**Software Design Documentation**

For

**Project: (Trang) Trang Test**

**Winforms Test Project**

Date created: 4/25/2018

Date updated: 4/25/2018

# Audience

The audience of this document is Paul Trang and his associates.

# Disclosure

There are no disclosure concerns for this project.

# Table of Contents

[Audience 2](#_Toc512449615)

[Disclosure 2](#_Toc512449616)

[Table of Contents 3](#_Toc512449617)

[Background and Overview 4](#_Toc512449618)

[Data Requirements 4](#_Toc512449619)

[Application Requirements 5](#_Toc512449620)

# Background and Overview

This project is to allow Paul Trang and his Associates a chance to assess my skills.

Overview is as follows;

Design and implement (in C#) a thermometer class or classes that read the temperature of some external source.

The thermometer needs to be able to provide temperature in both Fahrenheit and Celsius.  It must be possible for callers of the class(es) to define arbitrary thresholds such as ***freezing*** and ***boiling*** at which the thermometer class will inform the appropriate callers that a specific threshold has been reached.  Note that callers of the class may not want to be repeatedly informed that a given threshold has been reached if the temperature is fluctuating around the threshold point.  For example, consider the following temperature readings from the external source:

*1.5 C*

*1.0 C*

*0.5 C*

***0.0 C***

*-0.5 C*

***0.0 C***

*-0.5 C*

***0.0 C***

*0.5 C*

***0.0 C***

Some callers may only want to be informed that the temperature has reached 0° C once because they consider fluctuations of +/- 0.5° C insignificant.

It may also be important for some callers to be informed that a threshold has been reached only if the threshold was reached from a certain direction.  For example, some callers may only care about a freezing point threshold if the previous temperature was above freezing (i.e. they only care about the threshold if it occurred while the temperature was dropping).

**Key areas that you need to focus on:**

·         Document any assumptions, limitations and considerations related to your solution

·         Testing while you develop

·         Object Orientated Development and design patterns (SOLID Principles)

·         We are looking for modeling ability.

·         We are looking for some semblance of professional development skill (e.g. TDD, unit tests; clear code – other people need to be able to understand the code)

·         We are looking for people who have the ability to explain their choices (document why you did things certain ways)

# Data Requirements

This project will require little in the way of static data, a few formulas for conversions, and a place to store details regarding the desired alerts. Since the temperatures to be converted will be sent from an external source, the test application will use a list object to store the test temperatures and a ListBox to display them on screen to the user. XML will be used to store the Alert and Threshold temperature details. Lists will need to be created for dropdowns for small details, such as whether to allow multiple alerts, and which direction to allow alerts from. These will be contained in two XML tables, one for the different categories, and one for the values

# Application Requirements

|  |  |  |  |
| --- | --- | --- | --- |
| **Number** | **Requirement Name** | **Requirement Description** | **Requirement Details** |
| 1 | Convert Temperatures | The application must be able to input a temperature value, and a temperature type as a single input from an external source and output the temperature’s converted value in both Fahrenheit and Celsius. |  |
| 2 | Detect fluctuations | The application must remember the last temperature reading and deduce the direction and amount of difference between it and the current reading being input. |  |
| 3 | Alert User on Threshold | The application must be able to alert the user when a threshold temperature is reached. This threshold must be configurable in the following ways; |  |
| 3a | Alert on Temp value | The threshold temperature must have a specific value.  The value can be either C or F and is allowed up to 1 decimal point. Either may be defined, if one value is entered, the other is automatically calculated when the user saves the value. |  |
| 3b | Alert ONLY from certain direction | The threshold temperature alert must be configurable to allow alerts when the temperature rises to the value, drops to the value or both. |  |
| 3c | Alert ONLY once | The threshold temperature alert must be configurable to alert only once or every time the input temperature reaches all other configured criteria. |  |
| 3d | Named Thresholds | The threshold Temperature must allow for attaching a name to the threshold. |  |