King Saud University
College of Computer & Information Science
CSC111 – Lab03
IO, Variables, Expressions
All Sections

Objectives:

1. Student should learn how to read a problem statement and analyze it as following:
    a. Find out if the program needs input, how many inputs it is going to accept and of what type.
    b. Decide if variables are needed, how many variables and of what type.
    c. Understand the computation operations that are needed to solve the problem and design a simple algorithm to solve it (i.e., if the program needs to compute certain values using arithmetic expression).
    d. Decide what the program is going to output to the end user.
2. Students should learn how to define variables, and assign them values.
3. Students should learn how to write arithmetic expressions and use operators.
4. Students should learn about different numeric data types.

Instructions

1. ***Due date: Thursday, October 2nd, 2021 at 11:59 pm***
2. You can discuss answers with your colleagues. **But no copying.**
3. Submit it to lms.ksu.edu.sa. **Email submissions will not be accepted**.
4. All classes in one java project. The project name must be: ***Lab03_ID_FirstName_LastName.zip***. For example: Lab03_123456789_Marwan_Almaymoni.zip
5. Use the default package.
6. Write your name and university ID as a comment at the start of all java files.

Lab Exercise 1

Write a program that prompts the user to enter two points (x_1, y_1) and (x_2, y_2) and displays their distance between them. The formula for computing the distance is

$$The\ distance\ between\ two\ points\ = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

Hint*: you can use* `Math.pow(a, 0.5)` *to compute* $\sqrt{a}$.

Use the class name **Distance**. Here are some sample runs:

```
Enter x1 and y1: 1.5 -3.4 ↵
Enter x2 and y2: 4 5 ↵
The distance between the two points is 8.764131445842194
```

Example 2:

```
Enter x1 and y1: 10 20 ↵
Enter x2 and y2: -10 20 ↵
The distance between the two points is 20.0
```

Example 3:

```
Enter x1 and y1: 1.5 -60 ↵
Enter x2 and y2: -3.5 12 ↵
The distance between the two points is 72.17340230306452
```

Lab Exercise 2

Write a program that reads an integer between 0 and 1000 and adds all the digits in the integer. For example, if an integer is 932, the sum of all its digits 9+3+2 is 14.

Hint: *Use the % operator to extract digits*, 932 % 10 = 2
and use the / operator to remove the extracted digit. 932 / 10 = 93.

Use the class name **SumDigits**. Here are some sample runs:

```
Enter an integer between 0 and 1000: 123 ↵
The sum of all digits in 123 is 6
```

Example 2:

```
Enter an integer between 0 and 1000: 483 ↵
The sum of all digits in 483 is 15
```

Example 3:

```
Enter an integer between 0 and 1000: 19 ↵
The sum of all digits in 19 is 10
```

Done…