

**NATIONAL UNIVERSITY OF COMPUTER & EMERGING
SCIENCES PESHAWAR CAMPUS**



Programming Fundamentals(PF)

Assignment#2

Submitted BY

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Submitted to

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Problem 0: Warm up question

```
//This program is written by "Hassan Sardar" roll no."22p-9108".

#include<stdio.h>

int div_pizza(int a);      //function named "div_pizza" declaration.
int div_drink_glass(int b); // function named "div_drink_glass"
                             declaration.
float div_amount(int c);   // function named "div_amount" declaration.

int main()
{
    int n;
    printf("n=");
    scanf("%d",&n);

    printf("each of guests and i'll get %d slices of
    pizza\n",div_pizza(n));      //function call of "div_pizza".
    printf("each of guests and i'll get %d glass of
    drink\n",div_drink_glass(n)); // function call of "div_drink_glass".
    printf("each of guests will pay %.1f pkr\n",div_amount(n));      // function
    call "div_amount"

    return 0;
}

int div_pizza(int a)      // function definition of "div_pizza". it will
calculate how many slices will each guest get.
{
    int total_slices=24;   // There are 3 pizza each have 8 slices so there are
    total 24 slices.

    if(a>0 && a<=15)      // condition because guests don't exceed 15.
    {
        a++;              // because "a" is only no. of guests so in "a" i will also
        included here.
        return total_slices/a;
    }

    else if (a==0) // There is possibility that no one will come.
    return total_slices;
```

```

else
return -1;          // If user enter invalid input then it will return -
1.

}

int div_drink_glass(int b)    // function definition of "div_drink_glass". it
will calculate how many glasses and i'll each get.
{
int total_glasses=15;      // There are 3 1000ml drinks each have 5 glasses so
there will be total 15 glasses.

if(b>0 && b<=15)           // condition because guests don't exceed 15.
{
b++;          // because "b" is only no. of guests so in "a" i will also
included here.
return total_glasses/b;
}

else if(b==0)              // There is possibility that no one will come.
return total_glasses;

else
return -1;          // If user enter invalid input then it will return -1.

}

float div_amount(int c)     // function definition of "div_amount". it will
calculate how much will each guest pay.
{
int total_amount=5000;

if(c>0 && c<=15)           // condition because guests doesnot exceed
15.
{
total_amount=total_amount/2;      // Because 50% Paid by me so total amount
will be divided accordingly.
return total_amount/c;
}

else if(c==0)
return 0;          // There is possibility that no one will come.

else
return -1;          // If user enter invalid input then it will return -1.

```

```
}
```

Output

```
hassan@hassan-HP-Pavilion-Laptop-15-eh1xxx:~/Desktop/pf_mam$ gcc prb_0_party.c -o party.out
hassan@hassan-HP-Pavilion-Laptop-15-eh1xxx:~/Desktop/pf_mam$ ./party.out
n=5
each of guests and i'll get 4 slices of pizza
each of guests and i'll get 2 glass of drink
each of guests will pay 500.0 pkr
hassan@hassan-HP-Pavilion-Laptop-15-eh1xxx:~/Desktop/pf_mam$ ./party.out
n=0
each of guests and i'll get 24 slices of pizza
each of guests and i'll get 15 glass of drink
each of guests will pay 0.0 pkr
hassan@hassan-HP-Pavilion-Laptop-15-eh1xxx:~/Desktop/pf_mam$ ./party.out
n=-1
each of guests and i'll get -1 slices of pizza
each of guests and i'll get -1 glass of drink
each of guests will pay -1.0 pkr
hassan@hassan-HP-Pavilion-Laptop-15-eh1xxx:~/Desktop/pf_mam$
```

