

EXPERIMENT NO:3
TITLE: Develop a program to compute the roots of a quadratic equation by accepting the coefficients. Print appropriate messages.
<div>PROGRAM:</div> <pre>#include&lt;stdio.h&gt; #include&lt;math.h&gt; #include&lt;stdlib.h&gt; void main() {     float a, b, c, root1, root2, real, imag, d;     printf("Enter values for a, b and c\n");     scanf("%f%f%f",&amp;a,&amp;b,&amp;c);     if(a*b*c==0)     {         printf("Roots are not possible\n");         exit(0);     }     d=b*b-4*a*c;     if(d==0)     {         root1=root2=-b/(2*a);         printf("The real and equal root is %f\n",root1);     }     else if(d&gt;0)     {         root1=(-b+sqrt(d))/(2*a);         root2=(-b-sqrt(d))/(2*a);         printf("The real and distinct roots are %f and %f\n",root1,root2);     }     else     {         real=-b/(2*a);         imag=sqrt(fabs(d))/(2*a);         printf("The complex roots are\n");         printf("Root1=%f+i%f\n",real,imag);         printf("Root2=%f-i%f\n",real,imag);     } }</pre>
<div>OUTPUTS:</div> <div>Enter values for a, b and c</div> <div>0</div> <div>0</div> <div>0</div> <div>Roots are not possible</div> <div>-----</div> <div>Enter values for a, b and c</div> <div>2</div> <div>6</div> <div>8</div> <div>The complex roots are</div> <div>Root1=-1.500000+i1.322876</div> <div>Root2=-1.500000-i1.322876</div> <div>-----</div> <div>Enter values for a, b and c</div> <div>1</div> <div>-4</div> <div>3</div> <div>The real and distinct roots are 3.000000 and 1.000000</div> <div>-----</div> <div>Enter values for a, b and c</div> <div>1</div> <div>6</div> <div>9</div> <div>The real and equal root is 3.000000</div>

**ALGORITHM:**

**STEP 1:** Start

**STEP 2:** Read the coefficients **a**, **b** and **c**

**STEP 3:** check (**a\*b\*c == 0**)

if yes display roots are not possible

goto **STEP 7**

**STEP 4:** calculate **d = b\*b - 4\*a\*c**

**STEP 5:** check (**d == 0**)

if yes **root1 = root2 = -b / (2\*a)**

display roots are real and equal

display root1, root2

goto **STEP 7**

**STEP 6:** check (**d > 0**)

if yes **root1 = (-b +sqrt(d))/ (2\*a)**

**root2 = (-b -sqrt(d))/ (2\*a)**

display roots are real and distinct

display root1, root2

goto **STEP 7**

if no **real = -b/ (2\*a)**

**imag = sqrt(fabs(d))/ (2\*a)**

display roots are complex and imaginary

display **root1 = real + i imag**

display **root2 = real - i imag**

**STEP 7:** Stop

**FLOWCHART:**

