

**Gebze Technical University Computer  
Engineering**

**CSE222/Homework 1 Report**

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## Part one : Definition of the problem and requirements

**a) Definition of the problem:**

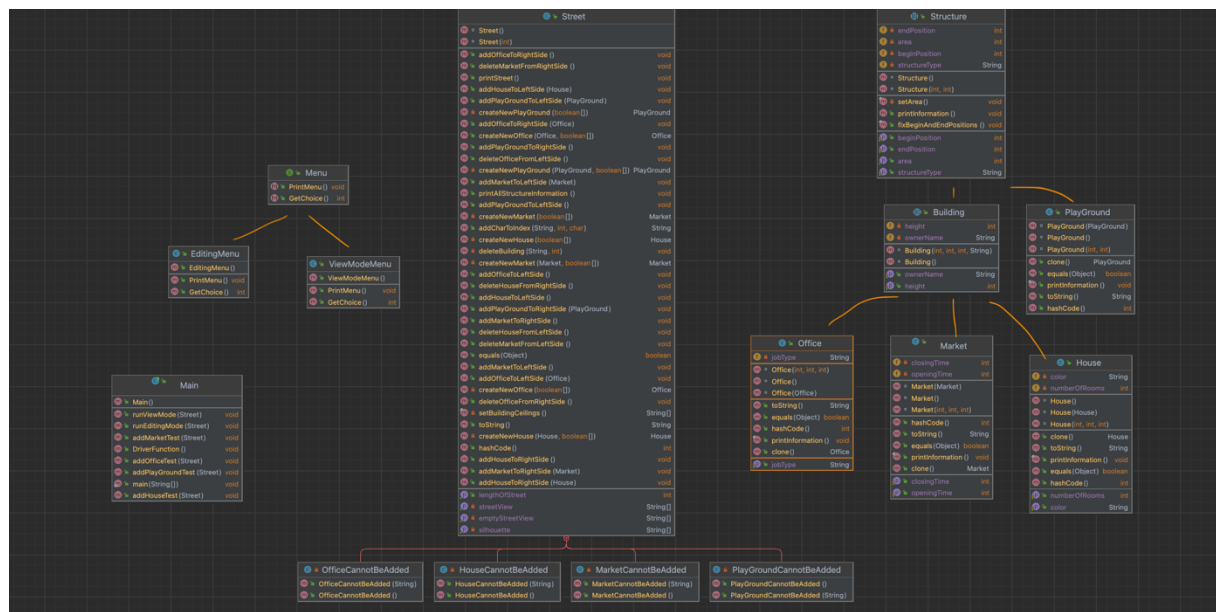
There is a city which has only one straight street. For this city, there can be 4 types structures those are playgrounds and three kind of building types (offices, markets and houses).

For planning which structures will be build and which structures will be destroyed on this city,a city planning software is needed.

### a) Requirements:

This software must be able to simulate the building and destruction operations. This simulation must show that how construction or destruction of the structure will effect the city or even if it can be done or not. This software also must show all simulated information and simulated image of the city.

## Part two : Class Diagrams



## Part three : Problem solution approach

I defined a Street class and this class keeps three types of data essentially. These are two arrays of the structure objects, max value of the height which is used to print the city and two arrays of boolean values to keep lands on the Street and check if these are occupied.

I defined an abstract Structure class because playgrounds are not buildings and have begin position, end position and area properties same with the three buildings.

I defined PlayGround class that inherits from Structure class that represents a playground.

I defined an abstract Building class for three types of the buildings.

I defined Office, House and Market classes with necessary data, setters and getters.

I made error checking within the Street class. If user wants to add structure to the city which is not possible, error is printed.

In Street class, there are creator functions that return the corresponding building references. These functions are overloaded, one of them gets a pre-defined building object reference and the other takes properties from the user.

Add functions in Street class catches if there is an error thrown by creator functions and if there is no problem with the object, created object gets added to the corresponding side of the Street.

There are different functions for all kinds of structure and both two sides of the Street.

