**8. Design, develop, code and run the program in any suitable language to solve the commission problem. Analyze it from the perspective of decision table-based testing, derive different test cases, execute these test cases and discuss the test results.**

**Refer program 2**

**Test Case Name: Decision Table for Commission Problem**

**Test data:**

**Price :** Rs for lock - 45.0 , stock - 30.0 and barrel - 25.0

**Sales =** total lock \* lock price + total stock \* stock price + total barrel \* barrel price

**Commission :** 10% up to sales Rs 1000 , 15 % of the next Rs 800 and 20% on any sales in excess of 1800

**Pre-condition :** lock = -1 to exit and 1< =lock < = 70 , 1<=stock <=80 and 1<=barrel<=90

**Brief Description :** The salesperson had to sell at least one complete rifle per month.

**Input data decision Table**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **RULES** | | **R1** | **R2** | **R3** | **R4** | **R5** | **R6** | **R7** | **R8** | **R9** |
| **Conditions** | C1: Locks = -1 | T | F | F | F | F | F | F | F | F |
| C2 : 1 ≤ Locks ≤ 70 | - | T | T | F | T | F | F | F | T |
| C3 : 1 ≤ Stocks ≤ 80 | - | T | F | T | F | T | F | F | T |
| C4 : 1 ≤ Barrels ≤ 90 | - | F | T | T | F | F | T | F | T |
| **Actions** | a1 : Terminate the input loop | X |  |  |  |  |  |  |  |  |
| a2: Invalid locks input |  |  |  | X |  | X | X | X |  |
| a3: Invalid stocks input |  |  | X |  | X |  | X | X |  |
| a4: Invalid barrels input |  | X |  |  | X | X |  | X |  |
| a5:Calculate total locks, stocks & barrels |  | X | X | X | X | X | X |  | X |
| a6: Calculate Sales | X |  |  |  |  |  |  |  |  |
| a7: Proceed to commission decision table | X |  |  |  |  |  |  |  |  |

**Commission calculation Decision Table (Precondition : lock = -1)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **RULES** | | R1 | R2 | R3 | R4 |
| **Conditions** | C1 : Sales = 0 | T | F | F | F |
| C2 : Sales >0 AND Sales ≤ 1000 | - | F | F | T |
| C3 : Sales >1000 AND sales ≤ 1800 | - | F | T | F |
| C4 : sales >1800 | - | T | F | F |
| **Actions** | a1: Terminate the program | X |  |  |  |
| a2: comm= 10%\*sales |  |  |  | X |
| a3: comm = 10%\*1000 + (sales-1000) \* 15% |  |  | X |  |
| a4: comm = 10%\*1000 + 15% \* 800 + (sales-1800)\*20% |  | X |  |  |

**Precondition : Initial Value Total Locks= 0 , Total Stocks=0 and Total Barrels=0**

**Precondition Limit : Total locks, stocks and barrels should not exceed the limit 70,80 and 90 respectively**

**Commission Problem -Decision Table Test cases for input data**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Case id** | **Description** | **Input Data** | | | **Expected Output** | **Actual Output** | **status** |
| Locks | Stocks | Barrels |
| 1 | Enter the value of Locks= -1 | **-1** |  |  | Terminate the input loop check for sales if(sales=0) exit from program else calculate commission | There is no sale | Test pass |
| 2 | Enter the valid input for locks and stocks and invalid for barrels | **20** | 30 | -5 | Total of locks, stocks is updated if it is within a precondition limit and Should display value of barrels is not in the range 1..90 | Locks, stocks updated and barrels is not in the range 1..90 | Test pass |
| 3 | Enter the valid input for locks and barrels and invalid for stocks | **15** | -2 | 45 | Total of locks, barrels is updated if it is within a precondition limit and Should display value of stocks is not in the range 1..80 | Locks, barrels updated and stocks is not in the range 1..80 | Test pass |
| 4 | Enter the valid input for stocks and barrels and invalid for locks | **-4** | 15 | 16 | Total of stocks, barrels is updated if it is within a precondition limit and Should display value of locks is not in the range 1..70 | Stocks, barrels updated and locks is not in the range 1..70 | Test pass |
| 5 | Enter the valid input for locks and invalid for stocks and barrels | **15** | 85 | 100 | Total of locks is updated if it is within a precondition limit and **(i)**Should display value of stock is not in the range 1..80 **(ii)**Should display value of barrels is not in the range 1..90 | Total locks updated and stocks is not in the range 1..80  barrels is not in the range 1..90 | Test pass |
| 6 | Enter the valid input for stocks and invalid for locks and barrels | **88** | 20 | 99 | Total of stocks is updated if it is within a precondition limit and **(i)**Should display value of locks is not in the range 1..70 **(ii)**Should display value of barrels is not in the range 1..90 | Total stocks updated and value of locks is not in the range 1..70 and value of barrels is not in the range 1..90 | Test pass |
| 7 | Enter the valid input for barrels and invalid for locks and stocks | **100** | 200 | 25 | Total of barrels is updated if it is within a precondition limit and **(i)**Should display value of locks is not in the range 1..70 **(ii)**Should display value of stocks is not in the range 1..80 | Total of barrels updated and value of lock is not in the range 1..70 and value of stocks is not in the range 1..80 | Test pass |
| 8 | Enter the invalid input for locks, stocks and barrels | **-5** | 400 | -9 | **(i)**Should display value of locks is not in the range 1..70 **(ii)**Should display value of stocks is not in the range 1..80 **(iii)**Should display value of barrels is in not in the range 1..90 | value of locks is not in the range 1..70 and value of stocks is not in the range 1..80 and value of barrel is in not in the range 1..90 | Test pass |
| 9 | Enter the valid input for locks, stocks and barrels | **15** | 20 | 25 | Total of locks, stocks and barrels is updated if it is within a precondition limit | Total locks, Total stocks, Total barrels updated | Test pass |

**Decision Table Test cases for commission calculation (Pre-condition: Locks = -1)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Case id** | **Description** | **Input Data** | **Expected Output** | **Actual Output** | **Status** |
| **Sales** | Commission |
| 1 | Check the value of sales | **0** | Terminate the program where commission is zero | Terminate the program | Test pass |
| 2 | if sales value with in these range( Sales >0 AND Sales ≤ 1000 ) | **900** | Then commission = 0.10\*sales = 90 | commission =90 | Test pass |
| 3 | if sales value with in these range( Sales >1000 AND Sales ≤ 1800 ) | **1400** | Then commission = 0.10\*1000 + 0.15\*(sales – 1000) = 160 | commission =160 | Test pass |
| 4 | if sales value with in these range( Sales >1800) | **2500** | Then commission = 0.10\*1000 + 0.15\*800 + 0.20 \*(sales – 1800) = 360 | commission =360 | Test pass |