



MOHSIN ALI

25P-0545

Programming Fundamentals Lab: Task 5

Task-1

Create a calculator asking for operator (+ or – or * or /) and 2 operands and perform calculation according to the user input using switch statement.

Code:

```
#include <stdio.h>

int main(){

printf("NAME: Mohsin Ali \nRoll Number: 25P-0545");

printf("_____ \n");

float num1,num2;

char ch;

printf("Enter Operation to be performed (+ - * /): ");

scanf(" %c",&ch);

switch(ch){

case '+':

printf("Enter Number 1: ");

scanf("%f",&num1);

printf("Enter Number 2: ");

scanf("%f",&num2);

printf("%f + %f = %.3f",num1,num2,num1+num2);

break;

case '-':

printf("Enter Number 1: ");

scanf("%f",&num1);

printf("Enter Number 2: ");

scanf("%f",&num2);

printf("%f - %f = %.3f",num1,num2,num1-num2);

break;

case '*':
```

```

printf("Enter Number 1: ");

scanf("%f",&num1);

printf("Enter Number 2: ");

scanf("%f",&num2);

printf("%f * %f = %.3f",num1,num2,num1*num2);

break;

case '/':

printf("Enter Number 1: ");

scanf("%f",&num1);

printf("Enter Number 2: ");

scanf("%f",&num2);

printf("%f / %f = %.3f",num1,num2,num1/num2);

break;

default:

printf("Invalid Operation: ");

}

```

The screenshot shows a C++ IDE with two panes. The left pane displays the source code for 'task1.cpp', which includes a main function that prompts the user for their name and roll number, then asks for an operation (+, -, *, /) and two numbers. It uses a switch statement to perform the operation and prints the result. The right pane shows the program's output, which matches the code's logic: it prints the user's name and roll number, prompts for an operation and two numbers, performs the multiplication, and prints the result.

```

//task-1
//Create a calculator asking for operator (+ or - or * or /) and 2 operands and
//perform calculation according to the user input using switch statement.
#include <iostream>
using namespace std;
int main()
{
    string name;
    int roll;
    char op;
    float num1, num2;
    printf("Enter Name: ");
    getline(cin, name);
    printf("Enter Roll Number: ");
    cin >> roll;
    printf("Enter Operation to be performed (+ - * /): ");
    cin >> op;
    printf("Enter Number 1: ");
    cin >> num1;
    printf("Enter Number 2: ");
    cin >> num2;
    switch(op)
    {
        case '+':
            printf("Enter Number 1: ");
            scanf("%f", &num1);
            printf("Enter Number 2: ");
            scanf("%f", &num2);
            printf("%f + %f = %.3f", num1, num2, num1+num2);
            break;
        case '-':
            printf("Enter Number 1: ");
            scanf("%f", &num1);
            printf("Enter Number 2: ");
            scanf("%f", &num2);
            printf("%f - %f = %.3f", num1, num2, num1-num2);
            break;
        case '*':
            printf("Enter Number 1: ");
            scanf("%f", &num1);
            printf("Enter Number 2: ");
            scanf("%f", &num2);
            printf("%f * %f = %.3f", num1, num2, num1*num2);
            break;
        case '/':
            printf("Enter Number 1: ");
            scanf("%f", &num1);
            printf("Enter Number 2: ");
            scanf("%f", &num2);
            printf("%f / %f = %.3f", num1, num2, num1/num2);
            break;
        default:
            printf("Invalid Operation");
    }
}

```

```

NAME: Mohsin Ali
Roll Number: 25P-0545
Enter Operation to be performed (+ - * /): +
Enter Number 1: 10
Enter Number 2: 10
10.000000 + 10.000000 = 20.000
Process exited after 10.35 seconds with return value 0
Press any key to continue . . .

```

Task-2

There are 2 wolves and 1 sheep in a line. Both wolves will attempt to eat the sheep. You are supposed to find out which wolf will reach the sheep and eat it, assuming both wolves move at the same speed and the sheep does not move.

Take as input the positions of wolf A, wolf B and the sheep on the line (x-coordinate) and find out which wolf will reach the sheep first and eat it.

If Wolf A reaches the sheep first, print "Wolf A"

If Wolf B reaches the sheep first, print "Wolf B"

If both wolves reach the sheep at the same time, the wolves will get distracted and fail to eat the sheep, so print "Wolves distracted, Sheep escaped"

Code:

```
#include <stdio.h>

int main(){
    printf("NAME: Mohsin Ali \nRoll Number: 25P-0545\n");
    printf("_____ \n");
    int wolf_a,wolf_b,sheep,distA,distB;
    printf("Enter Sheep's Distance: ");
    scanf("%d",&sheep);
    printf("Enter Wolf A's Distance: ");
    scanf("%d",&wolf_a);
    printf("Enter Wolf B's Distance: ");
    scanf("%d",&wolf_b);
```

```
if(sheep>=wolf_a){
    distA=sheep-wolf_a;
}else{
    distA=wolf_a-sheep;
}
if(sheep>=wolf_b){
    distB=sheep-wolf_b;
}else{
    distB=wolf_b-sheep;
}
if(distA<distB){
    printf("Wolf A is Closer to Sheep. ");
}else if(distA>distB){
    printf("Wolf B is Closer to Sheep. ");
}else if (distA==distB){
    printf("Both are at the same distance. ");
}else{
    printf("Wolf Distracted: Sheep Escaped. ");
}
}
```

