

CS1020 Take-home Lab #1

Exercise #1: Temperature Conversion

http://www.comp.nus.edu.sg/~cs1020/3_ca/labs.html

Objectives:

1. Writing user-defined methods
2. Using **DecimalFormat** class

Task statement:

(Note that unless otherwise stated, you may assume that all input data are valid and hence there is no need for you to perform input data validation.)

Temperature can be recorded using several scales, three of which are Celsius ($^{\circ}\text{C}$), Fahrenheit ($^{\circ}\text{F}$) and Kelvin ($^{\circ}\text{K}$). The following are some conversion formulas:

From Fahrenheit to Celsius:

- $^{\circ}\text{C} = (5/9) \times (^{\circ}\text{F} - 32)$

From Celsius to Fahrenheit:

- $^{\circ}\text{F} = 1.8 \times ^{\circ}\text{C} + 32$

From Celsius to Kelvin:

- $^{\circ}\text{K} = ^{\circ}\text{C} + 273.15$

You are to write a program **ConvertTemperature.java** to do read a temperature and convert the value from one scale to another. Your program then outputs the converted temperature in two decimal places. You should use **DecimalFormat** class for this purpose.

Note that your program must contain four conversion methods, three of which must be the ones given above. For the other two conversions, you are to use the appropriate methods among these four.

Note also that the scales appear in this order in the menu: Celsius, Fahrenheit, Kelvin. Once a particular scale is chosen as the source, it will not appear in the destination scale menu.

Refer to the sample runs for the output format.

Number of submissions:

You are given **15** submissions. Only the final submission will be graded.

Sample run #1:

Enter temperature: 300.0

Choose source scale:

1. Celsius
2. Fahrenheit
3. Kelvin

Enter your choice: 3

Choose destination scale:

1. Celsius
2. Fahrenheit

Enter your choice: 1

300.0 degrees Kelvin = 26.85 degrees Celsius

Sample run #2:

Enter temperature: 12.3

Choose source scale:

1. Celsius
2. Fahrenheit
3. Kelvin

Enter your choice: 2

Choose destination scale:

1. Celsius
2. Kelvin

Enter your choice: 2

12.3 degrees Fahrenheit = 262.21 degrees Kelvin

Notes:

- You are advised to do all take-home exercises by yourself so that you can truly learn, or you may have difficulty with the sit-in labs later.
- You may raise your doubts on the IVLE forum, but please do NOT post your codes (partial or complete) on the forum before the deadline. You may post your codes after the deadline.