Assignment 2

CPS501 –Advanced Programming and Data Structures

Released Date: 10/08/2018

Requirements

In this assignment, you will solve two practical and interesting problems in programming. By completing the project you will gain valuable hands-on experience in the design, implementation and evaluation of programming algorithms.

Problem 1

Write a Java program to implement a **Unit Converter** using JavaFX.

Problem description:

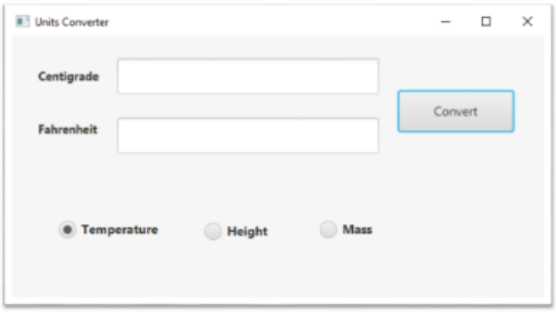
1. An application must have three different unit types (*Temperature*, *Height* and *Weight*) using radio buttons.
2. The name of the unit should change with respective to the unit type that has to be converted.
3. For example, for *Temperature*, the application should be able to convert into Fahrenheit if Celsius value is given and also it should be able to convert into Celsius if Fahrenheit value is given.
4. Examples:
   a. Temperature

   0 °C = 32 °F (The user inputs "0 C", and the output will be "32 F")
   b. Height

   6 ft 1 in = 1.85 m (The user inputs "6 ft 1 in", and the output will be "1.85 m")
   1.85 m = 6 ft 1 in (The user inputs "1.85 m", and the output will be "6 ft 1 in")
   c. Weight

   8 lb 2 oz = 3.69 kg (The user inputs "8 lb 2 oz", and the output will be "3.69 kg")
   1 kg = 2 lb 3.27 oz (The user inputs "1 kg", and the output will be "2 lb 3.27 oz")

Sample Screenshots for **Unit Converter**



Problem 2

Using JavaFX write a Java program to implement a **Calculator** that **performs** all the arithmetic operations and simultaneously creates a text file that **saves** all the operations performed in the calculator.

Use a TextField to show the output and Buttons to give input values. GUI example looks like:

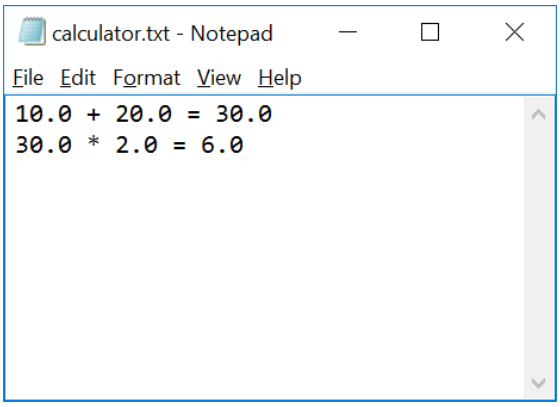
Design the GUI by using scene builder. The function of each button is described as below.

- TextField: receives input and output the result
- "1, 2, 3, 4, 5, 6, 7, 8, 9, 0": add digit into the TextField
- "AC": clear the TextField
- "+/-": toggle negative/positive number
- "%": percentage sign
- "+, - ,*, /": basic operator (add, subtract/multiply/divide)
- "=": produces the output to the TextField
- ".": starts the float number

Problem Description:

1. Application should be able to compute all basic arithmetic operations.
2. It should be able to save all the performed operations in the form of a text file.

Sample file



What to Submit

1. A well-documented program that implements all problems in the Assignment 2. You must submit your program source code.

2. A well-written, concise project report. It should include: (a) title and names of group members; (b) the analysis of each problem; (c) the issues during the implementation; (d) the solutions to overcome the issues in (c); (e) the contribution of each individual member

3. The powerpoint slides (maximum 20 slides)

For each group, you must submit the files above in a single zipped folder. Your group will be required to do a presentation in classroom for the grading.

Note: If you cannot submit zipped file to isidore, please change the filename extension to doc or docx and then submit it.

Submission Due: 11:55pm, October 26, 2018