

**GTU Department of Computer Engineering**

**CSE 222/505 - Spring 2022**

**Homework 1 Report**

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# 1. System Requirements

The system has 2 modes: edit and view. To access these modes, Town should be created using Town constructor with a parameter which is the length of the street.

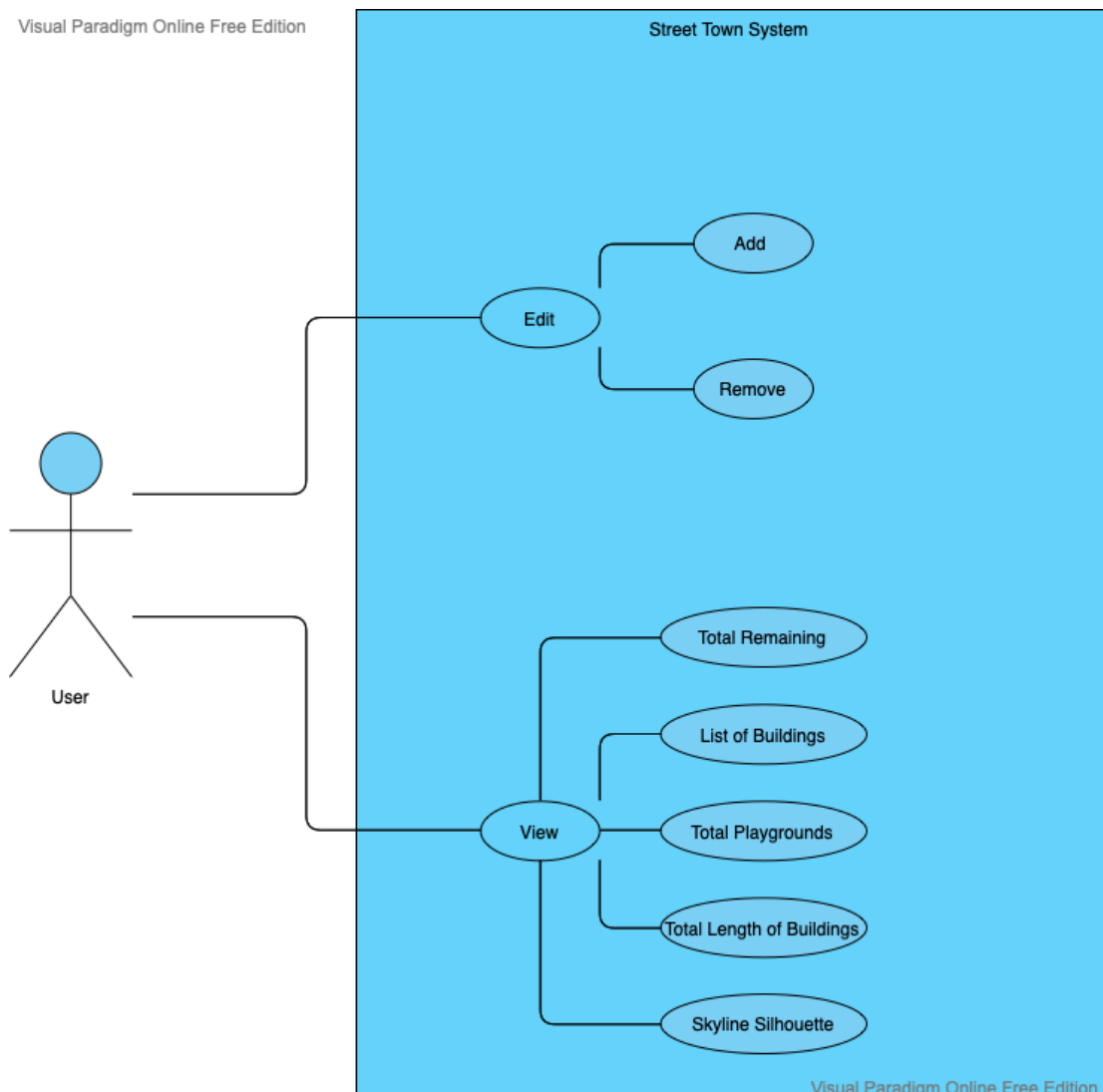
For edit mode,

- Addition or removing should be chosen first.
- To add a new element, the element should be created using constructors and sent as a parameter so that Add and EditMode methods can be overloaded.
- To remove an element, the index and the direction of the element should be given to the EditMode method.
- For both options, if the input is not valid, then it will be caught by the try-catch blocks so the program asks you to give the proper input again. Asking again is only for the user interactive part. Driver method can only catch the exceptions with try-catch blocks.
- Constructors should be called with right parameters. Otherwise, it will fail.

