Gebze Technical University Computer Engineering

CSE222/Homework 1 Report

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Part one : Definition of the problem and requirements

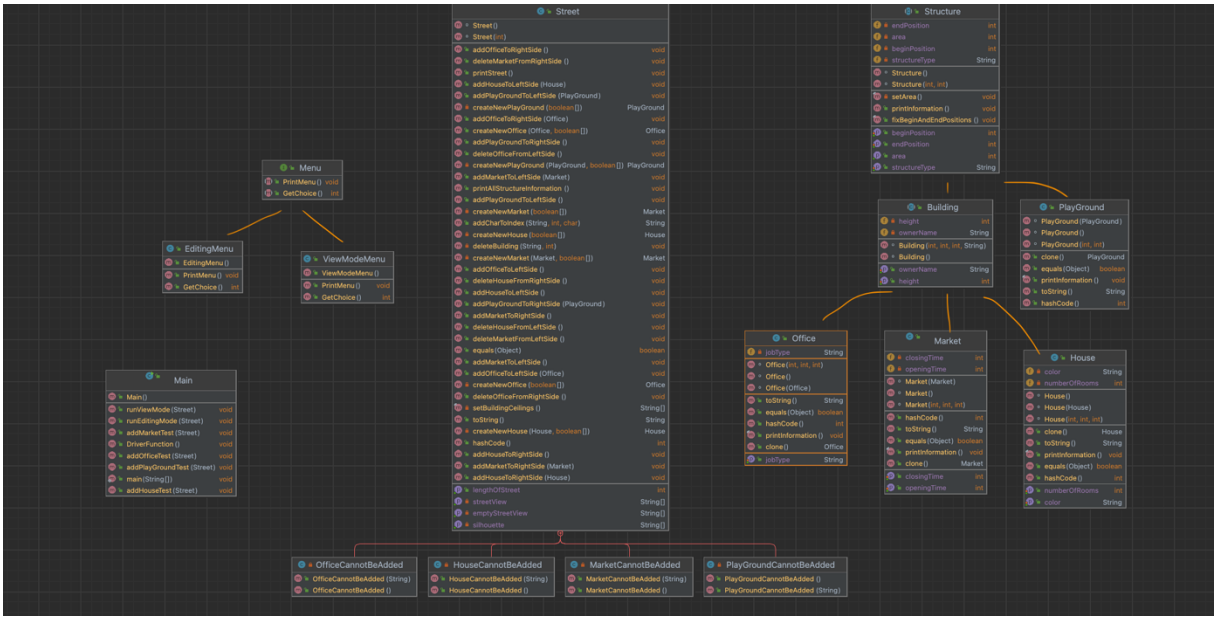
a)Definition of the problem:

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 esentially.These are two arrays of the structure objects,max value of the height which is uset to print the city and two arrays of boolean values to keep lands on the Street and check if these are occupied.

I defined a abstract Structure class because playgrounds are not building and has 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 a abstract Building class for three type of the buildings.

