

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 program needs input, how many inputs it is going to accept and of what type.
 - b. Decide if variables are needed, how many variable and of what type.
 - c. Understand the computation operations that are needed to solve the problem (i.e., if program needs to compute certain values using arithmetic expression).
 - d. 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.println`.

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:

$$\text{fahrenheit} = (9 / 5) * \text{celsius} + 32$$

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");
    }
}
```

- 4- When you are done, save your program and run it. Make sure it prints the output as shown above.
- 5- 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);
    }
}
```

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

Done...