Name: Sulaiman Pandit Time Taken to Complete :

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| **Quality Assurance Questionnaire** |  |

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| Subject: | Quality Assurance Questionnaire |
| Date: | December 22, 2018 |
| Version: | 1.0 |

# Introduction

The purpose of this document is to test the ability of the candidate to devise Test Plans/Test Cases given a specification for a small module.

It is expected that the candidate will take into consideration general cases, edge cases, efficient tests (reduce overlap), and identify gaps in the specification.

For each module, the candidate should understand the specification, and define a set of Inputs and expected Outputs that indicate success.

# Thermostat

Your team is developing software for a thermostat controller that has a switch for turning the heat on and off.

The following algorithm has been implemented:

* If the heating switch is on:
  + If the measured temperature is equal to or higher than 23°C, the heat is turned off.
  + If the measured temperature is lower than 23°C, the heat is turned on.
* If the heating switch is off:
  + If the measured temperature falls below 5°C, the heat is turned on to prevent the water in the heating system from freezing.
  + Otherwise, the heat is turned off.

Define the optimal (effective and efficient) set of boundary test cases to adequately test the thermostat controller.

|  |  |  |  |
| --- | --- | --- | --- |
| Measured Temp | Switch Position | Heat is On/Off | Comments |
| 20 | On | On | Sample Test Case |
|  |  |  |  |
|  |  |  |  |

Please outline any gaps, inconsistencies, ambiguity in the specs that should be clarified for a more accurate test Cases.

# Margin Calculator

Your team is developing software for helping resellers analyze the profit and run what-if scenarios on discounts.

A reseller, also called Value Added Reseller or VAR, purchases equipment from the Vendor at a given discount from the Vendor published List Price, this is called VAR Discount, and it can range from 0% to 100%. The value of the transaction the VAR pays the Vendor is called Cost.

The VAR then resells to the End-customer. The amount that the End-customer pays the VAR is called Price.

Following is definition of the various elements in the Margin Calculator and the formulas that define them.

For this Test Case, let’s assume that the Vendor List Price is 200.

Each of the elements that are NOT constant can sometimes be used as user input, and in other cases will be calculated based on user input in other input fields.

|  |  |  |  |
| --- | --- | --- | --- |
| Parameter | Formula/Input | Sample | Comments |
| List Price (LP) | Constant | 200 | Constant for all Test Cases |
| VAR Discount (%) (VD) | (1 – (VC/LP)) \* 100 | 40% | When user input, VC is calculated |
| VAR Cost (VC) | LP \* (1-VD/100) | 120 | When user input, VD is calculated |
|  |  |  |  |
| End-user Discount (%) ED | (1-EP/LP))\*100 | 10 | When user input, EP is calculated |
| End-user Price (EP) | LP \* (1-ED/100) | 180 | When user input, ED is calculated |
|  |  |  |  |
| Markup (%) (MU) | ((EP-VC)/VC)\*100 | 50% | Calculated unless input |
| EP as function of MU | VC \* (1+MU/100) | MU=30%  EP<-156  ED<-22% | When input, will impact the End-user side only (ED & EP) |

## Test Cases

**For all Test Cases, assume LP is 200.**

Each row represents a Test Case. For each row. Use either the Inp or the Calc columns for the 5 variables.

For efficiency, you can separate Test Cases if they are independent. In this case leave the irrelevant column empty.

Naturally, if one side of the equation is given as input, mark it under Inp, and specify the expected result in the Calc column. If errors are expected, mark “Err”.

The first 2 rows are exemplify the principle. In row#1, the input is 40%, and the expected calculation is 120. In Row #2, the input is 180, and the expected calculation is 10%.

You could and should combine Test Cases in one row if applicable, for example, row#3, is based on row#1 with more data

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **#** | **VD (%)** | | **VC** | | **ED(%)** | | **EP** | | **MU** | |
|  | **Inp** | **Calc** | **Inp** | **Calc** | **Inp** | **Calc** | **Inp** | **Calc** | **Inp** | **Calc** |
| 1 | 40% |  |  | 120 |  |  |  |  |  |  |
| 2 |  | 10% | 180 |  |  |  |  |  |  |  |
| 3 | 40% |  |  | 120 | 10 |  |  | 180 |  | 50% |
| 4 |  |  |  |  |  |  |  |  |  |  |
| 5 |  |  |  |  |  |  |  |  |  |  |
| 6 |  |  |  |  |  |  |  |  |  |  |
| … |  |  |  |  |  |  |  |  |  |  |

(add as many rows as necessary)