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

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

In Street class,there is creator functions those returns the corresponding building referances.These functions are overloaded,one of them gets a pre-defined building object referance 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 is different functions for all kind 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
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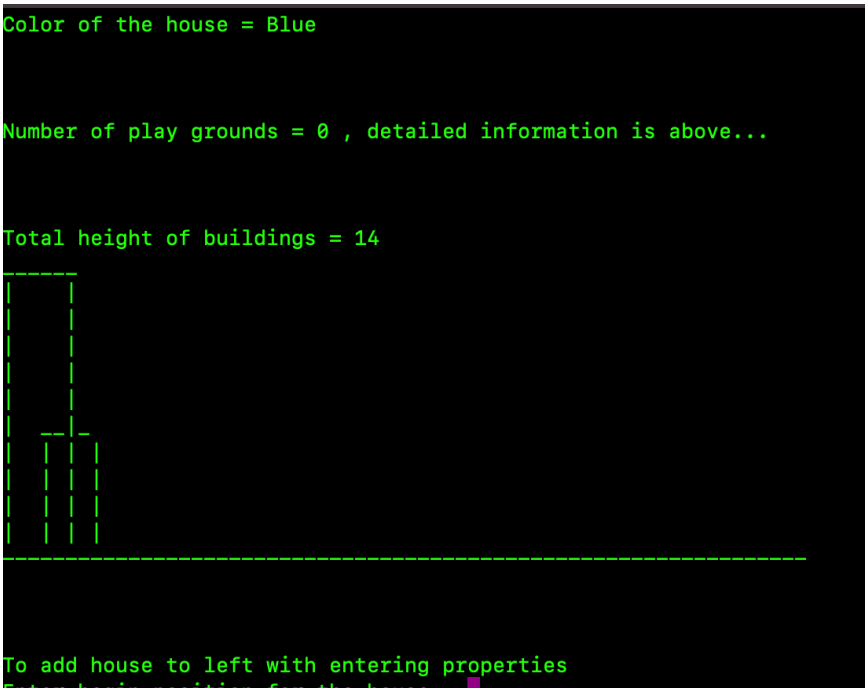
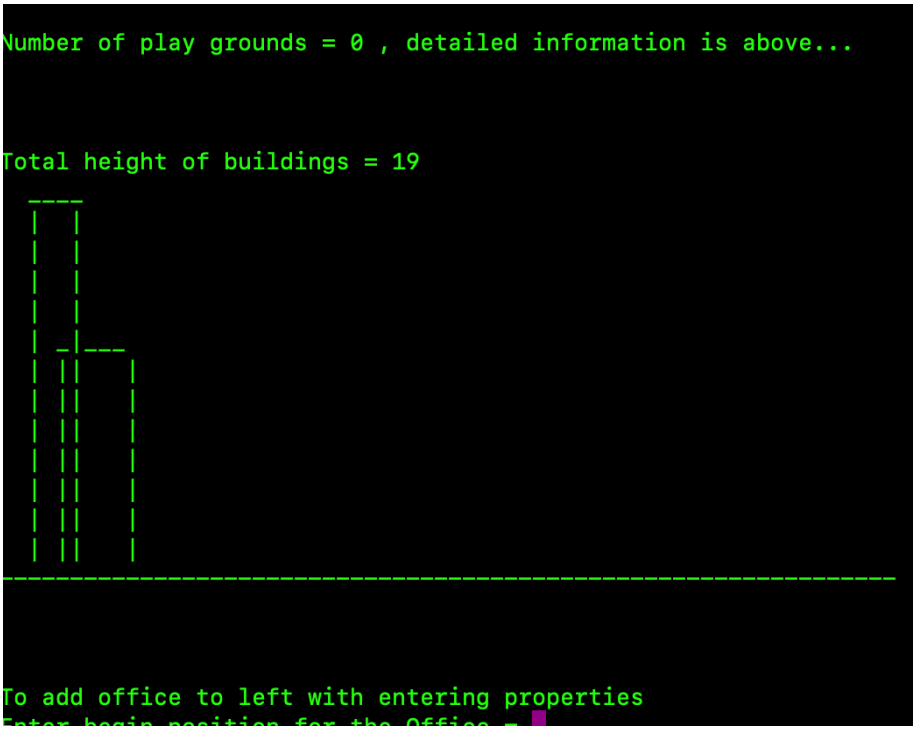
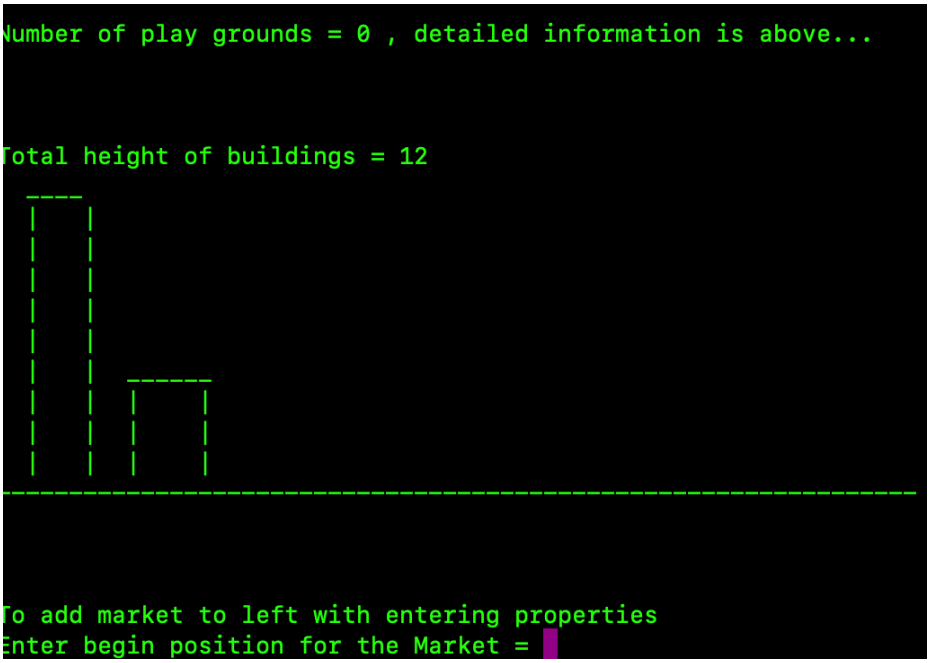