D:\Work Space\University\FAST\Classes\pf4\task2.cpp - [Executing] - Dev-C++ 5.11

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(globals)

Project Classes Debug task2.cpp

```
1 //Task-2
2 There are 2 wolves and 1 sheep in a line. Both wolves will attempt to eat the
3 sheep. You are supposed to find out which wolf will reach the sheep and eat it,
4 assuming both wolves move at the same speed and the sheep does not move.
5 Take as input the positions of wolf A, wolf B and the sheep as the line (x-
6 coordinates) and find out which wolf will reach the sheep first and eat it.
7 If Wolf A reaches the sheep first, print "Wolf A"
8 If Wolf B reaches the sheep first, print "Wolf B"
9 If both wolves reach the sheep at the same time, the wolves will get distracted
10 and fail to eat the sheep, so print "Wolves distracted, Sheep escaped" */
11
12 #include <stdio.h>
13 int main()
14 {
15     printf("NAME: Mohsin Ali Roll Number: 25P-0545\n");
16     printf("\n");
17     int wolf_a, wolf_b, sheep, dist_a, dist_b;
18     printf("Enter Sheep's Distance: ");
19     scanf("%d", &sheep);
20     printf("Enter Wolf A's Distance: ");
21     scanf("%d", &wolf_a);
22     printf("Enter Wolf B's Distance: ");
23     scanf("%d", &wolf_b);
24
25     if (sheep >= wolf_a)
26     {
27         dist_a = sheep - wolf_a;
28     }
29     else
30     {
31         dist_a = wolf_a - sheep;
32     }
33     if (sheep >= wolf_b)
34     {
35         dist_b = sheep - wolf_b;
36     }
37     else
38     {
39         dist_b = wolf_b - sheep;
40     }
41
42     if (dist_a < dist_b)
43     {
44         printf("Wolf A is Closer to Sheep.");
45     }
46     else if (dist_b < dist_a)
47     {
48         printf("Wolf B is Closer to Sheep.");
49     }
50     else if (dist_a == dist_b)
51     {
52         printf("Both are at the same distance.");
53     }
54     else
55     {
56         printf("Wolves distracted, Sheep escaped.");
57     }
58 }
```

D:\Work Space\University\FAST\Classes\pf4\task2.exe

NAME: Mohsin Ali

Roll Number: 25P-0545

Enter Sheep's Distance: 15

Enter Wolf A's Distance: 10

Enter Wolf B's Distance: 13

Wolf B is Closer to Sheep.

Process exited after 16.78 seconds with return value 0

Press any key to continue . . .

Task-3

An online shopping store is providing discounts on the items due to the Eid. If the

cost of items is more than 1999 it will give a discount upto 50%. If the cost of shopping is 2000 to 4000, a 20% discount will be applied. If the cost of shopping is 4001 to 6000, a 30% discount will be applied. If it's more than 6000 then 50% discount will be applied to the cost of shopping. Print the actual amount, saved amount and the amount after discount.

Code:

```
#include <stdio.h>

int main(){
printf("NAME: Mohsin Ali \nRoll Number: 25P-0545\n");
printf("_____ \n");
float cost,saved_am,final_p;
int disc;
printf("Enter Amount Spent: ");
scanf(" %f",&cost);
if(cost>1999 && cost<=4000){
disc=20;
}else if(cost>4000 && cost<=6000){
disc=30;
}else if(cost>6000){
disc=50;
}else{
```

```

disc=0;

}

saved_am=cost*(disc/100.0);

final_p=cost-saved_am;

printf("Actual Amount (Before Discount): %f",cost);

printf("\nFinal Amount (After Discount): %f",final_p);

printf("\nTotal Discount: %d",disc);

printf("\nSaved Amount: %f",saved_am);

}

```

The screenshot displays a C++ IDE with two windows. The left window shows the source code for `task3.cpp`, which implements a discount calculation based on the cost of shopping. The right window shows the execution output, where the user enters an amount of 4500, and the program calculates a 30% discount, resulting in a final amount of 3150 and a saved amount of 1350.

Source Code (task3.cpp):

```

1 //task-3
2 //Online shopping store is providing discounts on the items due to the Eid. If the
3 //cost of items is more than 2000 it will give a discount upon 30%. If the cost of
4 //shopping is 2000 to 4000, a 20% discount will be applied. If the cost of shopping is
5 //4000 to 6000, a 30% discount will be applied. If it's more than 6000 then 50%
6 //discount will be applied to the cost of shopping. Print the actual amount, saved
7 //amount and the amount after discount.
8
9 #include <stdio.h>
10
11 int main()
12 {
13     printf("NAME: Mohsin Ali Roll Number: 25P-0545\n");
14     float cost, saved_am, final_p;
15     int disc;
16     printf("Enter Amount Spent: ");
17     scanf("%f", &cost);
18     if(cost > 2000 && cost <= 4000)
19     {
20         disc = 30;
21     }
22     else if(cost > 4000 && cost <= 6000)
23     {
24         disc = 20;
25     }
26     else if(cost > 6000)
27     {
28         disc = 50;
29     }
30     else
31     {
32         disc = 0;
33     }
34     saved_am = cost * (disc / 100.0);
35     final_p = cost - saved_am;
36     printf("Actual Amount (Before Discount): %f", cost);
37     printf("\nFinal Amount (After Discount): %f", final_p);
38     printf("\nTotal Discount: %d", disc);
39     printf("\nSaved Amount: %f", saved_am);
40 }

```

Execution Output:

```

NAME: Mohsin Ali
Roll Number: 25P-0545

Enter Amount Spent: 4500
Actual Amount (Before Discount): 4500.000000
Final Amount (After Discount): 3150.000000
Total Discount: 30
Saved Amount: 1350.000000
-----
Process exited after 18.93 seconds with return value 0
Press any key to continue . . .

