Program 1

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

/* Assumption price for lock=45.0, stock=30.0 and barrels=25.0, production limit that could be sold in a month is 70 locks, 80 stocks and 90 barrels. Commission on sales = 10 % on sales <= 1000 and 15 % on 1001 to 1800 and 20 % on above 1800*/

```
#include<stdio.h>
int main()
{
        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("\n enter 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 ", temp);
                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;
```

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                if(temp>80)
printf("new total stocks =%d  not in the range 1..80 ", temp);

                 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 ", temp);
                 else
                           tbarrels=temp;
               }
            printf("total barrels=%d", tbarrels);
            printf("\n enter the number of locks and to exit the loop enter -1 for locks \n");
            scanf("%d", &locks);
    }
    printf("\n total locks = %d\n total stocks =%d\n total barrels =%d\n", tlocks, tstocks, tbarrels);
    sales = lprice*tlocks + sprice*tstocks + bprice*tbarrels;
    printf("\n the 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-1000.0);
         }
          else
                comm=0.10*sales;
                 printf("the commission is=%f\n", comm);
      }
    else
           printf("there is no sales\n");
           return 0;
}
```

Test Case Name : Boundary Value for Commission Problem
Experiment Number : 2
Test data : price for lock = 45.0 , stock = 30.0 and barrel = 25.0
sales = total locks * lock price + total stocks * stock price + total barrels * barrel price
commission : 10% up to sales Rs 1000 , 15 % for 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.

Commission Problem Boundary Value Analysis Test Cases

Case Id	Description	Input Data			Expected Output		Actual output		Status	Comment
		Total Locks	Total Stocks	Total Barrels	Sales	Comm-ission	Sales	Comm-ission		
1	Set locks and stocks as nominal value and vary barrels value.	35	40	1	2800					
2	Set locks and stocks as nominal value and vary barrels value.	35	40	2	2825					
3	Set locks and stocks as nominal value and vary barrels value.	35	40	45	3900					
4	Set locks and stocks as nominal value and vary barrels value.	35	40	89	5000					
5	Set locks and stocks as nominal value and vary barrels value.	35	40	90	5025					
6	Set locks and barrels as nominal value and vary stocks value	35	1	45	2730					
7	Set locks and barrels as nominal value and vary stocks value	35	2	45	2760					
8	Set locks and barrels as nominal value and vary stocks value	35	40	45	3900					
9	Set locks and barrels as nominal value and vary stocks value	35	79	45	5070					
10	Set locks and barrels as nominal value and vary stocks value	35	80	45	5100					

11	Set stocks and barrels as nominal value and vary locks value	1	40	45	2370					
12	Set stocks and barrels as nominal value and vary locks value	2	40	45	2415					
13	Set stocks and barrels as nominal value and vary locks value	35	40	45	3900					
14	Set stocks and barrels as nominal value and vary locks value	69	40	45	5430					
15	Set stocks and barrels as nominal value and vary locks value	70	40	45	5475					

Commission Problem Output Boundary Value Analysis Test Cases

Case Id	Description	Input Data			Expected Output		Actual output		Status	
		Total Locks	Total Stocks	Total Barrels	Sales	Comm-ission	Sales	Comm-ission		Comment
1	Enter the min value for locks, stocks and barrels	1	1	1	100	10				output minimum
2	Enter the min value for 2 items and min +1 for any one item	1	1	2	125	12.5				output minimum +
3		1	2	1	130	13				output minimum +
4		2	1	1	145	14.5				output minimum +
5	Enter the value sales approximately mid value between 100 to 1000	5	5	5	500	50				Midpoint
6	Enter the values to calculate the commission for sales nearly less than 1000	10	10	9	975	97.5				Border point -
7		10	9	10	970	97				Border point -
8		9	10	10	955	95.5				Border point -
9	Enter the values sales exactly equal to 1000	10	10	10	1000	100				Border point
10		10	10	11	1025	103.75				Border point +

11	Enter the values to calculate the commission for sales nearly greater than 1000	10	11	10	1030	104.5				Border point +
12		11	10	10	1045	106.75				Border point +
13	Enter the value sales approximately mid value between 1000 to 1800	14	14	14	1400	160				Midpoint
14	Enter the values to calculate the commission for sales nearly less than 1800	18	18	17	1775	216.25				Border point -
15		18	17	18	1770	215.5				Border point -
16		17	18	18	1755	213.25				Border point -
17	Enter the values sales exactly equal to 1800	18	18	18	1800	220				Border point
18	Enter the values to calculate the commission for sales nearly greater than 1800	18	18	19	1825	225				Border point +
19		18	19	18	1830	226				Border point +
20		19	18	18	1845	229				Border point +
21	Enter the value sales approximately mid value between 1800 to 7800	48	48	48	4800	820				Midpoint
22	Enter the max value for 2 items and max - 1 for any one item	70	80	89	7775	1415				Output maximum -
23		70	79	90	7770	1414				Output maximum -
24		69	80	90	7755	1411				Output maximum -
25	Enter the max value for locks, stocks and barrels	70	80	90	7800	1420				Output maximum

Output Special Value Test Cases

Case Id	Description	Input Data			Expected Output		Actual output			
		Total Locks	Total Stocks	Total Barrels	Sales	Comm-ission	Sales	Comm-ission	Status	Comment
1	Enter the random values such that to calculate commission for sales nearly less than 1000	11	10	8	995	99.5				Border point -

2	Enter the random values such that to calculate commission for sales nearly greater than 1000	10	11	9	1005	100.75				Border point +
3	Enter the random values such that to calculate commission for sales nearly less than 1800	18	17	19	1795	219.25				Border point -
4	Enter the random values such that to calculate commission for sales nearly greater than 1800	18	19	17	1805	221				Border point +

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	✓	✓	✓	✓						✓			✓	✓	✓