Sreenidhi University

Name: Himani Naidu
Email: 2401100cse0019@cse.suh.edu.in
Roll no: 2401100cse0019
Phone: 6281529011
Branch: Sreenidhi University
Department: CSE - A
Batch: 2024-28
Degree: B.Tech - CSE

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2024_28_CPP Programming Lab_CSE A

2028_SUH_CPP_COD_Cycle 3

Attempt : 1
Total Mark : 30
Marks Obtained : 21

Section 1 : Coding

1. Problem Statement

Write a program to find the roots and the nature of the roots of a quadratic equation given its coefficients.

The quadratic equation is of the form: ax2 + bx + c = 0, where a, b, and c are the coefficients provided by the user. Your program should determine whether the roots are real and different, real and the same, or complex, and output the roots accordingly.

Formulae:

Discriminant(D) = b2 - 4ac

If D > 0, Roots are real and different

If D = 0, Roots are real and the same

If D < 0, Roots are complex

Answer

```
// You are using GCC
#include<iostream>
#include<cmath>
#include<iomanip>
using namespace std;
int main() {
    int a,b,c;
    double d,root1,root2,img;
    cin>>a>>b>>c;
    d=b*b-4*a*c;
    if(a==0||b==0||c==0)
    {
        cout<<"Invalid";
    }
    else if(d==0)
    {
        cout<<"Roots are real and same\n"<<fixed<<setprecision(2)<<(-b/(2.0*a));
    }
    else if(d>0)
    {
        root1=(-b+sqrt(d))/(2.0*a);
    root2=(-b-sqrt(d))/(2.0*a);
    cout<<"Roots are real and different
\n"<<fixed<<setprecision(2)<<root1<<endl<<root2;
    }
    else
    {
        img=sqrt(-d)/(2.0*a);
    cout<<fixed<<setprecision(2);
    cout<<"Roots are complex\n"<<(-b/(2.0*a))<<"+"<<img<<"i\n";
    cout<<(-b/(2.0*a))<<"-"<<img<<"i";
    }
    return 0;
}
```

Status : Correct **Marks : 10/10**

2. Problem Statement

Write a program that takes three integers as input and determines the largest among them.

Answer

```
// You are using GCC
#include<iostream>
using namespace std;
int main()
{
   int X,Y,Z;
   cin>>X>>Y>>Z;
   if((X>Y)&&(X>Z)) {
      cout<<X;
   }
      else if ((Y>X)&&(Y>Z))
   {
       cout<<Y;
   }
   else
   {
      cout<<Z;
   }
   return 0;
}
```

Status : Correct **Marks : 10/10**

3. Problem Statement

Write a program that calculates the commission based on the following rules:

For sales amounts up to Rs. 5000, the commission rate is 5%(0.05).

For sales amounts exceeding Rs. 5000, the commission includes:

5% on the first Rs. 5000.8% on the amount exceeding Rs. 5000.A fixed addition of Rs. 250.

Answer

```
// You are using GCC
#include<iostream>
#include<iomanip>
#include<math.h>
using namespace std;
int main()
{
   double sales,eamt,com;
   cin>>sales;
   if(sales<=5000)
   {
      com=sales*0.05;
   }
   else
   {
       eamt=sales=5000;
       com=(5000*0.05)+(eamt*0.08)+250;
   }
   cout<<fixed<<setprecision(2)<<"Rs."<<com;
   }
```

Status : Partially correct ***Marks : 1/10***