```


Task-4

Write a program in which user enters his NTS and F.Sc marks and your program will help student in selection of university. Based on these marks Student will be allocated a seat at different department of different university.

? Oxford University

IT: Above 70% in Fsc. and 70 % in NTS

Electronics: Above 70% in Fsc. and 60 % in NTS

Telecommunication Above 70% in Fsc. and 50 % in NTS

? MIT

IT: 70% - 60 % in Fsc. and 50 % in NTS

Chemical: 59% – 50 % in Fsc. and 50 % in NTS

Computer: Above 40% and below 50 % in Fsc. and 50 % in NTS

Code:

```
#include <stdio.h>
```

```
int main(){
```

```
printf("Name: Mohsin Ali \n Roll Number: 25P-0545\n");
```

```
printf("_____ \n");
```

```
int fsc,nts;
```

```
float fsc_p;
```

```
printf("Enter FSC Obtained Marks out of 1100: ");
```

```
scanf("%d",&fsc);
```

```
fsc_p=(fsc/1100.0)*100;
```

```
printf("Enter NTS Obtained Marks out of 100: ");
```

```
scanf("%d",&nts);
if(fsc_p>=70){
printf("OXFORD UNIVERSITY: ");
if(fsc_p>70&&nts>70){
printf("\nIT");
}else if(fsc_p>70&&nts>60){
printf("\nElectronics: ");
}
else if(fsc_p>70&&nts>50){
printf("\nTeleCommunication");
}
}else if(nts>=50&&fsc_p<70){
if((fsc_p>=60 && fsc_p<70)&&nts>=50){
printf("MIT\n");
printf("IT");
}else if((fsc_p>=50 && fsc_p<60)&&nts>=50){
printf("MIT\n");
printf("Chemical");
}else if((fsc_p>=40 && fsc_p<50)&&nts>=50){
printf("MIT\n");
printf("Computer Science");
}
}else{
printf("Invalid Input");
```

```
}  
  
}
```

The screenshot shows a C++ IDE with two windows. The left window displays the source code for a program that calculates marks for different subjects based on FSC and NTS scores. The right window shows the program's execution, where the user has entered their name, roll number, and marks for FSC and NTS. The program then outputs the calculated marks for each subject.

```
D:\Work Space\University\FAST\Classes\pf4\q4.cpp - [Executing] - Dev-C++ 5.11  
File Edit Search View Project Execute Tools AStyle Window Help  
(globals)  
Project Classes Debug task2.cpp task3.cpp q4.cpp  
8 // Electronics: Above 70% is fac. and 60 % is NTS  
9 // Telecommunication Above 70% is fac. and 50 % is NTS  
10  
11 // IT  
12  
13 // IT: 70% - 60 % is fac. and 50 % is NTS  
14 // Chemical: 100 - 50 % is fac. and 50 % is NTS  
15 // Computer: Above 40% and below 50 % is fac. and 50 % is NTS %  
16  
17  
18 #include <stdio.h>  
19  
20 int main()  
21 {  
22     printf("Name: Mohsin Ali \n Roll Number: 25P-0545\n");  
23     printf("\n");  
24     int fac, nts;  
25     printf("Enter FSC Obtained Marks out of 100: ");  
26     scanf("%d", &fac);  
27     printf("Enter NTS Obtained Marks out of 100: ");  
28     scanf("%d", &nts);  
29     if (fac >= 70)  
30     {  
31         printf("Oxford University");  
32         if (fac >= 70 && nts >= 60)  
33         {  
34             printf("\nIT");  
35             if (fac >= 70 && nts >= 60)  
36             {  
37                 printf("\nElectronics");  
38             }  
39             else if (fac >= 70 && nts >= 50)  
40             {  
41                 printf("\nTelecommunication");  
42             }  
43             else if (nts >= 50 && fac >= 70)  
44             {  
45                 if ((fac >= 60 && fac < 70) && nts >= 50)  
46                 {  
47                     printf("IT");  
48                     if ((fac >= 60 && fac < 70) && nts >= 50)  
49                     {  
50                         printf("Chemical");  
51                         if ((fac >= 60 && fac < 70) && nts >= 50)  
52                         {  
53                             printf("Computer Science");  
54                         }  
55                     }  
56                 }  
57             }  
58         }  
59     }  
60     printf("Invalid Input");  
61 }
```

Execution Output:

```
Name: Mohsin Ali  
Roll Number: 25P-0545  
Enter FSC Obtained Marks out of 100: 896  
Enter NTS Obtained Marks out of 100: 86  
OXFORD UNIVERSITY:  
IT  
-----  
Process exited after 10.54 seconds with return value 0  
Press any key to continue . . .
```

