

Program 8: Commission Problem with Decision table approach

Program:

```
#include<stdio.h>
int main()
{
    // Sooraj M Singh 1CR18IS151
    int locks, stocks, barrels, tlocks, tstocks, tbarrels;
    float lprice, sprice, bprice, sales, comm;
    int c1,c2,c3,temp;
    lprice=45.0;
    sprice=30.0;
    bprice=25.0;
    tlocks=0;
    tstocks=0;
    tbarrels=0;
    printf("\nEnter the number of locks and to exit the loop enter -
1 for locks\n");
    scanf("%d",&locks);
    while(locks!=-1)
    {
        c1=(locks<=0||locks>70);
        printf("Enter the number of stocks and barrels\n");
        scanf("%d%d",&stocks,&barrels);
        c2=(stocks<=0||stocks>80);
        c3=(barrels<=0||barrels>90);
        if(c1)
            printf("Value of locks not in the range 1..70 ");
        else
        {
            temp=tlocks+locks;
            if(temp>70)
                printf("New total locks =%d not in the range 1..70 so old ",t
mp);
            else
                tlocks=temp;
        }
        printf("Total locks = %d\n",tlocks);
        if(c2)
            printf("Value of stocks not in the range 1..80 ");
        else
        {
            temp=tstocks+stocks;
            if(temp>80)
                printf("New total stocks =%d not in the range 1..80 so old ",t
emp);
```

```

        else
            tstocks=temp;
    }
    printf("Total stocks=%d\n",tstocks);
    if(c3)
        printf("Value of barrels not in the range 1..90 ");
    else
    {
        temp=tbarrels+barrels;
        if(temp>90)
            printf("new total barrels =%d not in the range 1..90 so old ",
temp);
        else
            tbarrels=temp;
    }
    printf("Total barrel = %d",tbarrels);
    printf("\nEnter the number of locks and to exit the loop enter -
1 for locks\n");
    scanf("%d",&locks);
}
printf("\nTotal locks = %d\nTotal stocks = %d\nTotal barrels = %d\n",tlock
s,tstocks,tbarrels);
sales = lprice*tlocks+sprice*tstocks+bprice*tbarrels;
printf("\nThe total sales = %f\n",sales);
if(sales > 0)
{
    if(sales > 1800.0)
    {
        comm=0.10*1000.0;
        comm=comm+0.15*800;
        comm=comm+0.20*(sales-1800.0);
    }
    else if(sales > 1000)
    {
        comm =0.10*1000;
        comm=comm+0.15*(sales-1000);
    }
    else
        comm=0.10*sales;
    printf("The commission is = %f\n",comm);
}
else
    printf("There is no sales\n");
return 0;
}

```

Output:

```
sooraj@Asus-F-15:~/st-lab$ gcc p8_STlab.cpp
sooraj@Asus-F-15:~/st-lab$ ./a.out

Enter the number of locks and to exit the loop enter -1 for locks
10
Enter the number of stocks and barrels
10
10
Total locks = 10
Total stocks=10
Total barrel = 10
Enter the number of locks and to exit the loop enter -1 for locks
11
Enter the number of stocks and barrels
11
11
Total locks = 21
Total stocks=21
Total barrel = 21
Enter the number of locks and to exit the loop enter -1 for locks
-1

Total locks = 21
Total stocks = 21
Total barrels = 21

The total sales = 2100.000000
The commission is = 280.000000
```

Input Data Decision Table:

RULES		R1	R2	R3	R4	R5	R6	R7	R8	R10
Conditions	C1: Locks = -1	T	F	F	F	F	F	F	F	F
	C2 : $1 \leq \text{Locks} \leq 70$	-	T	T	F	T	F	F	F	T
	C3 : $1 \leq \text{Stocks} \leq 80$	-	T	F	T	F	T	F	F	T
	C4 : $1 \leq \text{Barrels} \leq 90$	-	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 and barrels		X	X	X	X	X	X		X
	a5 : Calculate Sales	X								
	a6: proceed to commission decision table	X								

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

RULES		R1	R2	R3	R4
Condition	C1 : Sales = 0	T	F	F	F
	C1 : Sales > 0 AND Sales ≤ 1000		T	F	F
	C2 : Sales > 1001 AND sales ≤ 1800			T	F
	C3 : sales ≥ 1801				T
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

Case Id	Description	Input Data			Expected Output
		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
2	Enter the valid input for lock and stack and invalid for barrels	20	30	-5	Total of locks, stocks is updated if it is with in a precondition limit and Should display value of barrels is not in the range 1..90
3	Enter the valid input for lock and barrels and invalid for stocks	15	-2	45	Total of locks, barrels is updated if it is with in a precondition limit and Should display value of barrels is not in the range 1..80
4	Enter the valid input for lock and barrels and invalid for stocks	-4	15	16	Total of stocks , barrels is updated if it is with in a precondition limit and Should display value of barrels is not in the range 1..70
5	Enter the valid input for lock and invalid value for stocks and barrels	15	80	100	Total of locks is updated if it is with in 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
6	Enter the valid input for stocks and invalid value for locks and barrels	88	20	99	Total of stocks is updated if it is with in a precondition limit and (i)Should display value of lock is not in the range 1..70 (ii)Should display value of barrels is not in the range 1..90
7	Enter the valid input for barrels and invalid value for locks and stocks	100	200	25	Total of barrels is updated if it is with in a precondition limit and (i)Should display value of lock is not in the range 1..70 (ii)Should display value of stocks is not in the range 1..80

Commission Problem -Decision Table Test cases for commission calculation

Case Id	Description	Input Data	Expected Output	
		Sales	Commission	Values
1	Check the value of sales	0	Terminate the program where commission is Zero	0
2	if sales value with in these range(Sales > 0 AND Sales ≤ 1000)	900	Then commission = 0.10*sales = 90	900
3	if sales value with in these range(Sales> 1000 AND Sales≤ 1800)	1400	Then commission = 0.10*1000 + 0.15*(sales - 1000)	1600
4	if sales value with in these range(Sales > 1800	2500	Then commission = 0.10*1000 + 0.15*800 + 0.20 *(sales - 1800)	3400