

COMP1006/1406 – Winter 2022

Submit your `Temperature.java` file to Brightspace.

There are 10 possible marks A2-part 1

1 Temperature**[10 marks]**

Complete the provided `Temperature` class. Add any attributes and helper methods as needed but keep in mind that testing will involve only the methods you are asked to write/complete. You must complete the constructors and methods in the provided class (without changing any signatures, return types, or modifiers).

In this problem you will need to be able to convert temperatures between Celsius, Fahrenheit and Kelvin. For help, see https://en.wikipedia.org/wiki/Conversion_of_units_of_temperature

A `Temperature` object holds a single temperature value and displays it in one of the three scales. Once a scale has been set, it will display the temperature in that scale until changed. The default scale is Celsius if not specified.

The three scales are represented by Strings (class attributes) in the provided `Scale` class. For this assignment, the purpose of the `Scale` class is to provide a consistent naming scheme for the different scales. Essentially, we assign fixed names for the three scales and use these everywhere in the code.

Some examples of using a `Temperature` object:

```
Temperature t = new Temperature(10.1);
System.out.println(t.getScale());      // displays "CELSIUS"
System.out.println(t.toString());      // displays "10.1C"
t.setScale(Scale.FAHRENHEIT);          // change scale
System.out.println(t.toString());      // displays "50.18F" (notice it converted the value!)
System.out.println(t.getScale());      // displays "FAHREHEIT"
t = new Temperature(12.25, "KELVIN");  // scale input is not from Scale!
System.out.println(t.getScale());      // displays "NONE"
System.out.println(t.toString());      // displays "0.0N"
```

Note: Temperature values are floating point numbers. If the expected output is `"0.1F"` and your output is `"0.09999999999998F"`, that is OK. You are **not** asked to perform any string formatting in this class.

Submit your `Temperature.java` to Brightspace. along with your `.java` files.

A program called `SimpleTemperatureProgram` is provided with the code shown above that you can use as a starting point for your own testing if you wish.

- 1) You should have no static attributes or methods in your class.
- 2) Read the specifications in the skeleton file carefully!
(do not use Strings that look like the attributes from `Scale`)
- 3) Be sure to use **ENCAPSULATION!**
- 4) Remember to fill in the header comment block