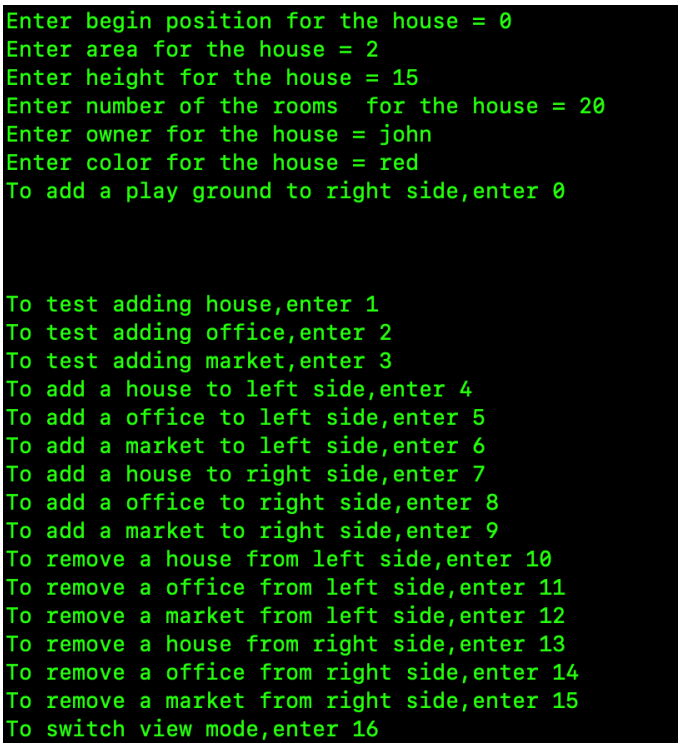
First choice selected and after adding pre defined houses,program asks for another two houses.



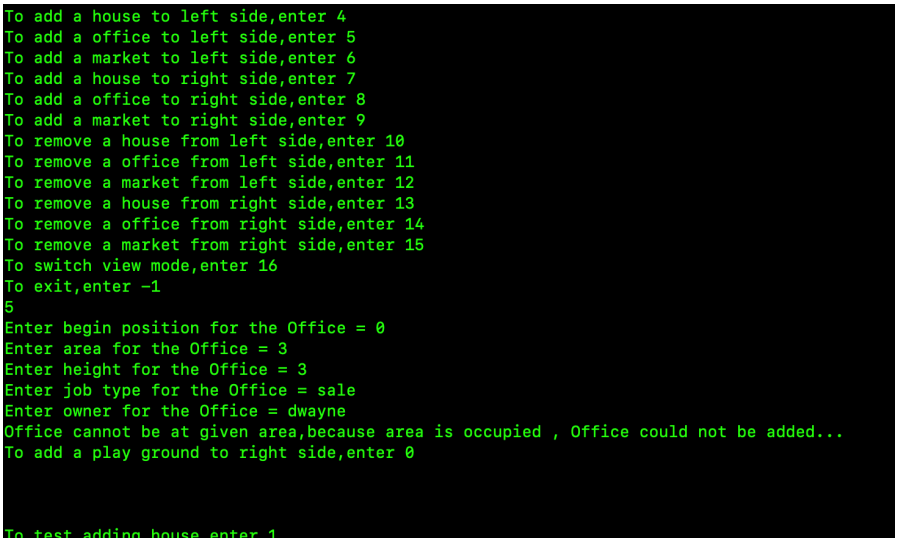
First choice selected and after adding pre defined offices,program asks for another two offices.



