Application Development Fundamentals I - Exam Paper

Duration: 60 minutes | Total Marks: 25

Exercise 1: Calculating interest

When you borrow money from a bank, you have to pay monthly interest for the bank. The interest monthly payment can be calculated using the following formula:

$$interest = balance * (annualInterestRate / 1200)$$

where:

- `balance` is the amount of monney that you are in debt,

- `annualInterestRate` is the interest rate set by the bank.

For example, if you borrow $1000, and annual interest rate is 10 percent, then monthly interest is $1000 * (10/1200) = $ 83.3.

Write a class named Bank with design as below:

Bank
- balance : double - rate : double
+ <<constructor>> Bank (double balance, double rate) + calculateInterest () : double

Additionally, write a program to test `calculateInterest()` method.

Exercise 2

Given a class as below:

Flight
- number : int - destination : String
+ <<Constructor>> Flight () + Flight (int number, String destination) + display () : void + getDestination () : String + getNumber () : int

- Flight class holds information about an airline flight including the flight number and destination. The flight number should be positive-valued. If the object receives a valid number and a string, the object accepts both. Otherwise, the object assumes a safe empty state (flight destination is empty and flight number is 0).

The Flight class is described as following:

- Flight() - flight destination is empty and flight number is 0.
- Flight(int number, String destination)-assign number field equal to number parameter and destination field equal to destination parameter.
- String getDestination() - a query that returns the destination string of the Flight object.
- int getNumber() - a query that returns the flight number.
- void display() – display the flight information in ther form: ***number, destination.*** This is an example: 857, Toronto

You are required to:
1. Implement Flight class
2. Write a program to test Flight class. For example, consider the following program that uses your class

```
public static void main(String args[]){
    Flight g1 = new Flight(857, "Toronto");
    g1.display();
}
```
This program should print out the following output:
857, Toronto

Marking:	
Exercise 1:	
1.0	Writing Bank class
1.0	Writing constructor
5.0	Writing calculateInterest() method
3.0	Test program
Exercise 2:	
2.0	Flight class
10.0	[5x2] Writing methods
3.0	Test program
25.0	*Total Marks*