Length of Street occupied by the Markets");
```

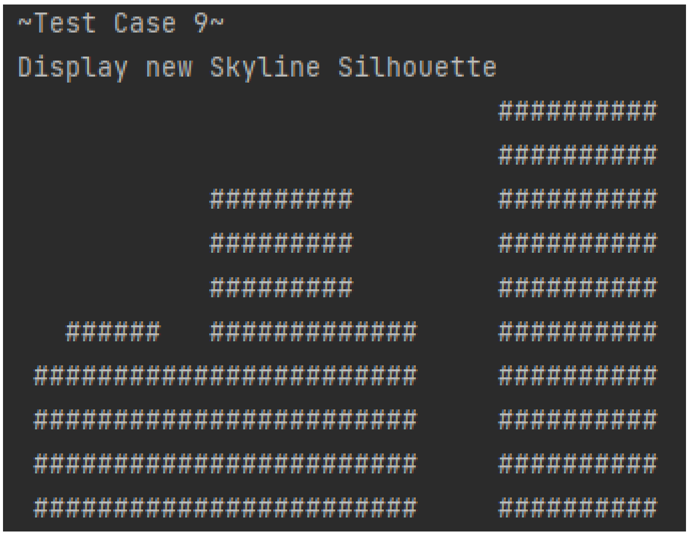


```
~Test Case 8~
Display Length of Street occupied by the Markets
Please enter name of building to calculate total length with case sensitive (Office, House, Market):
Market
Total length of Markets in this street is: 9
```

Case 9-

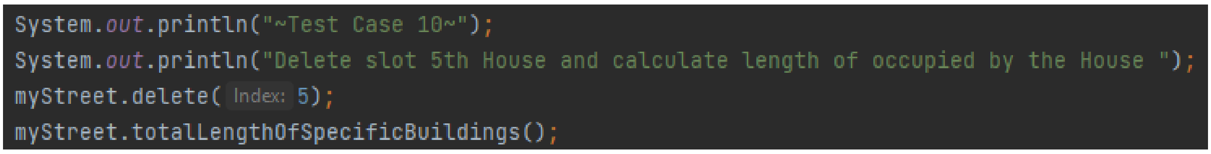


```
System.out.println("~Test Case 9~");
System.out.println("Display new Skyline Silhouette");
myStreet.displaySkylineSilhouette();
```

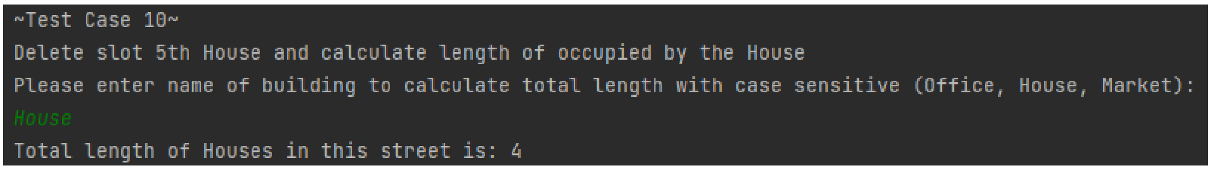


```
~Test Case 9~
Display new Skyline Silhouette
                              ##########
                              ##########
            #########         ##########
            #########         ##########
            #########         ##########
   ######   #############     ##########
 ########################     ##########
 ########################     ##########
 ########################     ##########
 ########################     ##########
```

Case 10-

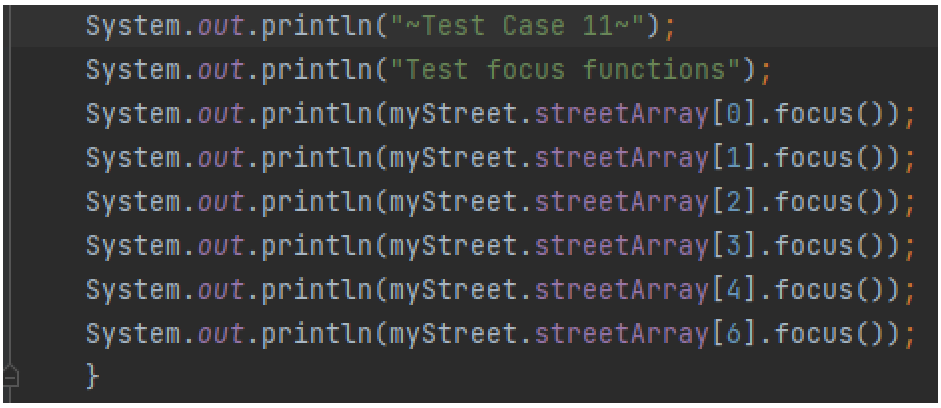


```
System.out.println("~Test Case 10~");
System.out.println("Delete slot 5th House and calculate length of occupied by the House ");
myStreet.delete( Index: 5);
myStreet.totalLengthOfSpecificBuildings();
```

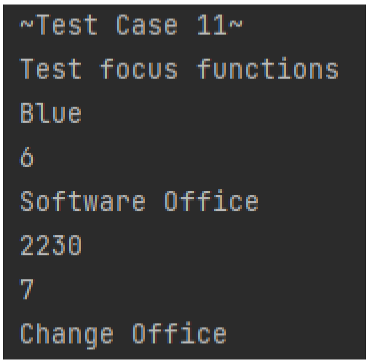


```
~Test Case 10~
Delete slot 5th House and calculate length of occupied by the House
Please enter name of building to calculate total length with case sensitive (Office, House, Market):
House
Total length of Houses in this street is: 4
```

Case 11-



```
    System.out.println("~Test Case 11~");
    System.out.println("Test focus functions");
    System.out.println(myStreet.streetArray[0].focus());
    System.out.println(myStreet.streetArray[1].focus());
    System.out.println(myStreet.streetArray[2].focus());
    System.out.println(myStreet.streetArray[3].focus());
    System.out.println(myStreet.streetArray[4].focus());
    System.out.println(myStreet.streetArray[6].focus());
    }
```



```
~Test Case 11~
Test focus functions
Blue
6
Software Office
2230
7
Change Office
```