Assignment No: 1 | **Dated:** Aug. 15th, 2020

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Instructions: Questions 1 to 4 contains 15 marks each, and questions 5 to 8 contains 10 marks each.

Q.1: Design a Calculator class which contains four lambda methods:

a. add(a, b)
b. difference(a, b)
c. product(a, b)
d. safeDivision(a, b)

Also design the main methods which pass actual parameters to test the Calculator class.

Q.2: Create two classes:

BaseClass

The Rectangle class should have two data fields-width and height of int types. The class should have display() method, to print the width and height of the rectangle separated by space.

DerivedClass

The RectangleArea class is derived from Rectangle class, i.e., it is the sub-class of Rectangle class.The class should have read_input() method, to read the values of width and height of the rectangle. The class should also overload the display() method to print the area (width*height) of the rectangle.

Input Format

The first and only line of input contains two space separated integers denoting the width and

height of the rectangle.

Constraints

1 <= width, height <= 10^3

Output Format

The output should consist of:

Print the width and height of the rectangle.

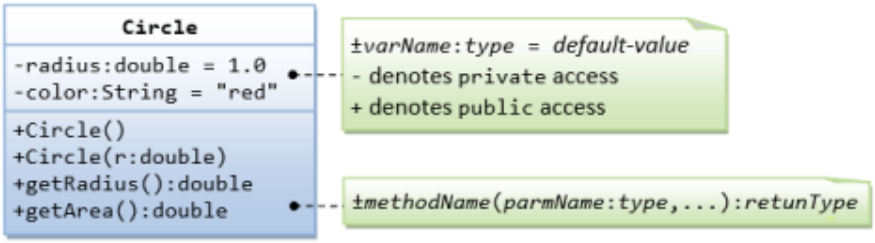
In the second line, print the area of the rectangle.

Q.3: Write a program, creating an Employee class containing details of empId, empName, empDesignation, empSalary and empLocation. Create necessary methods like getters, setters and toString. Create 10 instances of the same.

The problem is to generate stream of all the instances and do the following operations:

a. Print the name of all the employees.
b. Print all the salaries which are greater than 50,000/-
c. Print all the locations starting with the letter 'M'
d. Print all the designations ending with 'E'

Q.4: Create the following class as stated:



A class called circle is designed as shown in the following class diagram. It contains:

• Two private instance variables: radius (of the type double) and color (of the type String), with default value of 1.0 and "red", respectively.

• Two overloaded constructors - a default constructor with no argument, and a constructor which takes a double argument for radius.

• Two public methods: getRadius() and getArea(), which return the radius and area of this instance, respectively.

Q.5: Print the sum, difference and product of two complex numbers by creating a class named 'Complex' with separate methods for each operation whose real and imaginary parts are entered by user.

Q.6: Write a program, creating a class which contains a method that would print the information (name, year of joining, salary, address) of three employees by creating a class named 'Employee'. The output should be as follows:

Name	Year of joining	Address
Robert	1994	64C- WallStreet
Sam	2000	68D- WallStreet
John	1999	26B- WallStreet

Q.7: Write a program, creating a Triangle class which contains a method that takes three parameters of the three sides of the triangle, ‘a’, ‘b’, ‘c’, and returns you with the area of the triangle and print it.

Q.8: Write a program, creating a class containing the generic method which accepts only numbers, generating a custom exception when passed with the String value.
The functionality of the generic method is to print the 2/3 of the passed value.