CHANDIGARH UNIVERSITY
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APEX Institute of Technology

# Experiment Number:1.1

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| **Student Name**: | **UID:** |
| **Branch:** CSE-AML | **Section & Group**: |
| **Semester:** 3 | **Date**: 30/09/2022 |
| **Course Name**: Programming in JAVA | **Course Code**: 21CSH-244 |

**1. Aim/Overview of the practical:**

Write a Java program that prints all real solutions to the quadratic equation $ax^2+bx+c=0$.Read in a,b,c and use the quadratic formula .If the discriminate $b^2-4ac$ is negative,display a message that there are no real solutions

**2. Task to be done:**

We take input for a,b ,c and calculate the discriminate and if its negative it displays that there are no real roots

**3. Algorithm:**

**Step: 1.** Start
**Step: 2.** Declare three variables (coefficients a, b and c) and taking input from the user.
**Step: 3.** Use the basic mathematical formulas to find the Determinant.
**Step: 4.** If det ==0 print("the roots are real and equal").
**Step: 5.** Else If det >0 print("the roots are real and unequal").
**Step: 6.** else det ==0 print("the roots are imaginary").
**Step: 7.** print the roots using basic formulas.
**Step: 8.** Stop.

**4. Pseudocode (For Programming):**

```
Import java.io.;

Class Quadratic{

Public static void main(String args[])throws IOException

{Declare a,b,c,x1,x2,det;

Input(a,b,c);

det=(b*b)-(4*a*c1);
```

if(det==0){print(“roots are real and equal”);

x1=x2=-b/(2*a);

print(“roots are”x1,x2);} elseif(det>0){

print(“roots are real and unequal”)

x1=(-b+Math.sqrt(det))/(2*a); x2=(-b-Math.sqrt(det))/(2*a);

print(“roots are” x1, x2); } else{

print(“roots are imaginary”);}

**5. Code (For Programming)**

```
import java.io.*;
class Quadratic
{
public static void main(String args[])throws IOException
 {
double x1,x2,det,a,b,c;
InputStreamReader obj=new InputStreamReader(System.in);
BufferedReader br=new BufferedReader(obj);
System.out.println("enter a,b,c values");
a=Double.parseDouble(br.readLine());
b=Double.parseDouble(br.readLine());
c=Double.parseDouble(br.readLine());
det=(b*b)-(4*a*c);
if(det==0)
{
System.out.println("roots are real and equal");
x1=x2=-b/(2*a);
System.out.println("roots are "+x1+","+x2);
}
else if(det>0)
{
System.out.println("roots are real and unequal");
 x1=(-b+Math.sqrt(det))/(2*a);
x2=(-b-Math.sqrt(det))/(2*a);
 System.out.println("roots are"+x1 +x2);
}
else
{
 System.out.println("roots are imaginary");
 }
 }
```

```
}
```

**6. Result/Output/Writing Summary:**

```
PS D:\java>  d:; cd 'd:\java'; & 'C:\Program Files
'C:\Users\adity\AppData\Roaming\Code\User\workspac
enter a,b,c values
3
6
3
roots are real and equal
roots are -1.0,-1.0
PS D:\java>
```

**Learning outcomes (What I have learnt):**

**1.** Learnt how to use Java compiler.

**2.** Learnt the basic syntax of Java.

**3.**Learnt how to print string and take user input.

**4.**Learnt how to use Mathematical formulas to get desired output.

**5**.Learnt how to imply conditional statements.

**Evaluation Grid (To be created as per the SOP and Assessment guidelines by the faculty):**

| Sr. No. | Parameters | Marks Obtained | Maximum Marks |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
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