Faculty of Information Technology
University of Moratuwa
BSc in Hons Information Technology, BSc in Hons Information Technology & Management
IN 2100 – Object Oriented Programming

Level 2 – Semester 1 **Lab Sheet 02**

Objective
Write java programs that make use of **Java Classes, Objects, Object Creation, Primitive Data Types, Variables, Methods, Arithmetic Operators, Casting**

Exercises

Q1.

1. Create a class called Temperature
2. Declare two variables named as follows inside of the main method.(data type of the variable should be double)

   fahrenheit = 212

   celsius = 98.5
3. Write a java program to convert temperature from fahrenheit to celsius and celsius to fahrenheit and print the values as follows
   - Fahrenheit value before converting to celsius
   - Fahrenheit value after converting to celsius
   - Celsius value before converting to fahrenheit
   - Celsius value after converting to fahrenheit

   Hint -

   (C/5) = (F-32)/9

   C = Celsius , F = Fahrenheit

Q2.

1. Create a class called FindAverage
2. Declare three variables named as X,Y,Z as double values inside of the main method and assign values as below

   X=10, Y=5, Z=15
3. Create a method to calculate the average of the above three values inside of the FindAverage class.
4. Print the average value of X,Y,Z inside of the main method.

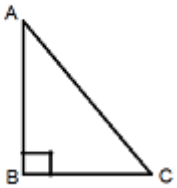
   Hint -

   Average = (sum of the values/number of values)

Q3. 1. Create a class named as Cast

2. Declare the variables by considering the following given values
   X = 5
   Y = 10.5
3. Do the following tasks
   1. Convert X value in to double
   2. Convert X value in to long
   3. Convert X value in to float
   4. Use the value which after converting to long in step 2 and convert the long value to float
   5. Convert Y value to int
   6. Convert Y value in to long

Q4.ABC is a right angled triangle



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AC = Hypotenuse
AB = Height
BC = Base

a. Create a class called Triangle.
b. Inside the Triangle class declare three instance variables named as height, base, hypotenuse(Variables should be declared as double)
c. Triangle class has 3 methods as follows.Create and develop the following methods inside of the class Triangle
    1. FindArea() - To find the Area of the right angled triangle
    2. FindHypotenuse() - To find the Hypotenuse of the right angled triangle
    3. FindPerimeter() - To find the Perimeter
d. Create another class named as Demo with the main method
e. Create an object from Triangle class
f. Through the created object pass , height value as 4.0 and base value as 3.0
g. Through the created object call above three methods (which were created inside of the Triangle class) and display the output.

Hint -

- Area of the right angled triangle = 0.5 * Height * Base
- To calculate the Hypotenuse value you can use Pythagoras Theorem Formula
  $AC^2 = AB^2 + BC^2$
  In java to find the square root you can use **Math.sqrt()** function
  To get the power value you can use **Math.pow(X,Y)** function ; X= value,Y= power
  Eg - : AC^2 = Math.pow(AC,2)

Q5. a.Create a Java class named as ‘Swap’
b.Declare two variables named as X and Y (Data type of the variables should be Integer)
c.Then assign X’s Value as 15 and Y’s Value as 5

1) Swap X and Y using a third variable named as Z and print the below outputs.
    1. X,Y values before swap
    2. X,Y values after swap

   Note: Comment or Undo part 1 before moving to part 2
2) Swap X and Y without using a third variable and print the below outputs.
    1. X,Y values before swap
    2. X,Y values after swap

Q6.

a. Create a class called Calculator.
b. Inside the Calculator class declare two instance variables named as number1 and number2(Variables should be declared as int)
c. Calculator class has 5 methods as follows. Create and develop the following methods inside of the class Calculator
    1. Addition() - To Add two values
    2. Subtraction() - To Subtract two values
    3. Multiplication() - To Multiply two values
    4. Division() - To divide two values
    5. Modulus() - To get the modulus after dividing two values
d. Create another class named as Demo with the main method
e. Create an object from Calculator class
f. Through the created object pass , number1 value as 12 and number2 value as 5
g. Through the created object call above three methods (which were created inside of the Calculator class) and display the output.