Module 2 : Java Essentials

Assignment

Version 1.0

Assignment

Problem Statement 1

- Write a program which has an *overloaded method multiply* that will multiply two integers and floats.

Problem Statement 2

- Refactor the above solution and *override* the multiply method so that it adds two integers.

Problem Statement 3

- Two friends Jack and Jill play a game of cards. There are 10 cards in total and each card has a different message on it. Jack reveals the message written on the card selected by Jill from 1 to 10. Use switch case construct to write a program to implement the game played by them.

Problem Statement 4

Jonah is trying to implement *Inheritance* in Java. He first declares a "class Animal". Second he declares a "class Fish" and *inherits* "class Animal" in it. Third he declares "class Shark" and *inherits* "class Fish" in it. Finally he created a "class Environment" in which he creates an object of "class Shark".
Now, using this object, he wants to print the following string:
Shark is an Animal which lives in Water, hence it is Aquatic.
Implement a code which fulfils the above requirements using all the three classes that Jack created.
The following fields are to be *initialized*:

In class Animal:
Family = "Animal"

In class Fish:
Habitat = "Water"
Type = "Aquatic"

In class Shark:
Kind = "Shark"

Problem Statement 5

- Implement a class with three *constructors*, which could display and *initialize* the value of a *variable*. The conditions are:
  - First constructor takes an integer value as attribute.
  - Second constructor takes a float value as attribute.
  - Third constructor does not take any attribute.

Problem Statement 6

Develop an application following the below guidelines.

- The maximum marks for each subject is 100. The subjects whose marks are required:
  - ✓ Mathematics
  - ✓ English
  - ✓ Science
  - ✓ Social Science
- Implement a check on the marks entered. It should be between 0 and 100.
- If the user enters marks greater than 100 or less than 0 then in that case, display a message and ask the user to enter the marks once again.
- Now using below performance grade chart calculate the percentage and determine his/her performance grade based upon the percentage obtained in the examination.

Performance Grade Chart	
Below 40 %	Poor
40 – 59 %	Average
60 – 79 %	Good
80 – 89 %	Very Good
90% and Above	Excellent

- Now confirm with the user whether he wants to continue calculating or he is done.
- This application should continue running until the user chooses to exit.

Problem Statement 7

- Using *constructor* write a program to display the 10 multiples of natural numbers 1,2,3,4 and 5.