Task-5:

Write a program to control a coffee machine. Allow the user to input the type of coffee as B for Black and W for White. Ask the user if the cup size is double and if the coffee is manual. The following table details the time chart for the machine for each coffee type. Display a statement for each step. If the coffee size is double, increase the baking time by 50 percent

Code:

```
#include <stdio.h>  
  
int main(){  
  
printf("Name: Mohsin Ali\nRoll Number: 25P-0545\n");
```

```
printf("_____ \n");
char type,size;
float timeW,timeB,timeW_f1,timeW_f2;
printf("Enter Coffee Type:(b for black : w for white): ");
scanf("%c",&type);
printf("Enter Cup Size: (d for double : m for manual): ");
scanf(" %c",&size);

switch(type){
case 'w':
timeW=15+15+20+2+4+20;
switch(size){
case 'd':
printf("Step 1: Put Water (15mins)\n");
printf("Step 2: Add Sugar (15mins)\n");
printf("Step 3: Mix Well (20mins)\n");
printf("Step 4: Add Coffee (2mins)\n");
printf("Step 5: Add Milk (4mins)\n");
printf("Step 6: Mix Well (20mins)\n");
timeW_f1=timeW*(50.0/100.0);
timeW_f2=timeW+timeW_f1;
printf("Total Time Taken for White Coffee with Cup Size Double: %.1f mins\n",
timeW_f2);
break;
case 'm':
```

```
printf("Step 1: Put Water (15 mins)\n");
printf("Step 2: Add Sugar (15 mins)\n");
printf("Step 3: Mix Well (20 mins)\n");
printf("Step 4: Add Coffee (2 mins)\n");
printf("Step 5: Add Milk (4 mins)\n");
printf("Step 6: Mix Well (20 mins)\n");
```

```
printf("Total Time Taken for White Coffee with Cup Size Manual: %f",timeW);
break;
default:
printf("Invalid Input");
break;
}
break;
case 'b':
timeB=20+20+25+15+25;
switch(size){
case 'd':
printf("Step 1: Put Water (20mins)\n");
printf("Step 2: Add Sugar (20mins)\n");
printf("Step 3: Mix Well (25mins)\n");
printf("Step 4: Add Coffee (15 mins)\n");
printf("Step 5: Mix Well (25mins)\n");
timeW_f1=timeB*(50.0/100.0);
```

```
timeW_f2=timeB+timeW_f1;
printf("Total Time Taken for Black Coffee with Cup Size Double: %f",timeW_f2);
break;
case 'm':
printf("Step 1: Put Water (20 mins)\n");
printf("Step 2: Add Sugar (20 mins)\n");
printf("Step 3: Mix Well (25 mins)\n");
printf("Step 4: Add Coffee (15 mins)\n");
printf("Step 5: Mix Well (25 mins)\n");
printf("Total Time Taken for Black Coffee with Cup Size Manual: %f",timeB);
break;
default:
printf("Invalid Input");
}
}
}
```

```

D:\Work Space\University\FAST\Classes\pf4\task5_1.cpp - [Executing] - Dev-C++ 5.11
File Edit Search View Project Execute Tools AStyle Window Help
(globals)
Project Classes Debug task5_1.cpp
7 #include <iostream>
8 int main()
9 {
10     print("Name: Mohsin Ali Roll Number: 25P-0545\n");
11     print("\n");
12     char type, size;
13     float time, time1, time2, time3, time4, time5, time6;
14     print("Enter Coffee Type: (b for black : w for white): ");
15     scanf("%c", &type);
16     print("Enter Cup Size: (d for double : m for manual): ");
17     scanf("%c", &size);
18
19     switch(type)
20     {
21         case 'b':
22             time1 = 15 + 10 + 10 + 10;
23             switch(size)
24             {
25                 case 'd':
26                     print("Step 1: Put Water (15mins)\n");
27                     print("Step 2: Add Sugar (10mins)\n");
28                     print("Step 3: Mix Well (10mins)\n");
29                     print("Step 4: Add Coffee (10mins)\n");
30                     print("Step 5: Add Milk (10mins)\n");
31                     print("Step 6: Mix Well (10mins)\n");
32                     time2 = time1 + time2;
33                     print("Total Time Taken for White Coffee with Cup Size Double: %f mins\n", time2);
34                     break;
35                 case 'm':
36                     print("Step 1: Put Water (15 mins)\n");
37                     print("Step 2: Add Sugar (10 mins)\n");
38                     print("Step 3: Mix Well (10 mins)\n");
39                     print("Step 4: Add Coffee (10 mins)\n");
40                     print("Step 5: Add Milk (10 mins)\n");
41                     print("Step 6: Mix Well (10 mins)\n");
42                     time3 = time1 + time3;
43                     print("Total Time Taken for White Coffee with Cup Size Manual: %f mins\n", time3);
44                     break;
45                 default:
46                     print("Invalid Input\n");
47                     break;
48             }
49             break;
50         case 'w':
51             time4 = 15 + 10 + 10 + 10;
52             switch(size)
53             {
54                 case 'd':
55                     print("Step 1: Put Water (15mins)\n");
56                     print("Step 2: Add Sugar (10mins)\n");
57                     print("Step 3: Mix Well (10mins)\n");
58                     print("Step 4: Add Coffee (10mins)\n");
59                     print("Step 5: Add Milk (10mins)\n");
60                     print("Step 6: Mix Well (10mins)\n");
61                     time5 = time4 + time5;
62                     print("Total Time Taken for Black Coffee with Cup Size Double: %f mins\n", time5);
63                     break;
64                 case 'm':
65                     print("Step 1: Put Water (15 mins)\n");
66                     print("Step 2: Add Sugar (10 mins)\n");
67                     print("Step 3: Mix Well (10 mins)\n");
68                     print("Step 4: Add Coffee (10 mins)\n");
69                     print("Step 5: Add Milk (10 mins)\n");
70                     print("Step 6: Mix Well (10 mins)\n");
71                     time6 = time4 + time6;
72                     print("Total Time Taken for Black Coffee with Cup Size Manual: %f mins\n", time6);
73                     break;
74                 default:
75                     print("Invalid Input\n");
76                     break;
77             }
78             break;
79     }
80     return 0;
81 }

