**King Saud University**

**College of Computer & Information Science**

**CSC111 – Lab02**

**IO, Variables, Expressions**

**All Sections**

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# Objectives:

1. Student should learn how to read a problem statement and analyze it as following:
	1. Find out if program needs input, how many inputs it is going to accept and of what type.
	2. Decide if variables are needed, how many variable and of what type.
	3. Understand the computation operations that are needed to solve the problem (i.e., if program needs to compute certain values using arithmetic expression).
	4. Decide what is the program is going to output to the end user.
2. Student should learn how to use class Scanner to read inputs.
3. Student should learn how to define variable, assign them values and write arithmetic expressions.
4. Student should learn how to output results using System.out.print(ln).

# 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.

Here is a sample run:

Enter a temperature in Celsius: 43 **↵**

43.0 Celsius is 109.4 Fahrenheit

# Solution

1. Create a new project in eclipse and name it **lab02**
2. Create a new class and name it **CToF**. Make sure you choose the public static void main option.
3. Write the program as following (you can ignore comments):

**import** java.util.Scanner;

**public** **class** CToF {

 // Main method

 **public** **static** **void** main(String[] args) {

 Scanner input = **new** Scanner(System.***in***);

 // Enter a temperature in Celsius

 System.***out***.print("Enter a temperature in Celsius: ");

 **double** celsius = input.nextDouble();

 // Convert it to Fahrenheit

 **double** fahrenheit = (9.0 / 5) \* celsius + 32;

 // Display the result

 System.***out***.println(celsius + " Celsius is " +

 fahrenheit + " Fahrenheit");

 }

}

1. When you are done, save your program and run it. Make sure it prints the output as shown above.
2. Submit your program to WebCAT through eclipse to get familiar with WebCAT. Ask your TA for help.

# Lab Exercise 2

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

Here is a sample run:

Enter subtotal and gratuity rate: 10 15 **↵**

The gratuity is $1.5 total is $11.5

# Solution

1. Use the same project **lab02** that you created before
2. Create a new class and name it **Tips**. Make sure you choose the public static void main option.
3. Write the program as following (you can ignore comments):

**import** java.util.Scanner;

**public** **class** Tips {

 **public** **static** **void** main(String args[]) {

 // Read subtotal

 Scanner input = **new** Scanner(System.***in***);

 System.***out***.print("Enter subtotal and gratuity rate: ");

 **double** subtotal = input.nextDouble();

 **double** rate = input.nextDouble();

 **double** gratuity = subtotal \* rate / 100;

 **double** total = subtotal + gratuity;

 System.***out***.println("The gratuity is $" + gratuity +

 " total is $" + total);

 }

}

1. When you are done, save your program and run it. Make sure it prints the output as shown above.
2. Submit your program to WebCAT through eclipse to get familiar with WebCAT. Ask your TA for help.

**Done…**