CPSC 1061 – Introduction to Programming in Java Lab

Spring 2021

Lab 2 – Due Monday, January 25, 10:00pm

1 Introduction

In this lab you will practice writing short Java programs.

The lab today can be performed in groups of two. Do not just tell each other solutions but always make sure that your lab partner also understands why something does or does not work.

Have fun!

2 Lab Objectives

By the end of the lab, you should be able to:

1. write short Java programs to perform simple computations
2. declare and use variables to store data
3. use a multitude of concepts: string concatenation, primitive data types, assignment statements and expressions, constants, and output operations

3 Main

3.1 General Instructions

At the start of each program, write your name, the name of your lab partner, the course and lab, the date, and a description of what your program does. Here is an example:

```
// Name: Sophie Joerg
// Lab partner: Ada Lovelace
// Course and lab: CPSC 1061 - Lab 2
// Date: Jan 18, 2021
// Description: Celsius.java computes and displays the temperature in
//              Celsius based on a temperature in Fahrenheit given by
//              the user.

// ----------------------------------------------------------------------

public class Celsius {
```

Each program needs to have comments.

Each program needs to be clean. For example, if you tried out different approaches, delete outcommented lines that are not necessary anymore or variables that are not being used.

Make sure that each of your programs compiles and make sure that your files are named correctly and stay named correctly (based on the subsection titles, e.g., Initials.java) when you submit them.

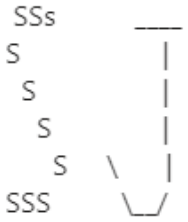
3.2 CirclePerimeter.java

Write a program that computes and displays the perimeter of a circle with a radius of 1.5 cm. Your program needs to declare and use a constant. Your output needs to be a full sentence.

3.3 Initials.java

Write a program that prints your initials in ascii art.

Example output:



3.4 TigerRoar.java

The roar of a tiger can be heard from a distance of about 3km. Write a program that computes and displays that information using miles. Your output needs to be a full sentence.

3.5 Celsius.java

Write a Java program that asks the user for a temperature in Fahrenheit and gives back the temperature in Celsius.

Tip1:
To receive input from the user (more specifically, input that can be assigned to a variable of type double, which is what we need in this program), follow these steps:

1. Add the line `import java.util.Scanner;` before the class definition
2. Add the lines
   ```
   Scanner input = new Scanner(System.in);
   double d = input.nextDouble();
   ```
   to the place in the code where the user should be promted.
3. The value that the user entered is now saved as the variable d. Rename that variable depending on your program.

Tip2:

$$*tC = (tF - 32) * \frac{5}{9} \tag{1}$$

with tC: temperature in degrees Celsius
tF: temperature in degrees Fahrenheit.

Example output:

```
Please enter a temperature in Fahrenheit
86
The temperature in Celsius is: 30.0
```

3.6 WhichError.java

If your program needs to read a value that can be assigned to a variable of type double, but the user entered a string, an error would occur when running this program. What kind of error is this (syntax, runtime, or logic)? Write a program to test it. Take a screenshot of the error in your console output and save it as WhichError.png or WhichError.jpg. Submit the program as well.

3.7 Submit Files

Transfer your java files from the lab machine to your computer/laptop. Create a zip-file that includes the five files and the screenshot and submit the zip-file to Canvas.