institute of Computer Technology
B. Tech. Computer Science and Engineering

Sub: ESFP – I
Course Code: 2CSE102

Practical – 6

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Q.1.Problem Definition: Compute the real roots of the equation: ax2+bx+c=0.

The program will prompt the user to input the values of a, b, and c. and then it computes the real roots of the equation based on the following rules:

-if a and b are zero => no solution
-if a is zero =>one root (-c/b)
-if b2-4ac is negative =>no roots
-Otherwise=> two roots

The roots can be computed using the following formula:

x1=-b+(b2-4ac)1/2/2a
x=-b-(b2-4ac)1/2/2a

Solution:

Code:-

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

void main()
{
   double a,b,c,z;       float y,x,x1;
   //input value          //equation result value

   printf("Please enter the value of a b and c here:-\n");

   scanf("%lf %lf %lf",&a,&b,&c);     printf("\n");


   y=b * b - 4 * a * c;
   //This equation is used to determine the number of roots.


   if(a==0)
   {
      if(b==0)
      {

         printf("No solution(no roots) was found\n-->[because the value
of a and b is 0]");

      }
      else
      {

          printf("The value of one root is: %.2lf\n-->[only one root was
found because the value of a is 0]",-c/b);
```

```
        }

    }
    else if(y<0)
    {

       printf("No solution(no roots) was found\n-->[because the value of
b*b-4ac is negative]");

    }
    else
    {

        x1=(-b + sqrt(y)) / (2 * a);

        x=(-b - sqrt(y)) / (2 * a);

        //These two are equations for computing the roots.

        printf("The value of two root is: %.2f and %.2f",x,x1);

    }
}
```

Output:-

```
Please enter the value of a b and c here:-
0 0 3

No solution(no roots) was found
-->[because the value of a and b is 0]

...Program finished with exit code 0
Press ENTER to exit console.
```

```
Please enter the value of a b and c here:-
0 4 5

The value of one root is: -1.25
-->[only one root was found because the value of a is 0]

...Program finished with exit code 0
Press ENTER to exit console.
```

```
Please enter the value of a b and c here:-
2 3 2

No solution(no roots) was found
-->[because the value of b*b-4ac is negative]

...Program finished with exit code 0
Press ENTER to exit console.
```

```
Please enter the value of a b and c here:-
3 -5 2

The value of two root is: 0.67 and 1.00

...Program finished with exit code 0
Press ENTER to exit console.
```

Q.2. Problem Definition:

Determines a student's grade, for that, make a proper program which will read the
three types of scores like (quiz, mid-term, and final scores) and grade will be
evaluated based on the following rules:

-if the average score =90% =>grade=A
-if the average score >= 70% and <90% => grade=B
-if the average score>=50% and <70% =>grade=C
-if the average score<50% =>grade=F

Solution:

Code:-

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

void main()
{

   float q , m , f;
   //q=quiz  m=mid-term f=final score   //this are paper marks.

   float q1 , m1 ,f1;
   //q1=quiz  m1=mid-term f1=final score   //this are marks obtained.

   printf("To find total presentage of all marks,\n\n");

   printf("first enter maximum mark of quiz, mid-term, and final score respactively:\n");

   scanf("%f %f %f", &q , &m , &f );

   printf("Now,enter your marks obtained in quiz, mid-term, and final score respactively:\n");

   scanf("%f %f %f", &q1 , &m1 , &f1 );
```

```
float avg;

float a;
a=(q+m+f);

float b;
b=(q1+m1+f1);

avg=(b/a)*100;

//printf("%f",avg);

if(avg>=50)
{
   if(avg>=90)
   {
     printf("Your average score is:\n");

     printf("%f => grade=A",avg);
   }

   else if(avg<=90&&avg>=70)
   {

     printf("Your average score is: \n");

     printf("%f => grade=B",avg);

   }

   else
   {

     printf("Your average score is: \n");

     printf("%f => grade=C",avg);

   }

}
else
{
   printf("Your average score is: \n");
```

```
        printf("%f => grade=F",avg);

    }

}
```

Output:-

```
To find total presentage of all marks,

first enter maximum mark of quiz, mid-term, and final score respactively:
20 30 60
Now,enter your marks obtained in quiz, mid-term, and final score respactively:
15 30 47
Your average score is:
83.636360 => grade=B

...Program finished with exit code 0
Press ENTER to exit console.
```

Q.3. Problem Definition:

Calculate the fare for the passengers traveling in a bus. When a Passenger enters the bus, the the conductor will ask “What distance will you travel?” On knowing distance from the passenger (as an approximate integer), the conductor mentions the fare to the passenger according to following criteria.

Solution:

Code:-

```
#include <stdio.h>
#include<math.h>
void main()
{
    int d;
    //d=distance traveled by user

    printf("Enter the distance(in KMS) you will be traveling:-\n");

    scanf("%d",&d);

    if(d>=0&&d<=100)
    {

        if(d<=20)
```

```
        {
            printf("Your fare will be 65 paisa.");
        }
        else if(d<=40)
        {
            printf("Your fare will be 75 paisa.");
        }
        else if(d<=60)
        {
            printf("Your fare will be 78 paisa.");
        }
        else if(d<=80)
        {
            printf("Your fare will be 80 paisa.");
        }
        else
        {
            printf("Your fare will be 95 paisa.");
        }
    }
    else
    {
        printf("Your fare will be 1.05 paisa.");
    }
}
```

Output:-

```
Enter the distance(in KMS) you will be traveling:-
132
Your fare will be 1.05 paisa.

...Program finished with exit code 0
Press ENTER to exit console.
```

```
Enter the distance(in KMS) you will be traveling:-
23
Your fare will be 75 paisa.

...Program finished with exit code 0
Press ENTER to exit console.
```