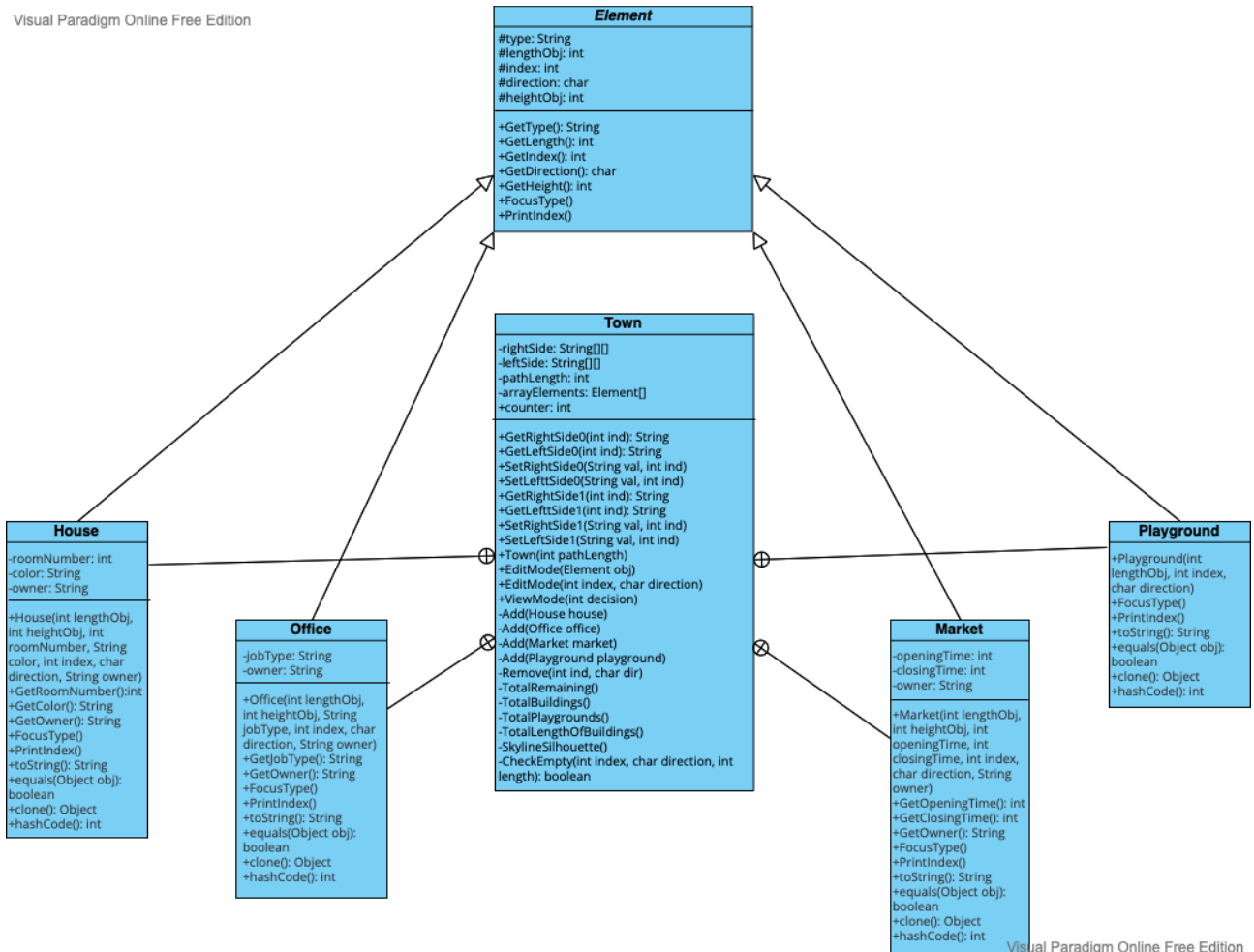
For view mode,

- The option among 5 options should be given to the method.

## 2. Use Case Diagram



### 3. Class Diagram



### 4. Problem Solution Approach

In this homework, we need to implement a class which contains the elements of a street town. Since these elements have a lot in common, I used a superclass to drive all the elements including buildings and playground. This class named “Element” has common features such as length of the element, the starting index of the element, etc and common methods such as getters, focusing mode, etc. The main class named “Town” consists of all the methods and elements. This class has four inner classes for each element and they are inherited from the superclass “Element”.

This program have 2 modes: edit and view. Edit mode allows the user to add and remove the elements. I implemented add method for each element by overloading it. Remove method is based on the index and it removes the element at the given index and direction. All errors are handled in try-catch blocks by using exceptions. (InputMismatchException and ArrayIndexOutOfBoundsException)

## 5. Test Cases

- Create a street with a length of 50.
- Create a house, an office, a market and a playground using constructors.
- Add them by overloading the EditMode method.
- View all 5 options.
- Removing the house at index 0
- View related information about buildings after removing.
- For error check, try to add a house at index 45 with a length of 10 which exceeds the length of the street.

## 6. Running Command and Results

```
-----  
Total Remaining Lands on Right Side:36  
Total Remaining Lands on Left Side:35  
-----  
  
List of the buildings:  
  
House:  
Length: 10  
Height: 2  
Room Number: 2  
Color: black  
Index: 0  
Direction: l  
Owner: Owner1  
  
Office:  
Length: 4  
Height: 10  
Job Type: Dentist  
Index: 15  
Direction: r  
Owner: Owner2  
  
Market:  
Length: 5  
Height: 4  
Opening Time: 9  
Closing Time: 20  
Index: 11  
Direction: l  
Owner: Owner3  
  
-----  
  
The ratio of total length of playgrounds on right side is 10/50  
The ratio of total length of playgrounds on left side is 0/50  
The number of total playgrounds is 1  
  
-----  
  
The total length of markets, offices and houses is 19  
-----
```

[illegible]

```
Total Remaining Lands on Right Side:36
Total Remaining Lands on Left Side:45
```

```
Market:
Length: 5
Height: 4
Opening Time: 9
Closing Time: 20
Index: 11
Direction: 1
Owner: Owner3
```

[illegible]

Something went wrong!