Problem 1: Ice cream Price Calculator (Console application)

```
//This program is written by "Hassan Sardar" roll no."22p-9108".

#include<stdio.h>

int main()
```

```

{
int budget=0;
char type;
int count=0;
int b=0;

printf("Enter your budget:");
scanf("%d",&budget);

if(budget<200)
{
printf("your budget is too low\n");
return 0;
}

while(budget>=200)    // if budget is greater than 200 than it will run.
{

printf("\nPlease Select Ice cream type:\n1.cone\n2.cup\n For cone
enter 1 and for cup enter 2 \n");
scanf("\n%c",&type);

if(type=='1')        // For cone type.
{
char cont;
char flav;
int a;
printf("please select flavour:\n
1.chocolate\t200Rs.\n2.Vanilla\t250Rs.\n3.Strawberry\t200Rs.\n4.oreo\t\t250Rs.\n");
printf("for chocolate enter 1\t for vanilla enter 2\t for strawberry enter 3\t
for oreo enter 4\n");
scanf("\n%c",&flav);

    if(flav=='1')    // if user select choclate flavour.
    {
        budget=budget-200;
        printf("\nyou choose CONE type of CHOCLATE flavour and your remaining
budget is %d",budget);
        count++;
        a=200;
    }
    else if(flav=='2')    // if user select vanilla flavour.
    {
        budget=budget-250;
        printf("you choose CONE type of VANILLA flavour and your remaining budget
is %d",budget);
        count++;
    }
}
}

```

```

        a=250;
    }
    else if(flav=='3') // if user select strawberry flavour.
    {
        budget=budget-200;
        printf("you choose CONE type of STRAWBERRY flavour and your remaining
budget is %d",budget);
        count++;
        a=200;
    }
    else if(flav=='4') // if user select oreo flavour.
    {
        budget=budget-250;
        printf("you choose CONE type of OREO flavour and your remaining budget is
%d",budget);
        count++;
        a=250;
    }
    else
        printf("-1");
b=b+a;

    if(budget>=200) // this will ask user whether user want to continue
shopping or not.
    {
        printf("\nIf you want to continue shopping\tenter 1 if you dont enter
2\n");
        scanf("\n%c",&cont);

        if(cont=='2')
            break;
    }

}

else if(type=='2') // For cup type.
{
    char flav;
    char size;
    char cont;
    int a;
    printf("please select flavour:\n
1.chocolate\n2.Vanilla\n3.Strawberry\n4.oreo\n");
    printf("for chocolate enter 1\t for vanilla enter 2\t for strawberry enter 3\t
for oreo enter 4\n");
    scanf("\n%c",&flav);

```

```

    if(flav=='1')    //for choclate flavour.
    {
        printf("\nNow select size:\n1.small 200RS.\t2.medium 250RS.\t3.large
300RS.");
        printf("\nFor small Enter 1  For Medium Enter 2  For large Enter 3\n");
        scanf("\n%c",&size);
        if(size=='1')    // for small size.
        {
            budget=budget-200;
            printf("\nyou choose CUP type of CHOCLATE flavour of small size and
your remaining budget is %d\n",budget);
            a=200;
        }
        else if(size=='2')    // for medium size.
        {
            budget=budget-250;
            printf("\nyou choose CUP type of CHOCLATE flavour of medium size and
your remaining budget is %d\n",budget);
            a=250;
        }
        else if(size=='3')    // for large size.
        {
            budget=budget-300;
            printf("\nyou choose CUP type of CHOCLATE flavour of large size and
your remaining budget is %d\n",budget);
            a=300;
        }
        else
            printf("-1");

        b=b+a;
        count++;
        if(budget>=200)    // this will ask user whether user want to continue
shopping or not.
        {
            printf("\nIf you want to continue shopping\t enter 1 if you dont enter
2\n");
            scanf("\n%c",&cont);

            if(cont=='2')
                break;
        }
    }

    else if(flav=='2')    // for vanilla flavour.
    {

```

```

    printf("\nNow select size:\n1.small 250RS.\t2.medium 300RS.\t3.large
350RS.");
    printf("\nFor small Enter 1  For Medium Enter 2  For large Enter 3\n");
    scanf("\n%c",&size);
    if(size=='1')    // for small size.
    {
        budget=budget-250;
        printf("\nyou choose CUP type of VANILLA flavour of small size and
your remaining budget is %d\n",budget);
        a=250;
    }
    else if(size=='2')    // for medium size.
    {
        budget=budget-300;
        printf("\nyou choose CUP type of VANILLA flavour of medium size and
your remaining budget is %d\n",budget);
        a=300;
    }
    else if(size=='3')    // for large size.
    {
        budget=budget-350;
        printf("\nyou choose CUP type of VANILLA flavour of large size and
your remaining budget is %d\n",budget);
        a=350;
    }
    else
        printf("-1");

b=b+a;
count++;
    if(budget>=200)    // this will ask user whether user want to continue
shopping or not.
    {
        printf("\nIf you want to continue shopping\t enter 1 if you dont enter
2\n");
        scanf("\n%c",&cont);

        if(cont=='2')
            break;
    }
}
else if(flav=='3')    // for strawberry flavour.
{
    printf("\nNow select size:\n1.small 250RS.\t2.medium 300RS.\t3.large
350RS.");
    printf("\nFor small Enter 1  For Medium Enter 2  For large Enter 3\n");
    scanf("\n%c",&size);