## Part four : Test Cases

```
To run program in editing mode,enter 1
To run program in view mode,enter 2
To terminate program ,enter -1
Your choice --> 1
To add a play ground to right side,enter 0

To test adding house,enter 1
To test adding office,enter 2
To test adding market,enter 3
To add a house to left side,enter 4
To add a office to left side,enter 5
To add a market to left side,enter 6
To add a house to right side,enter 7
To add a office to right side,enter 8
To add a market to right side,enter 9
To remove a house from left side,enter 10
To remove a office from left side,enter 11
To remove a market from left side,enter 12
To remove a house from right side,enter 13
To remove a office from right side,enter 14
To remove a market from right side,enter 15
To switch view mode,enter 16
To exit,enter -1
```

```
Color of the house = Blue
```

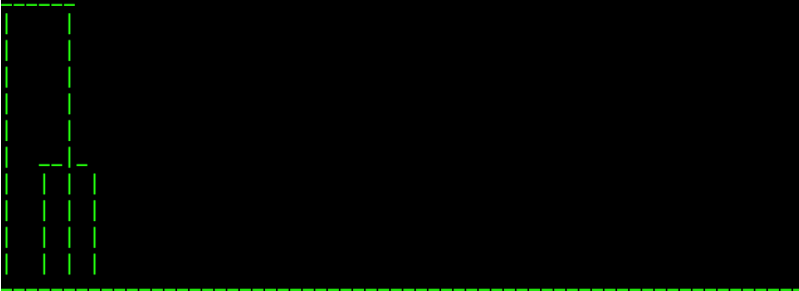
Number of play grounds = 0 , detailed information is above...

Total height of buildings = 14

To add house to left with entering properties  
Enter building position from the house:

Number of play grounds = 0 , detailed information is above...

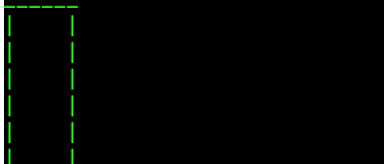
Total height of buildings = 14



To add house to left with entering properties

Enter building position from the house: 1

Total height of buildings = 14



To add house to left with entering properties

Enter building position from the keyboard

To add house to left with entering properties

```
To add house to left with entering properties
Enter house name for the house
```

First choice selected and after adding pre defined houses,program asks for another two houses.

[illegible]

```
Total height of buildings = 19
```

```
To add office to left with entering properties  
Enter begin position for the Office = █
```

To add office to left with entering properties  
Enter begin position for the Office = 1

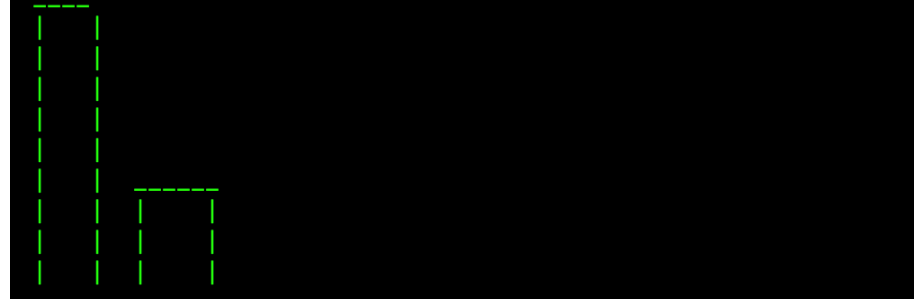
To add office to left with entering properties  
Enter begin position for the Office =

Enter begin position for the Office of

First choice selected and after adding pre defined offices,program asks for another two offices.

```
Number of play grounds = 0 , detailed information is above...
```

```
Total height of buildings = 12
```



```
To add market to left with entering properties
```

```
Enter begin position for the Market =
```

First choice selected and after adding pre defined markets,program asks for another two markets.

```
Enter begin position for the house = 0
Enter area for the house = 2
Enter height for the house = 15
Enter number of the rooms for the house = 20
Enter owner for the house = john
Enter color for the house = red
To add a play ground to right side,enter 0
```

```
To test adding house,enter 1
To test adding office,enter 2
To test adding market,enter 3
To add a house to left side,enter 4
To add a office to left side,enter 5
To add a market to left side,enter 6
To add a house to right side,enter 7
To add a office to right side,enter 8
To add a market to right side,enter 9
To remove a house from left side,enter 10
To remove a office from left side,enter 11
To remove a market from left side,enter 12
To remove a house from right side,enter 13
To remove a office from right side,enter 14
To remove a market from right side,enter 15
To switch view mode,enter 16
```