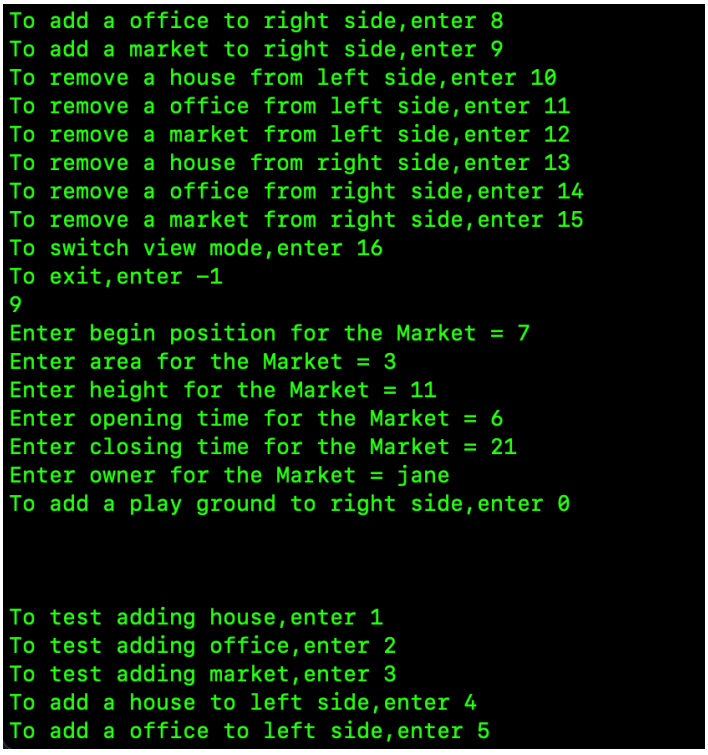
First choice selected and after adding pre defined markets,program asks for another two markets.



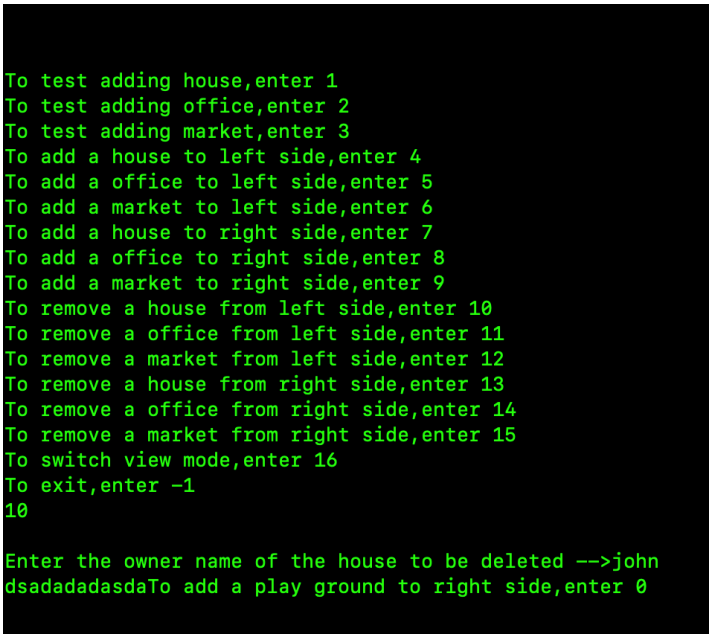
User added a house with selecting 4th choice.



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



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



User deleted the house that he/she added.

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



Total height of buildings = 11




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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 , 2
2 , 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
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User printed all inormation by switching the mode.