```



```

        if(size=='1') // for small size.
        {
            budget=budget-200;
            printf("\nyou choose CUP type of   STRAWBERRY   flavour of small size
and your remaining budget is %d\n",budget);
            a=200;
        }
        else if(size=='2') // for medium size.
        {
            budget=budget-250;
            printf("\nyou choose CUP type of   STRAWBERRY   flavour of medium
size and your remaining budget is %d\n",budget);
            a=250;
        }
        else if(size=='3') // for large size.
        {
            budget=budget-300;
            printf("\nyou choose CUP type of   STRAWBERRY   flavour of large
size and your remaining budget is %d\n",budget);
            a=300;
        }
        else
            printf("You entered Wrong Size!");

b=b+a;
count++;
        if(budget>=200) // this will ask user whether user want to
continue shopping or not.
        {
            printf("\nIf you want to continue shopping\t enter 1 if you dont
enter 2\n");
            scanf("\n%c",&cont);

                if(cont=='2')
                    break;
            }
        }

        else if(flav=='4') // for oreo flavour.
        {
            printf("\nNow select size:\n1.small 250RS.\t2.medium 300RS.\t3.large
400RS.");
            printf("\nFor small Enter 1 For Medium Enter 2 For large Enter 3\n");
            scanf("\n%c",&size);

            if(size=='1') // for small size.
            {
                budget=budget-250;

```

```

        printf("\nyou choose CUP type of   OREO   flavour of small size and
your remaining budget is %d\n",budget);
        a=250;
    }
    else if(size=='2')    // for medium size.
    {
        budget=budget-300;
        printf("\nyou choose CUP type of   OREO   flavour of medium size and
your remaining budget is %d\n",budget);
        a=300;
    }
    else if(size=='3')    // for large size.
    {
        budget=budget-400;
        printf("\nyou choose CUP type of   OREO   flavour of large size and
your remaining budget is %d\n",budget);
        a=400;
    }
    else
        printf("-1");

b=b+a;
count++;
    if(budget>=200)    // this will ask user whether user want to continue
shopping or not.
    {
        printf("\nIf you want to continue shopping\t enter 1 if you dont
enter 2\n");
        scanf("\n%c",&cont);
        if(cont=='2')
            break;
    }
}

}
else
printf("-1");

}

printf("you have selected %d items and your total price is %d rupees\n
",count,b);
return 0;
}

```

Output

```
hassan@hassan-HP-Pavilion-Laptop-15-eh1xxx:~/Desktop/pf_mam$ gcc prb_1_console.c -o console.out
hassan@hassan-HP-Pavilion-Laptop-15-eh1xxx:~/Desktop/pf_mam$ ./console.out
Enter your budget:1000

Please Select Ice cream type:
1.cone
2.cup
  For cone enter 1 and for cup enter 2
1
please select flavour:
  1.chocolate      200Rs.
  2.Vanilla         250Rs.
  3.Strawberry      200Rs.
  4.oreo            250Rs.
for chocolate enter 1    for vanilla enter 2    for strawberry enter 3    for oreo enter 4
2
you choose CONE type of VANILLA flavour and your remaining budget is 750
If you want to continue shopping      enter 1 if you dont enter 2
1

Please Select Ice cream type:
1.cone
2.cup
  For cone enter 1 and for cup enter 2
2
please select flavour:
  1.chocolate
  2.Vanilla
  3.Strawberry
  4.oreo
for chocolate enter 1    for vanilla enter 2    for strawberry enter 3    for oreo enter 4
4

Now select size:
1.small 250RS. 2.medium 300RS. 3.large 400RS.
For small Enter 1 For Medium Enter 2 For large Enter 3
3

you choose CUP type of OREO flavour of large size and your remaining budget is 350

If you want to continue shopping      enter 1 if you dont enter 2
2
you have selected 2 items and your total price is 650 rupees
hassan@hassan-HP-Pavilion-Laptop-15-eh1xxx:~/Desktop/pf_mam$
```

