

Experiment 02:-

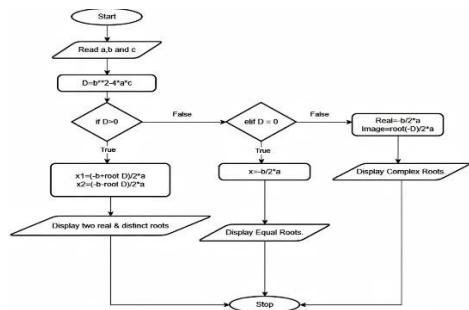
Problem Statement:-

Write a program to find the roots of a quadratic equation, given its coefficients a, b, and c. Use the quadratic formula: $(-b \pm \sqrt{b^2 - 4ac}) / 2a$.

Algorithm:-

1. Start.
2. Read the coefficients a, b, and c.
3. Calculate the discriminant using: $D = b^2 - 4ac$.
4. If $D > 0$ Compute: $x_1 = (-b + \sqrt{D}) / 2a$ and $x_2 = (-b - \sqrt{D}) / 2a$ Display two real and distinct roots.
5. Else if $D = 0$ Compute: $x = -b / 2a$ Display equal real roots.
6. Else ($D < 0$) Compute: Real part = $-b / 2a$ Imaginary part = $\sqrt{-D} / 2a$ Display complex roots.
7. Stop.

Flowchart:-



Execution:-

2.1.1. Roots of a Quadratic Equation

Write a program to find the roots of a quadratic equation, given its coefficients a , b , and c . Use the quadratic formula:
$$\frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

The discriminant $D = b^2 - 4ac$ determines the nature of the roots:

- If $D > 0$: Roots are real and different.
- If $D = 0$: Roots are real and the same.
- If $D < 0$: Roots are imaginary.

Input Format:

- Three space-separated integers representing the coefficients a , b , and c , respectively.

Output Format:

- If roots are real and different, print:

```
root1 = <Root1>
root2 = <Root2>
```

- If roots are the same, print:

```
root1 = root2 = <Root1>
```

Sample Test Cases

Code Editor:

```
quadratic...
1 import math
2
3 a, b, c = map(int, input().split())
4
5 D = b*b - 4*a*c
6
7 if D > 0:
8     root1 = (-b + math.sqrt(D)) / (2*a)
9     root2 = (-b - math.sqrt(D)) / (2*a)
10    print("root1 = {:.2f}\nroot2 = {:.2f}".format(root1))
11    print("root1 = {:.2f}\nroot2 = {:.2f}".format(root2))
```

Average time: 0.015 s Maximum time: 0.019 s 3 out of 3 shown test case(s) passed
14.83 ms 19.00 ms 3 out of 3 hidden test case(s) passed

Test Case 1 Expected output: 1.5 - 3.0 Actual output: 1.5 - 3.0 root1 = -3.00 root2 = 2.00

Test Case 2 Expected output: 1.5 - 3.0 Actual output: 1.5 - 3.0 root1 = -3.00 root2 = 2.00

Terminal Test cases

6

Experiment 03:-

Problem Statement:-

Write a Python program to convert temperature from Celsius to Fahrenheit.

Algorithm:-

- Start.
- Input temperature in Celsius C.
- Calculate Fahrenheit using the formula $F = (C \times 9/5) + 32$.
- Display the temperature in Fahrenheit.
- Stop.

Flowchart:-

