

COMP47500 - Part A - Programming Assignment 1

MyBnb startup service

MyBnb, a property sharing startup, is planning to launch new rental services by segmenting the properties regarding their standards. More specifically, the properties are separated into three categories, i.e. apartments, houses and luxury villas. All properties have common info, i.e. unique register number, owner's name, postal address, rental cost per day, total number of season's rental days. The apartment has as additional info the storey number and number of beds. The house has as additional info the total number of storeys and the clearing fees. The luxury villa has as additional info the total number of rooms, the room service cost per day and luxury tax per day.

MyBnb wants to develop a Java program that will handle the whole business. Moreover, their analyst demands from the programmers to develop four classes. i.e. BnbProperty, BnbApartment, BnbVilla within the necessary attributes and the appropriate constructors, mutators and accessors. The analyst needs the existence of three array lists to cover the three different types of property.

The ultimate aim is the calculation of the total income from all properties including the additional costs and taxes. More specifically, you should deliver the following classes and methods:

Part A

Property class: This class is the superclass of all types of properties. The class should contain the necessary attributes (unique register number, owner's name, postal address, rental cost per day, total number of season's rental days) and the whole set of constructor, mutator and accessor methods. This section is worth 15% of the final work.

Apartment class: This class is a subclass of the Property class. The class should contain the necessary additional attributes (storey number and number of beds) and the whole set of constructor, mutator and accessor methods. This section is worth 15% of the final work.

House class: This class is a subclass of the Property class. The class should contain the necessary additional attributes (total number of storeys and the clearing fees) and the whole set of constructor, mutator and accessor methods. This section is worth 15% of the final work.

Villa class: This class is a subclass of the Property class. The class should contain the necessary additional attributes (the room service cost per day and luxury tax per day) and the whole set of constructor, mutator and accessor methods. This section is worth 15% of the final work.

Part B

FillInProperties method: This method should insert data to three ArrayLists, i.e. Apartments, Houses and Villas. You should insert three in each list objects (3 apartments, 3 houses, 3 villas). Then the method will call the RentProperty(int RentalDays) method 3 times for each property (totally 27 times). The RentProperty method will add the RentalDays to the TotalRentalDays of the property. You can insert the data manually or by using JOptionPane class. This section is worth 10% of the final work.

PrintAllProperties method: This method should display the content of all ArrayLists after their filling with data. This section is worth 10% of the final work.

CalculateTotalIncome method: This method will calculate the total income from all properties including the additional costs and taxes. This section is worth 10% of the final work.

Main class: The main class that calls all the other methods. This section is worth 10% of the final work.

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

Marking criteria for MyBnb project assignment 1:

Property class:	15%
Apartment class:	15%
House class:	15%
Villa class:	15%
FillInProperties method:	10%
PrintAllProperties method:	10%
CalculateTotalIncome method:	10%
Main class:	10%