```

```

D:\Work Space\University\FAST\Classes\pf4\task5_1.exe
Name: Mohsin Ali
Roll Number: 25P-0545
Enter Coffee Type:(b for black : w for white): w
Enter Cup Size: (d for double : m for manual): d
Step 1: Put Water (15mins)
Step 2: Add Sugar (15mins)
Step 3: Mix Well (20mins)
Step 4: Add Coffee (2mins)
Step 5: Add Milk (4mins)
Step 6: Mix Well (20mins)
Total Time Taken for White Coffee with Cup Size Double: 114.0 mins

-----
Process exited after 41.23 seconds with return value 0
Press any key to continue . . .

```

Task-6

Using IF and Switch statement, write a program that displays the following menu for the food items available to take order from the customer:

- B= Burger (Rs. 200)
- F= French Fries (Rs. 50)
- P= Pizza (Rs. 500)
- S= Sandwiches (Rs. 150)

The costumer can order any combination of available food. The program first ask to enter the no of types of snacks i.e. 2, 3 or 4 then it ask to enter the choice i.e. B for Burger and then for quantity. The program should finally display the total charges for the order.

Code:

```
#include <stdio.h>

int main(){

printf("Name: Mohsin Ali\nRoll Number: 25P-0545\n");

char ch,ch2,ch3,ch4;

int q,buy,buy2,buy3,buy4,total=0;

printf("\t\t\t\t\tABC RESTAURENT\t\t\t\t\t\n");

printf("\t\t\t\t\t WELCOME!!\n");

printf(" MENU:: \n\n");

printf(". B= Burgers (RS: 200)\n. F= French Fries (RS: 50)\n. P= Pizza (RS:500)\n.
S= Sandwiches (RS:150)\n");

printf("Enter Number of Snacks You Want to you: ");

scanf("%d",&q);


switch(q){

case 1:

printf("Enter First Snack to order: ");

scanf(" %c",&ch);

printf("Enter Quantity: \n");

scanf("%d",&buy);

printf("\nYou Have Ordered: \n");

if(ch=='B'){

total+=buy*200;

printf("%d Burgers value %d\n",buy,buy*50);
```



```
}else if(ch=='F'){
total+=buy*50;
printf("%d Fries value %d\n",buy,buy*50);
}else if(ch=='P'){
total+=buy*500;
printf("%d Pizza value %d\n",buy,buy*500);
}else if(ch=='S'){
total+=buy*150;
printf("%d Sandwiches value %d\n",buy,buy*150);
}else{

printf("Invalid Choice: ");
}
break;
case 2:
printf("Enter First Snack to order: ");
scanf(" %c",&ch);
printf("Enter Quantity: \n");
scanf(" %d",&buy);
printf("Enter Second Snack to order: ");
scanf(" %c",&ch2);
printf("Enter Quantity: \n");
scanf(" %d",&buy2);
printf("\nYou Have Ordered: \n");
```

```
if(ch=='B'){
total+=buy*200;
printf("%d Burgers value %d\n",buy,buy*200);
}else if(ch=='F'){
total+=buy*50;
printf("%d Fries value %d\n",buy,buy*50);
}else if(ch=='P'){
total+=buy*500;
printf("%d Pizza value %d\n",buy,buy*500);
}else if(ch=='S'){
total+=buy*150;
printf("%d Sandwiches value %d\n",buy,buy*150);
}
if(ch2=='B'){
total+=buy2*200;
printf("%d Burgers value %d\n",buy2,buy2*200);
}else if(ch2=='F'){
total+=buy2*50;
printf("%d Fries value %d\n",buy2,buy2*50);
}else if(ch2=='P'){
total+=buy2*500;
printf("%d Pizza value %d\n",buy2,buy2*500);
}else if(ch2=='S'){
total+=buy2*150;
```

```
printf("%d Sandwiches value %d\n",buy2,buy2*150);
}else{
printf("Invalid CHOICE: ");
}
break;
```