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|  |  |  |  |
| --- | --- | --- | --- |
| **Measured Temp** | **Switch Position** | **Heat is on/off** | **Comments** |
| 20 | ON | ON | Heating is ON because  Measured Temp is less than 23 |
| 21 | ON | ON | Heating is ON because  Measured Temp is less than 23 |
| 22 | ON | ON | Heating is ON because  Measured Temp is less than 23 |
| 23 | ON | OFF | Heating is OFF because  Measured Temp is equal to 23 |
| 24 | ON | OFF | Heating is OFF because  Measured Temp is Higher  than 23 |
| 25 | ON | OFF | Heating is OFF because  Measured Temp is Higher  than 23 |
| 26 | ON | OFF | Heating is OFF because  Measured Temp is Higher  than 23 |
| 7 | OFF | OFF | Heating is OFF because  Measured Temp is Higher  than 5 |
| 6 | OFF | OFF | Heating is OFF because  Measured Temp is Higher  than 5 |
| 5 | OFF | OFF | Heating is OFF because  Measured Temp is equal to 5 |
| 4 | OFF | ON | Heating is ON because  Measured Temp is less than 5 |
| 3 | OFF | ON | Heating is ON because  Measured Temp is less than 5 |
| 2 | OFF | ON | Heating is ON because  Measured Temp is less than 5 |
| 1 | OFF | ON | Heating is ON because  Measured Temp is less than 5 |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Case ID | Test Case Name | Pre Condition | Steps to Execute | Expected Result | Status | Comment(if any) | Executed QA Name |
| TC\_01 | Verify the Heating is ON while the Measured Temperature is 20 | - Switch Position have to ON | 1. Open Tharmostat Google sheet 2. Check Measured Temp 20 and  observe the Heating section | Heating is ON when the measured  Temperature is 20 |  |  |  |
| TC\_02 | Verify the Heating is ON while the Measured Temperature is 21 | - Switch Position have to ON | 1. Open Tharmostat Google sheet 2. Check Measured Temp 21 and  observe the Heating section | Heating is ON when the measured  Temperature is 21 |  |  |  |
| TC\_03 | Verify the Heating is ON while the Measured Temperature is 22 | - Switch Position have to ON | 1. Open Tharmostat Google sheet 2. Check Measured Temp 22 and  observe the Heating section | Heating is ON when the measured  Temperature is 22 |  |  |  |
| TC\_04 | Verify the Heating is OFF while  the Measured Temperature is 23 | - Switch Position have to ON | 1. Open Tharmostat Google sheet 2. Check Measured Temp 23 and  observe the Heating section | Heating is OFF when the measured  Temperature is 23 |  |  |  |
| TC\_05 | Verify the Heating is OFF while  the Measured Temperature is 24 | - Switch Position have to ON | 1. Open Tharmostat Google sheet 2. Check Measured Temp 24 and  observe the Heating section | Heating is OFF when the measured  Temperature is 24 |  |  |  |
| TC\_06 | Verify the Heating is OFF while  the Measured Temperature is 25 | - Switch Position have to ON | 1. Open Tharmostat Google sheet 2. Check Measured Temp 25 and  observe the Heating section | Heating is OFF when the measured  Temperature is 25 |  |  |  |
| TC\_07 | Verify the Heating is OFF while  the Measured Temperature is 26 | - Switch Position have to ON | 1. Open Tharmostat Google sheet 2. Check Measured Temp 26 and  observe the Heating section | Heating is OFF when the measured  Temperature is 26 |  |  |  |
| TC\_08 | Verify the Heating is OFF while  the Measured Temperature is 7 | - Switch Position have to OFF | 1. Open Tharmostat Google sheet 2. Check Measured Temp 7 and  observe the Heating section | Heating is OFF when the measured  Temperature is 7 |  |  |  |
| TC\_09 | Verify the Heating is OFF while  the Measured Temperature is 6 | - Switch Position have to OFF | 1. Open Tharmostat Google sheet 2. Check Measured Temp 6 and  observe the Heating section | Heating is OFF when the measured  Temperature is 6 |  |  |  |
| TC\_10 | Verify the Heating is OFF while  the Measured Temperature is 5 | - Switch Position have to OFF | 1. Open Tharmostat Google sheet 2. Check Measured Temp 5 and  observe the Heating section | Heating is OFF when the measured  Temperature is 5 |  |  |  |
| TC\_11 | Verify the Heating is ON while  the Measured Temperature is 4 | - Switch Position have to OFF | 1. Open Tharmostat Google sheet 2. Check Measured Temp 4 and  observe the Heating section | Heating is ON when the measured  Temperature is 4 |  |  |  |
| TC\_12 | Verify the Heating is ON while  the Measured Temperature is 3 | - Switch Position have to OFF | 1. Open Tharmostat Google sheet 2. Check Measured Temp 3 and  observe the Heating section | Heating is ON when the measured  Temperature is 3 |  |  |  |
| TC\_13 | Verify the Heating is ON while  the Measured Temperature is 2 | - Switch Position have to OFF | 1. Open Tharmostat Google sheet 2. Check Measured Temp 2 and  observe the Heating section | Heating is ON when the measured  Temperature is 2 |  |  |  |
| TC\_14 | Verify the Heating is ON while  the Measured Temperature is 1 | - Switch Position have to OFF | 1. Open Tharmostat Google sheet 2. Check Measured Temp 1 and  observe the Heating section | Heating is ON when the measured  Temperature is 1 |  |  |  |