User added a house with selecting 4th choice.

```

To add a house to left side,enter 4
To add a office to left side,enter 5
To add a market to left side,enter 6
To add a house to right side,enter 7
To add a office to right side,enter 8
To add a market to right side,enter 9
To remove a house from left side,enter 10
To remove a office from left side,enter 11
To remove a market from left side,enter 12
To remove a house from right side,enter 13
To remove a office from right side,enter 14
To remove a market from right side,enter 15
To switch view mode,enter 16
To exit,enter -1
5
Enter begin position for the Office = 0
Enter area for the Office = 3
Enter height for the Office = 3
Enter job type for the Office = sale
Enter owner for the Office = dwayne
Office cannot be at given area,because area is occupied , Office could not be added...
To add a play ground to right side,enter 0

To test adding house,enter 1

```

User couldn't add a Office with choice 5 and got an error.

```

To add a office to right side,enter 8
To add a market to right side,enter 9
To remove a house from left side,enter 10
To remove a office from left side,enter 11
To remove a market from left side,enter 12
To remove a house from right side,enter 13
To remove a office from right side,enter 14
To remove a market from right side,enter 15
To switch view mode,enter 16
To exit,enter -1
9
Enter begin position for the Market = 7
Enter area for the Market = 3
Enter height for the Market = 11
Enter opening time for the Market = 6
Enter closing time for the Market = 21
Enter owner for the Market = jane
To add a play ground to right side,enter 0

To test adding house,enter 1
To test adding office,enter 2
To test adding market,enter 3
To add a house to left side,enter 4
To add a office to left side,enter 5

```

User added a market to the right side of the Street.

```
To test adding house,enter 1
To test adding office,enter 2
To test adding market,enter 3
To add a house to left side,enter 4
To add a office to left side,enter 5
To add a market to left side,enter 6
To add a house to right side,enter 7
To add a office to right side,enter 8
To add a market to right side,enter 9
To remove a house from left side,enter 10
To remove a office from left side,enter 11
To remove a market from left side,enter 12
To remove a house from right side,enter 13
To remove a office from right side,enter 14
To remove a market from right side,enter 15
To switch view mode,enter 16
To exit,enter -1
10

Enter the owner name of the house to be deleted -->john
dsadadasdaTo add a play ground to right side,enter 0
```

User deleted the house that he/she added.



Number of play grounds = 0 , detailed information is above...

Total height of buildings = 11



To exit,enter -1  
16

Empty land positions on the left side below...

0 , 1 , 2 , 3 , 4 , 5 , 6 , 7 , 8 , 9 , 10 , 11 , 12 , 13 , 14 , 15 , 16 , 17 , 18 , 19 , 20 , 21 , 22 , 23 , 24 , 25 , 26 , 27 , 28 , 29 , 30 , 31 , 32 , 33 , 34 , 35 , 36 , 37 , 38 , 39 , 40 , 41 , 42 , 43 , 44 , 45 , 46 , 47 , 48 , 49 , 50 , 51 , 52 , 53 , 54 , 55 , 56 , 57 , 58 , 59 ,

Empty land positions on the right side below...

0 , 1 , 2 , 3 , 4 , 5 , 6 , 11 , 12 , 13 , 14 , 15 , 16 , 17 , 18 , 19 , 20 , 21 , 22 , 23 , 24 , 25 , 26 , 27 , 28 , 29 , 30 , 31 , 32 , 33 , 34 , 35 , 36 , 37 , 38 , 39 , 40 , 41 , 42 , 43 , 44 , 45 , 46 , 47 , 48 , 49 , 50 , 51 , 52 , 53 , 54 , 55 , 56 , 57 , 58 , 59 ,

All structures on the street are listed below...

All structures on the left side are listed below...

All structures on the right side are listed below...

Begin position of the market = 7

End position of the market = 10

Area of the market = 3

Height of the market = 11

Owner of the market = jane

Opening time of the rooms of the market = 6

Closing time of the rooms of the market = 21

User printed all information by switching the mode.