CSE - 141 - Introduction to Programming Lab

Lab 2

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1 Objective

The purpose of this lab session is to acquaint ourselves with **variables (some primitive data types)**, **assignment operator**, **mathematical operators**, **concatenation operator** and **few math functions** in Java programming language.

2 Instructions

You have to perform the following tasks and upload your work via LMS before leaving this lab. You have to raise your hand if you face any difficulty in understanding and solving these tasks. You are probably aware of the IBA policy regarding **plagiarism** and we frown upon it. Don't try to submit plagiarized code. Your codes would be thoroughly checked for similarity so do your tasks by yourself.

3 Exercises

Task 1

Write a program **Compute.java** that take two integers from command-line and prints the sum and product of two number respectively. Submit your solution (Compute.java file).
Note: Use Integer.parseInt(args[0]) to convert args[0] from String to int.

Example Input

```
% java Compute 20 10
```

Output

```
30
200
```

Example Input

```
% java Compute -10 3
```

Output

```
-7
-30
```

Task 2

Write a program **Distance.java** that takes two integer command-line arguments x and y and prints the Euclidean distance from the point (x,y) to the origin (0,0).
Note: Euclidean distance between (x_1, y_1) and (x_2, y_2) is $\sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$ Use the function Math.sqrt() to compute square root in Java.

Task 3

Write a program **Stats3.java** that prints three uniform random values between 0 and 1, their average value, and their minimum and maximum value.
Note: Use Math.random(), Math.min(), and Math.max().

Task 4

Write a program **ThreeSort**.java that takes three int values from the command-line and prints them in ascending order.
Note: Do not use if statement (we haven't covered it in lectures yet). Use Math.min() and Math.max().

Task 5

The International Standard Book Number (ISBN) is a 10-digit code that uniquely specifies a book. The rightmost digit is a checksum digit which can be uniquely determined from the other 9 digits from the condition that $d_1 + 2d_2 + 3d_3 + 4d_4 + 5d_5 + 6d_6 + 7d_7 + 8d_8 + 9d_9 + 10d_{10}$ must be a multiple of 11 (here d_i denotes the ith digit from the right). The checksum digit d_1 can be any value from 0 to 10: the ISBN convention is to use the value X to denote 10.

Example: The checksum digit corresponding to $d_{10}d_9d_8d_7d_6d_5d_4d_3d_2 = 020131452$ is 5 since it is the only value of d_1 between 0 and 10 for which $d_1 + 2*2 + 3*5 + 4*4 + 5*1 + 6*3 + 7*1 + 8*0 + 9*2 + 10*0$ is a multiple of 11.
Write a program **ISBN.java** that takes a 9-digit integer as a command-line argument, computes the checksum, and prints the 10-digit ISBN number. It's OK if you don't print any leading 0s.

Hint:
If an int variable x contains a 9-digit integer, then you can access its individual digits as follows:

```
int d2 = x % 10;
int d3 = (x / 10) % 10;
int d4 = (x / 100) % 10;
and so on.
```