Practice Assignment 3

Boundary Value Analysis

A. Create test cases of the following problems based on Normal Boundary Value Analysis (BVA) and Robust Boundary Value Analysis. Execute those test cases using JUnit. The zip folder "SourceCode" includes the source codes of the following problems.

Submit the test code and the source code in Moodle.

Question 1: 20 Points

The *TriangleClassify.java* program accepts three integers, side1, side2, and side3, as input. These are taken to be sides' values of a triangle. Integer values side1, side2, and side3 must satisfy the following conditions:

c_1 $1 <= side1 <= 200$

c_2 $1 <= side2 <= 200$

c_3 $1 <= side3 <= 200$

c_4 $side1 < side2 + side3$

c_5 $side2 < side1 + side3$

c_6 $side3 < side1 + side2$

If an input value fails any of conditions c1, c2, or c3, the program notes this with an output message, for example, "OUT_OF_RANGE."

If values of a, b, and c satisfy conditions c1, c2, and c3, one of four mutually exclusive outputs is given:

•   If all three sides are equal, the program output is Equilateral.

•   If exactly one pair of sides is equal, the program output is Isosceles.

•   If no pair of sides is equal, the program output is Scalene.

•   If any of conditions c4, c5, and c6 is not met, the program output is NotATriangle.

Question 2: 20 Points

A rifle salesperson in the former Arizona Territory sold rifle locks, stocks, and barrels made by a gunsmith in Missouri. Locks cost $45, stocks cost $30, and barrels cost $25. The salesperson had to sell at least one complete rifle per month, and production limits were such that the most the

salesperson could sell in a month was 70 locks, 80 stocks, and 90 barrels. After each town visit, the salesperson sent a telegram to the Missouri gunsmith with the number of locks, stocks, and barrels sold in that town. At the end of a month, the salesperson sent a very short telegram showing total number of locks, stocks and barrels sold. The gunsmith then knew the sales for the month were complete and computed the salesperson's commission as follows: 10% on sales up to (and including) $1000, 15% on the next $800, and 20% on any sales in excess of $1800. The commission program produced a monthly sales report that gave the total number of locks, stocks, and barrels sold, the salesperson's total dollar sales, and, finally, the commission.

Consider the attached file "CommissioningProblem.java" source code. This has implemented the above-mentioned problem partially.

Decision Table based Testing

B. Submit "DecisionTable.docx", the source code along with bug description (if any), and the test code in Moodle.

Question 1: 30 Points

A commercial house needs an application to request products towards customers based on three features: Gender, Residence Type, and Age Group. The Age Groups are - A1 (under 35), A2 (between 35 and 65), A3 (over 65). The commercial house has four products to assign towards clients. Those are W, X, Y and Z. Product W will request to young females. Product X will appeal to all but not to older females. Product Y will request to female city residents. Product Z will request to Male middle-aged shoppers who do not live in cities.

a) Test this program "Client_Product.java" using the Decision Table based testing. Use "DecisionTable.docx" file to create the decision table for this problem. Create test cases from that decision table. **10 Points**

b) Execute your test cases. Use the source code "Client_Product.java". **10 Points**

c) If you find out any bug, write the dug description in the source file. **10 Points**

Question 2: 30 Points

Consider the class YesterdayDate. It calculates the previous day of the input date.

a) Test this program using the Decision Table based testing. Use "DecisionTable.docx" file to create the decision table for this problem. Create test cases from that decision table. **10 Points**

b) Execute your test cases. Use the source code "YesterdayDate.java". **10 Points**

c) If you find out any bug, write the dug description in the source file. **10 Points**