case 3:

```
printf("Enter First Snack to order: ");
scanf(" %c",&ch);
printf("Enter Quantity: \n");
scanf(" %d",&buy);
printf("Enter Second Snack to order: ");
scanf(" %c",&ch2);
printf("Enter Quantity: \n");
scanf(" %d",&buy2);
printf("Enter Third Snack to Order: ");
scanf(" %c",&ch3);
printf("Enter Quantity: \n");
scanf(" %d",&buy3);
printf("\nYou Have Ordered: \n");
if(ch=='B'){
total+=buy*200;
printf("%d Burgers value %d\n",buy,buy*200);
}else if(ch=='F'){
```

```
total+=buy*50;
printf("%d Fries value %d\n",buy,buy*50);
}else if(ch=='P'){
total+=buy*500;
printf("%d Pizza value %d\n",buy,buy*500);
}else if(ch=='S'){
total+=buy*150;
printf("%d Sandwiches value %d\n",buy,buy*150);
}
if(ch2=='B'){
total+=buy2*200;
printf("%d Burgers value %d\n",buy2,buy2*200);
}else if(ch2=='F'){
total+=buy2*50;
printf("%d Fries value %d\n",buy2,buy2*50);
}else if(ch2=='P'){
total+=buy2*500;
printf("%d Pizza value %d\n",buy2,buy2*500);
}else if(ch2=='S'){
total+=buy2*150;
printf("%d Sandwiches value %d\n",buy2,buy2*150);
}
if(ch3=='B'){
total+=buy3*200;
```

```
printf("%d Burgers value %d\n",buy3,buy3*200);
}else if(ch3=='F'){
total+=buy3*50;
printf("%d Fries value %d\n",buy3,buy3*50);
}else if(ch3=='P'){
total+=buy3*500;
printf("%d Pizza value %d\n",buy3,buy3*500);
}else if(ch3=='S'){
total+=buy3*150;
printf("%d Sandwiches value %d\n",buy3,buy3*150);
}else{
printf("INVALID CHOICE: ");
}

case 4:

printf("Enter First Snack to order: ");
scanf(" %c",&ch);
printf("Enter Quantity: \n");
scanf(" %d",&buy);
printf("Enter Second Snack to order: ");
scanf(" %c",&ch2);
printf("Enter Quantity: \n");
scanf(" %d",&buy2);
printf("Enter Third Snack to Order: ");
scanf(" %c",&ch3);
```

```
printf("Enter Quantity: \n");
scanf(" %d",&buy3);
printf("Enter Fourth Snack to Order: ");
scanf(" %c",&ch4);
printf("Enter Quantity: ");
scanf(" %d",&buy4);
printf("\nYou Have Ordered: \n");
if(ch=='B'){
total+=buy*200;
printf("%d Burgers value %d\n",buy,buy*200);
}else if(ch=='F'){
total+=buy*50;
printf("%d Fries value %d\n",buy,buy*50);
}else if(ch=='P'){
total+=buy*500;
printf("%d Pizza value %d\n",buy,buy*500);
}else if(ch=='S'){
total+=buy*150;
printf("%d Sandwiches value %d\n",buy,buy*150);
}
if(ch2=='B'){
total+=buy2*200;
printf("%d Burgers value %d\n",buy2,buy2*200);
}else if(ch2=='F'){
```

```
total+=buy2*50;
printf("%d Fries value %d\n",buy2,buy2*50);
}else if(ch2=='P'){
total+=buy2*500;
printf("%d Pizza value %d\n",buy2,buy2*500);
}else if(ch2=='S'){
total+=buy2*150;
printf("%d Sandwiches value %d\n",buy2,buy2*150);
}
if(ch3=='B'){
total+=buy3*200;
printf("%d Burgers value %d\n",buy3,buy3*200);
}else if(ch3=='F'){
total+=buy3*50;
printf("\n%d Fries value %d\n",buy3,buy3*50);
}else if(ch3=='P'){
total+=buy3*500;
printf("\n%d Pizza value %d\n",buy3,buy3*500);
}else if(ch3=='S'){
total+=buy3*150;
printf("\n%d Sandwiches value %d\n",buy3,buy3*150);
}
if(ch4=='B'){
total+=buy4*200;
```

```
printf("\n%d Burgers value %d\n",buy4,buy4*200);
}else if(ch4=='F'){
total+=buy4*50;
printf("\n%d Fries value %d\n",buy4,buy4*50);
}else if(ch4=='P'){
total+=buy4*500;
printf("\n%d Pizza value %d\n",buy4,buy4*500);
}else if(ch4=='S'){
total+=buy4*150;
printf("\n%d Sandwiches value %d\n",buy4,buy4*150);
}else{
printf("\nInvalid Input");
}
}
printf("\nTotal Price: %d",total);
}
```