Problem2: The Game

```
//This program is written by "Hassan Sardar" roll no."22p-9108".

#include<stdio.h>
#include<time.h>      // header file for time function.
#include<stdlib.h>    // header file for random function.

int compute_sum();    // function declaration for computing sum of two cards
from two decks.
int get_rounds();     // function declaration for getting no. of rounds from
user.
int computer_guess(); // function declaration for which computer will guess
the number.
int player_guess();   // function declaration from which player will guess
the number.
int player_capital(int rounds); // function declaration for which calculate
the player's capital.
int computer_capital(int rounds); // function declaration which will
calculate the computer's capital.
int play(int rounds);  // function declaration which will tell us that
whether player wins or lose.

int main()
{
int r;
srand(time(NULL));    // random Time function call.

r=get_rounds();       // function call which will get the number of the rounds
from user.
printf("\nplayer %d \n",play(r)); // function call which will tell us that
whether player win or lose.

return 0;
}

int get_rounds()      // function definition which will get the number of
rounds.
{
int r;

printf("Enter the number of rounds:");
scanf("%d",&r);

return r;    // return the no. of rounds to main.
}
```

```

int compute_sum()    // function that will calculate the sum of the two cards
from deck.
{
int a, b, sum;
a=rand()%(10+1-0)+0;    // random function that will choose card from deck A.
b=rand()%(10+1-0)+0;    // random function that will choose card from deck B.
sum=a+b;                // sum of both cards.
return sum;    // return sum.
}

int computer_guess() // function that will return the computer's guess.
{
int a;
a=rand()%(20+1-3)+3;    // computer's guess.
return a;
}

int player_guess()    // Function that will return the user's guess.
{
int guess;
printf("\nEnter your guess:");
scanf("%d",&guess);    // User will enter his guess.
return guess;    // return the guess of user.
}

int player_capital(int rounds)    // This function will calculate the user's
money that he won.
{
int a;
int i=1;
while(i<=rounds)
{
    if(player_guess() != compute_sum()) // If user's guess is not equal to
sum of cards.
    {
        printf("your guess is wrong");
        a=rounds-10;    // Then it will deduct 10 rupees
from user's money.
    }
    else
    {
        printf("your guess is right");
        a=rounds+compute_sum();    // If user's guess is right then that
sum will include in User's money.
    }
    i++;
}
}

```

```

}
return a;          // return's the amount money that user have won or
lost.
}

int computer_capital(int rounds)          // This function will calculate the
computer's money that he won.
{
int b;
for(int i=1;i<=rounds;i++)
{
    if(computer_guess()==compute_sum())    // If computer's guess is right then
that sum will include in computer's money.
    {
        b=rounds+compute_sum();
    }
    else          // If computer's guess is not equal to sum of
cards.
        b=rounds-10;          // Then it will detuct 10 rupees from computer's
money.
}

return b;
}

int play(int rounds)          // this function will return that user win or
lost.
{
int c=player_capital(rounds);

if(c>computer_capital(rounds) || c==rounds) // if user won then it will
return 1.
return 1;
else          // if user lost then it will return 0.
return 0;
}

```

output

```
hassan@hassan-HP-Pavilion-Laptop-15-eh1xxx:~/Desktop/pf_mam$ gcc prb_2_game.c -o game.out
hassan@hassan-HP-Pavilion-Laptop-15-eh1xxx:~/Desktop/pf_mam$ ./game.out
Enter the number of rounds:5

Enter your guess:13
your guess is right
Enter your guess:13
your guess is wrong
Enter your guess:16
your guess is wrong
Enter your guess:19
your guess is wrong
Enter your guess:16
your guess is wrong
player 0
hassan@hassan-HP-Pavilion-Laptop-15-eh1xxx:~/Desktop/pf_mam$
```