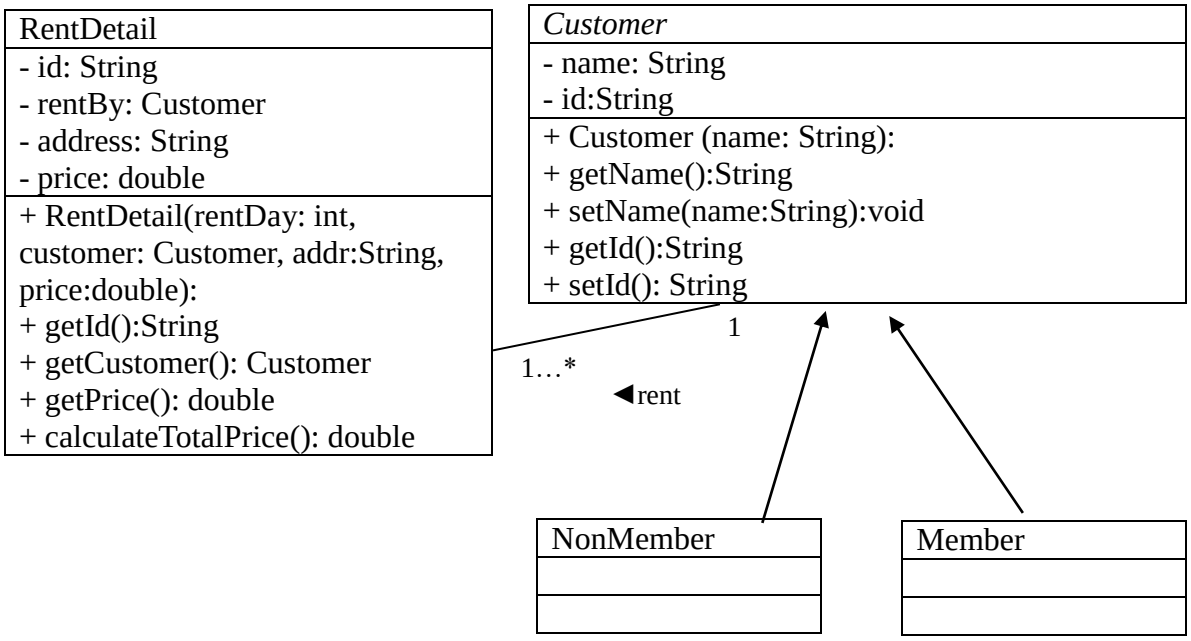
PROG2013 Object-oriented Programming

Case study:

Answer the following questions based on the UML class diagram below:



The Homestay Rental Company hires you to work on their online homestay booking system. Customer can rent a homestay by specify the start date and time and total days of staying.

Complete the following tasks:

a) Create an abstract class named Customer (as shown in UML class diagram above) and fulfill the following requirements:
   i. Include all the data fields, constructor method, accessor and mutator methods as shown in UML class diagram.

b) Create a subclass named Member and a subclass named NonMember (as shown in UML class diagram above).

c) Create a class named RentDetail (as shown in UML class diagram above) and fulfill the following requirements:
   i. Include all the data fields, constructor method, accessor and mutator methods as shown in UML class diagram.
   ii. The id of RentDetail should be auto-generated by the system. For example, R0001, R0002 and etc.

iii. The constructor method will receive total days of staying, homestay address, customer detail and price per day.

iv. Write the calculateTotalPrice() method to calculate the total rental fee. The total fee is calculated by multiple the price per day with total days of staying.

v. Override the method toString() to return a string description of the successfully renting details. Following is the sample output:

```
Rent by: Alan (D12345)
Rent ID: R0001
Rent Address: No. 1, Jalan Bunga 1, Taman Bunga.
Total days of staying: 2 days
Price per day: RM 100
Payment: RM 200
```

d) Modify the Customer class based on the requirements below:

i. Add a private data field named RentList that holds a list of RentDetail objects.

ii. Write an accessor method to return the list of RentDetail objects.

iii. Write an abstract method called addRentalDetail(RentDetail) that return a Boolean result.

e) Modify the Member class based on the requirements below:

i. A public static constant variable named MAX_CREDIT with value 1000.

ii. Override the addRentalDetail(RentDetail) method. The method is aim to add RentDetail into the RentList if the total price of the current RentDetail object and the RentDetail objects in the list are not over the credit limit (denote in the MAX_CREDIT). The method will return true if the RentDetail object successfully added into the list. Otherwise, it will return false.

f) Modify the NonMember class based on the requirements below:

i. A public static constant variable named MAX_ CREDIT with value 500.

ii. Override the addRentalDetail(RentDetail) method. The method is aim to add RentDetail into the RentList if the total price of the current RentDetail object and the RentDetail objects in the list are not over the credit limit (denote in the MAX_CREDIT). The method will return true if the RentDetail object successfully added into the list. Otherwise, it will return false.