The screenshot shows a C++ program in Dev-C++ with the following code in task6.cpp:

```

11 #include <iostream>
12 using namespace std;
13 int main()
14 {
15     print("Name: Mohsin Ali Roll Number: 25P-0545\n");
16     char ch; do {
17         int q, buy, buy2, buy3, total;
18         print("Enter your choice: B= Burgers (RS: 200), F= French Fries (RS: 50), P= Pizza (RS: 500), S= Sandwiches (RS: 150)\n");
19         print("Enter your choice: ");
20         ch = getche();
21         print("\n");
22         switch(ch)
23         {
24             case 'B':
25                 print("Enter First Snack to order: ");
26                 scanf("%d", &q);
27                 print("Enter Quantity: ");
28                 scanf("%d", &buy);
29                 print("\n");
30                 if(q > 0)
31                 {
32                     total = buy * q;
33                     print("Total value of Burgers: %d\n", total);
34                     if(ch == 'B')
35                     {
36                         total = buy * q;
37                         print("Total value of Burgers: %d\n", total);
38                     }
39                     if(ch == 'F')
40                     {
41                         total = buy * q;
42                         print("Total value of French Fries: %d\n", total);
43                     }
44                     if(ch == 'P')
45                     {
46                         total = buy * q;
47                         print("Total value of Pizza: %d\n", total);
48                     }
49                     if(ch == 'S')
50                     {
51                         total = buy * q;
52                         print("Total value of Sandwiches: %d\n", total);
53                     }
54                     print("Total value: ");
55                     break;
56             case 'F':
57                 print("Enter First Snack to order: ");
58                 scanf("%d", &q);
59                 print("Enter Quantity: ");
60                 scanf("%d", &buy);
61                 print("Enter Second Snack to order: ");
62                 scanf("%d", &buy2);
63                 print("Enter Quantity: ");
64                 scanf("%d", &buy3);
65                 print("\n");
66                 if(q > 0)
67                 {
68                     total = buy * q;
69                     print("Total value of Burgers: %d\n", total);
70                     if(ch == 'B')
71                     {
72                         total = buy * q;
73                         print("Total value of Burgers: %d\n", total);
74                     }
75                     if(ch == 'F')
76                     {
77                         total = buy * q;
78                         print("Total value of French Fries: %d\n", total);
79                     }
80                     if(ch == 'P')
81                     {
82                         total = buy * q;
83                         print("Total value of Pizza: %d\n", total);
84                     }
85                     if(ch == 'S')
86                     {
87                         total = buy * q;
88                         print("Total value of Sandwiches: %d\n", total);
89                     }
90                     print("Total value: ");
91                     break;
92             case 'P':
93                 print("Enter First Snack to order: ");
94                 scanf("%d", &q);
95                 print("Enter Quantity: ");
96                 scanf("%d", &buy);
97                 print("Enter Second Snack to order: ");
98                 scanf("%d", &buy2);
99                 print("Enter Quantity: ");
100                 scanf("%d", &buy3);
101                 print("\n");
102                 if(q > 0)
103                 {
104                     total = buy * q;
105                     print("Total value of Burgers: %d\n", total);
106                     if(ch == 'B')
107                     {
108                         total = buy * q;
109                         print("Total value of Burgers: %d\n", total);
110                     }
111                     if(ch == 'F')
112                     {
113                         total = buy * q;
114                         print("Total value of French Fries: %d\n", total);
115                     }
116                     if(ch == 'P')
117                     {
118                         total = buy * q;
119                         print("Total value of Pizza: %d\n", total);
120                     }
121                     if(ch == 'S')
122                     {
123                         total = buy * q;
124                         print("Total value of Sandwiches: %d\n", total);
125                     }
126                     print("Total value: ");
127                     break;
128             case 'S':
129                 print("Enter First Snack to order: ");
130                 scanf("%d", &q);
131                 print("Enter Quantity: ");
132                 scanf("%d", &buy);
133                 print("Enter Second Snack to order: ");
134                 scanf("%d", &buy2);
135                 print("Enter Quantity: ");
136                 scanf("%d", &buy3);
137                 print("\n");
138                 if(q > 0)
139                 {
140                     total = buy * q;
141                     print("Total value of Burgers: %d\n", total);
142                     if(ch == 'B')
143                     {
144                         total = buy * q;
145                         print("Total value of Burgers: %d\n", total);
146                     }
147                     if(ch == 'F')
148                     {
149                         total = buy * q;
150                         print("Total value of French Fries: %d\n", total);
151                     }
152                     if(ch == 'P')
153                     {
154                         total = buy * q;
155                         print("Total value of Pizza: %d\n", total);
156                     }
157                     if(ch == 'S')
158                     {
159                         total = buy * q;
160                         print("Total value of Sandwiches: %d\n", total);
161                     }
162                     print("Total value: ");
163                     break;
164             default:
165                 print("Invalid Choice: ");
166                 break;
167         }
168     } while(ch != 'q');
169     print("\n");
170     print("You Have Ordered:\n");
171     print("1 Burgers value 200\n");
172     print("2 Fries value 100\n");
173     print("1 Pizza value 500\n");
174     print("3 Sandwiches value 450\n");
175     print("\n");
176     print("Total Price: 1250\n");
177     print("-----\n");
178     print("Process exited after 24.54 seconds with return value 0\n");
179     print("Press any key to continue . . .");
180 }

```

The output of the program is as follows:

```

Name: Mohsin Ali
Roll Number: 25P-0545

ABC RESTAURENT
WELCOME!!

MENU:

. B= Burgers (RS: 200)
. F= French Fries (RS: 50)
. P= Pizza (RS:500)
. S= Sandwiches (RS:150)
Enter Number of Snacks You Want to you: 4
Enter First Snack to order: B
Enter Quantity:
1
Enter Second Snack to order: F
Enter Quantity:
2
Enter Third Snack to Order: P
Enter Quantity:
1
Enter Fourth Snack to Order: S
Enter Quantity: 3

You Have Ordered:
1 Burgers value 200
2 Fries value 100
1 Pizza value 500
3 Sandwiches value 450

Total Price: 1250
-----
Process exited after 24.54 seconds with return value 0
Press any key to continue . . .

