

I like to write down my thinking process and some design concerns.

The design is based on my learning from Clean code - google talk.

My blog is here:

<http://juliachencoding.blogspot.com/2015/12/oo-principle-solid-open-close-principle.html>

I tried to apply S.O.L.I.D.principles, single responsibility principle, open and close principle.

Here are user cases handled in the project, the test cases also are written to pass those user cases.

User cases:

1. The thermometer can read data points and then response with temperature value in Celsius or Fahrenheit;
2. The thermometer can be specified with a threshold, and then if the threshold is reached and notification can be sent.
3. The freezing threshold is implemented as one of threshold thermometer.
4. The boiling threshold is implemented as one of threshold thermometer.
5. The smart threshold is defined as avoiding notification for insignificant fluctuation. And direction can be specified, such as freezing smart threshold is implemented in the project.
6. Two test cases are written for smart threshold thermometer, first one without directional information, second one with directional information.

The test cases can be run, and the result is copied here.

Temperature is 34.7 °F

Temperature is 33.8 °F

Temperature is 32.9 °F

Temperature is 32 °F

Temperature is 1.5 °C

Temperature is 1 °C

Temperature is 0.5 °C

Temperature is 0 °C

Temperature is 35 °F

Temperature is 36 °F

Temperature is 37 °F
Temperature is 38 °F
Temperature is 1.7 °C
Temperature is 2.2 °C
Temperature is 2.8 °C
Temperature is 3.3 °C
Temperature is 37.4 °F
Temperature is 30.2 °F
Freezing note: -1 C <= or LessEqual 0 C. Keep warm. It is freezing!
Temperature is 28.4 °F
Freezing note: -2 C <= or LessEqual 0 C. Keep warm. It is freezing!
Temperature is 39.2 °F
Temperature is 37.4 °F
Temperature is 30.2 °F
Freezing note: -1 C <= or LessEqual 32 F. Keep warm. It is freezing!
Temperature is 28.4 °F
Freezing note: -2 C <= or LessEqual 32 F. Keep warm. It is freezing!
Temperature is 39.2 °F
Temperature is 96.8 °F
Temperature is 98.6 °F
Temperature is 100.4 °F
Boiling note: 38 C >= or BiggerEqual 38 C. Super hot!
Temperature is 102.2 °F
Boiling note: 39 C >= or BiggerEqual 38 C. Super hot!
Temperature is 36 °C
Temperature is 37 °C
Temperature is 38 °C
Boiling note: 38 C >= or BiggerEqual 38 C. Super hot!
Temperature is 40 °C
Boiling note: 40 C >= or BiggerEqual 38 C. Super hot!
Temperature is 1.5 °C
Temperature is 1 °C
Temperature is 0.5 °C
Temperature is 0 °C
Freezing note: 0.0 C <= or LessEqual 0 C. Keep warm. It is freezing!
Temperature is -0.5 °C
Temperature is 0 °C
Temperature is -20 °C
Freezing note: -20 C <= or LessEqual 0 C. Keep warm. It is freezing!
Temperature is -10 °C
Freezing note: -10 C <= or LessEqual 0 C. Keep warm. It is freezing!

The smart freezing threshold thermometer is tested in the following:

Freezing is defined \leq or LessEqual 32 F

InsignificantAmount: ± 0.5 °C

The direction is specified, Dropping only.

So last temperature -10 C will not trigger notification.

The smart freezing threshold thermometer is tested in the following:

The temperature data points are the following:

1.5 C, 1.0 C, 0.5 C, 0.0 C, -0.5 C, 0.0 C, -20 C, -10 C

Temperature is 1.5 °C

Temperature is 1 °C

Temperature is 0.5 °C

Temperature is 0 °C

Freezing note: 0.0 C \leq or LessEqual 32 F. Keep warm. It is freezing!

Temperature is -0.5 °C

Temperature is 0 °C

Temperature is -20 °C

Freezing note: -20 C \leq or LessEqual 32 F. Keep warm. It is freezing!

Temperature is -10 °C