

## COMP47500 Part A - Programming Assignment 2

### MyBnb startup service

MyBnb startup company, in order to improve its software and the I/O process demands from the programmers to implement the whole process using input and output text files. More specifically, the **InputProperty.txt** file contains the initial info for every property in one line. The first string of the line will represents the type of the property and the rest string the values of properties' fields. The following lines give an example of the **InputProperty.txt**:

```
1 1 2 50 0 George Paradise_3
1 2 3 50 0 John Somewhere_4
1 2 4 50 0 Jane Devil's_place_3
2 1 50 60 0 George Paradise_13
2 2 50 60 0 John Somewhere_14
2 4 60 60 0 Jane Devil's_place_13
3 5 10 10 50 0 George Paradise_23
3 4 15 20 40 0 John Somewhere_24
3 8 20 30 55 0 Jane Devil's_place_23
```

You should write code for the method **ReadInputPropertyFile** that will scan the input file and fill in the appropriate ArrayLists. Moreover you should modify the method **PrintAllProperties** of the initial project, in order to redirect the output to an output text file with name **OutputProperty.txt**. MyBnb also demands from the programmers to use exception handling for the input process.

Moreover, **you should modify your code from the first assignment**, in order to change the Rental process. The modified method should ask from the user the Property ID and the rental days and then the code searches the appropriate ArrayList, in order to locate the exact property and update total number of rental days.

MyBnb is also planning to expand its business to rental vehicles. The firm needs to offer rental services for typical cars and trucks. The head analyst suggests the declaration of an Interface called **RentItem** and the implementation of the **Property** and **Vehicle** based on this interface. More specifically, she proposes the following schema:

**Property** and **Vehicle** implement **RentItem**. **Apartment**, **House** and **Villa** are extensions of **Property** (as described in the 1st Assignment). **Car** and **Truck** are extensions of **Vehicle**. **Vehicle** class has as additional attributes the **Owner**, **TotalRentalDays** and **RentalCostPerDay**. **Car** has as additional attribute the **PassengersNumber** and **Truck** the **CargoWeight**.

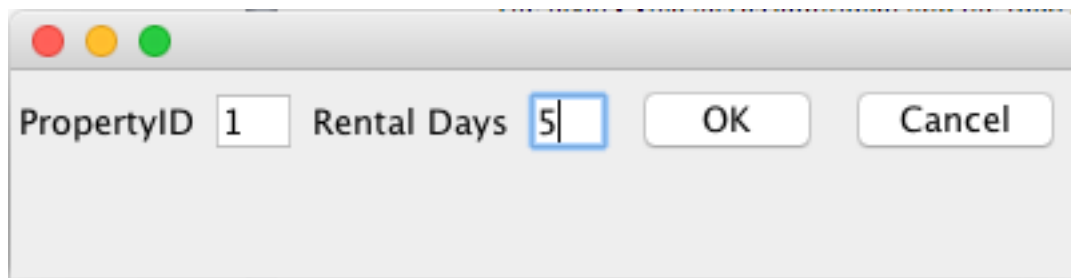
More analytically, you should deliver the following classes and methods:

### Part A

**ReadInputPropertyFile method:** This method will scan the input file and fill in the appropriate ArrayLists. More specifically, the **InputProperty.txt** file contains the initial info for every property in one line. The first string of the line will represent the type of the property and the rest string the values of properties' fields. This section is worth **15%** of the final work.

**PrintAllProperties method:** You should modify this method (first project's method), in order to redirect the output to an output text file with name **OutputProperty.txt**. This section is worth **10%** of the final work.

**GiveRentalProperty method:** **GiveRentalProperty** method displays a frame (using **swing** packet) and the user can insert a new rental transaction by giving the Property ID and the rental days. The method searches for the Property Id into the three Array Lists. This section is worth **35%** of the final work.



### Part B

**RentalItem interface:** This interface represents everything that can be rented. It has only one declared method, **RentalItem(int RentalDays)**. This section is worth **5%** of the final work.

**Property class:** You should modify this class, in order to be an interface's implementation. This section is worth **5%** of the final work.

**Vehicle, Car and Truck classes:** This class will be a new implementation of the RentalItem interface. The only difference from Property is the implementation of the RentalItem() method (polymorphism). More specifically, it increases the total number of rental days minus the one free day (special offer). You have to write **ReadInputVehicleFile**, **FillInVehicles** and **PrintAllVehicles** methods (analogous to **ReadInputPropertyFile**, **FillInProperties**, **PrintAllProperties** methods). The input file should be named **InputVehicle.txt** and the output file **OutputVehicle.txt**. This section is worth **20%** of the final work.

**CalculateVehicleTotalIncome method:** This method will calculate the total income from all vehicles including the additional costs and taxes. That means that for each truck rental there is an additional cost which is equal to **CargoWeight**. This section is worth **5%** of the final work.

**Main class:** The main class that calls all the other methods. This section is worth **5%** of the final work.

You should design the public classes as they have been described above, using the concepts of the **polymorphism and inheritance**. You need also the **implementation of the appropriate ArrayLists**. You should also use **exception handling technique** for the data input process. For simplicity reasons, assume all numeric variables as integers.

### Marking criteria for MyBnb2 project

<i>ReadInputPropertyFile method:</i>	15%
<i>PrintAllProperties method modification:</i>	10%
<i>GiveRentalProperty method:</i>	35%
<i>RentalItem interface:</i>	5%
<i>Property class modification:</i>	5%
<i>Vehicle, Car and Truck classes:</i>	20%
<i>CalculateVehicleTotalIncome</i> method:	5%
Main class:	5%