```

Task-7:

Mortgage Calculator) Develop a C program to calculate the interest accrued on a bank customer's

mortgage. For each customer, the following facts are available:

- the account number
- the mortgage amount
- the mortgage term
- the interest rate

The program should input each fact, calculate the

total interest payable ($\text{total interest payable} = \text{mortgage amount} \times \text{interest rate} \times \text{mortgage term}$), and add it to the mortgage amount to get the total amount payable. It should calculate the required monthly payment by dividing the total amount payable by the number of months in the mortgage term. The program should display the

required monthly payment rounded off to the nearest dollar. The program should process each customer's account at a time

Code:

```
#include <stdio.h>
```

```
#include <math.h>
```

```
int main(){
```

```
printf("Name: Mohsin Ali \nRoll Number: 25P-0545\n");
```

```
printf("_____ \n");
```

```
float total_in,rate;
```

```
int mort_am,mort_term,acc,total_pm,mort_term_m;
```

```
printf("Enter Account Number: (-1 to end): ");
```

```
scanf("%d",&acc);
```

```
switch(acc){
```

```
case -1:
```

```
printf("Good Bye: ");
```

```
break;
```

```
default:
```

```
printf("Mortgage Amount:(in dollars): ");
```

```
scanf("%d",&mort_am);
```

```
printf("Mortgage Term: (in years): ");
```

```
scanf("%d",&mort_term);
```

```
printf("Enter Interest Rate: (in decimal): ");
```

```
scanf("%f",&rate);
```

```
total_in=mort_am*rate*mort_term;
```

```
mort_am+=total_in;
```

```
mort_term_m=mort_term*12;
```

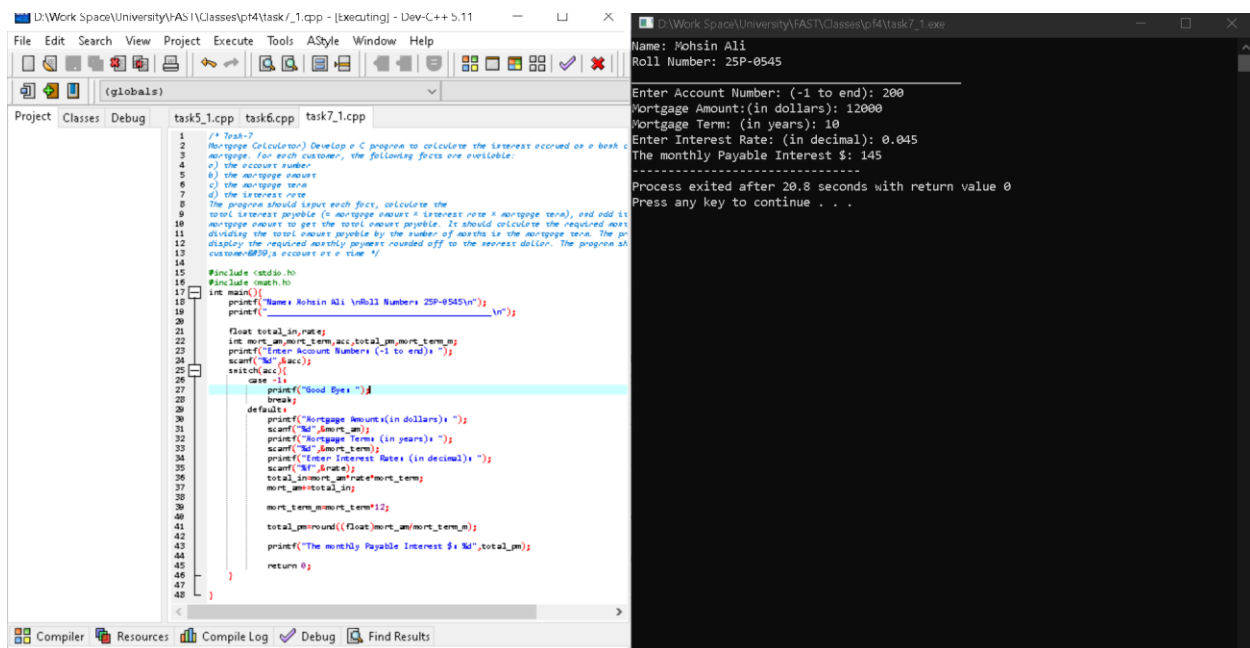
```
total_pm=round(((float)mort_am/mort_term_m);
```

```
printf("The monthly Payable Interest $: %d",total_pm);
```

```
return 0;
```

```
}
```

```
}
```



The screenshot displays a C++ IDE with a project named 'task7_1.cpp'. The code is a mortgage calculator that prompts the user for account number, mortgage amount, term, and interest rate. It calculates the total interest payable and the monthly payable interest. The output window shows the program's execution with the following input and output:

```
Name: Mohsin Ali
Roll Number: 25P-0545

Enter Account Number: (-1 to end): 200
Mortgage Amount:(in dollars): 12000
Mortgage Term: (in years): 10
Enter Interest Rate: (in decimal): 0.045
The monthly Payable Interest $: 145
-----
Process exited after 20.8 seconds with return value 0
Press any key to continue . . .
```