King Saud University
College of Computer & Information Science
CSC111 – Lab02
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 (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 use class Scanner to read inputs.
3. Students should learn how to define variables, assign them values and write arithmetic expressions.
4. Students should learn how to output results using System.out.print(ln).

Instructions

1. ***Due date: Saturday, September 18th, 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: ***Lab02_ID_FirstName_LastName.zip***. For example: Lab02_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 reads a Celsius degree in a double value from the console, then converts it to Fahrenheit and displays the result. The formula for the conversion is as follows:

$$fahrenheit = (9 / 5) * celsius + 32$$

Hint*: In Java, 9 / 5 is 1, but 9.0 / 5 is 1.8.*

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

```
Enter a temperature in Celsius: 43 ↵
43.0 Celsius is 109.4 Fahrenheit
```

Example 2:

```
Enter a temperature in Celsius: 15 ↵
15.0 Celsius is 59.0 Fahrenheit
```

Example 3:

```
Enter a temperature in Celsius: -1 ↵
-1.0 Celsius is 30.2 Fahrenheit
```

Lab Exercise 2

Write a program that reads the subtotal and the gratuity rate (tip rate), then computes the gratuity (tip) and total. For example, if the user enters 10 for subtotal and 15 for gratuity rate (15%), the program displays $1.5 as gratuity and $11.5 as total.

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

```
Enter subtotal and gratuity rate: 80 12 ↵
The gratuity is $9.6 total is $89.6
```

Example 2:

```
Enter subtotal and gratuity rate: 10 15 ↵
The gratuity is $1.5 total is $11.5
```

Example 3:

```
Enter subtotal and gratuity rate: 33 5 ↵
The gratuity is $1.6500000000000001 total is $34.65
```

Done…