2.1.1. Roots of a Quadratic Equation

Algorithm: To Find the Roots of a Quadratic Equation

Step 1: Start

Step 2: Read the values of a, b and c

Step 3: Calculate the discriminant

D = b * b − 4 * a * c

Step 4: Check the value of D

If D > 0, then

root1 = (−b + √D) / (2 * a)
root2 = (−b − √D) / (2 * a)

Print root1 and root2

Else if D = 0, then

root = −b / (2 * a)

Print root1 = root2 = root

Else

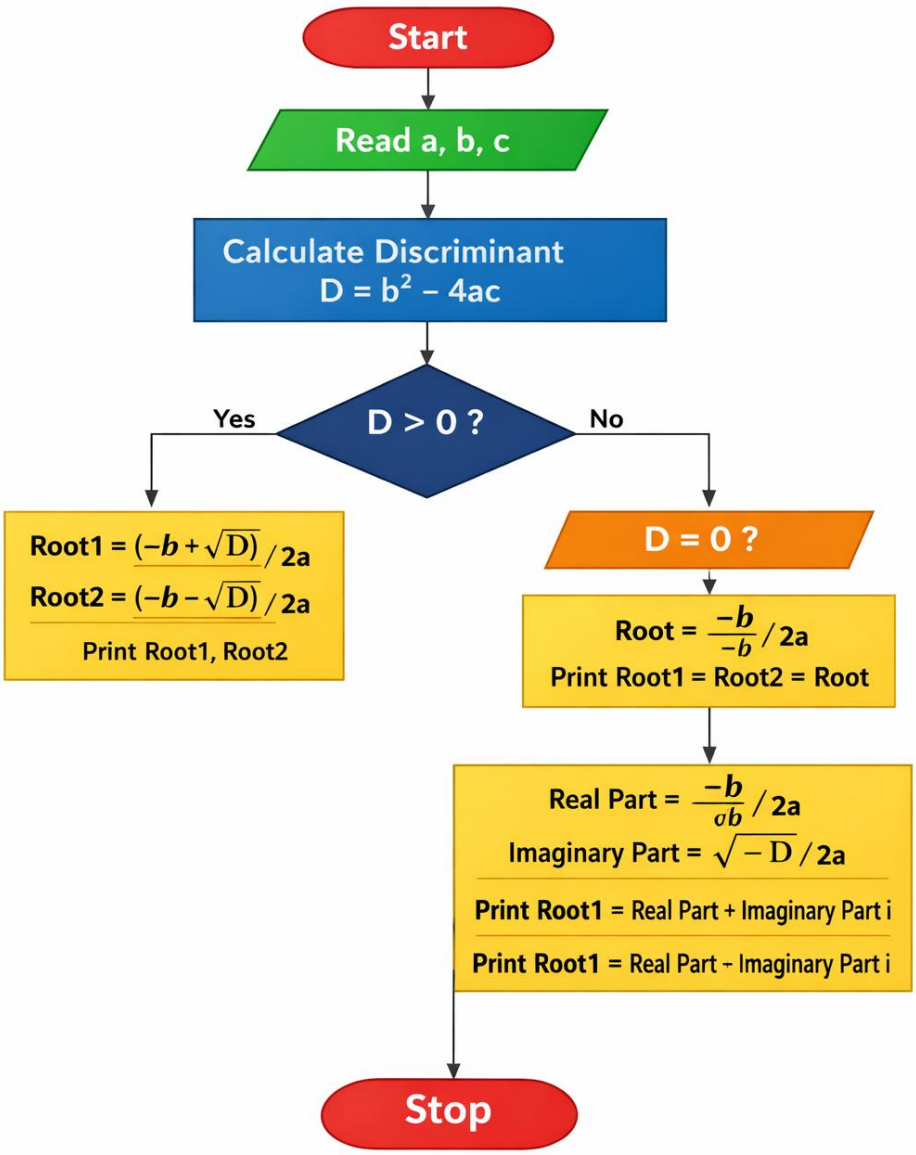
real_part = −b / (2 * a)
imaginary_part = √(−D) / (2 * a)

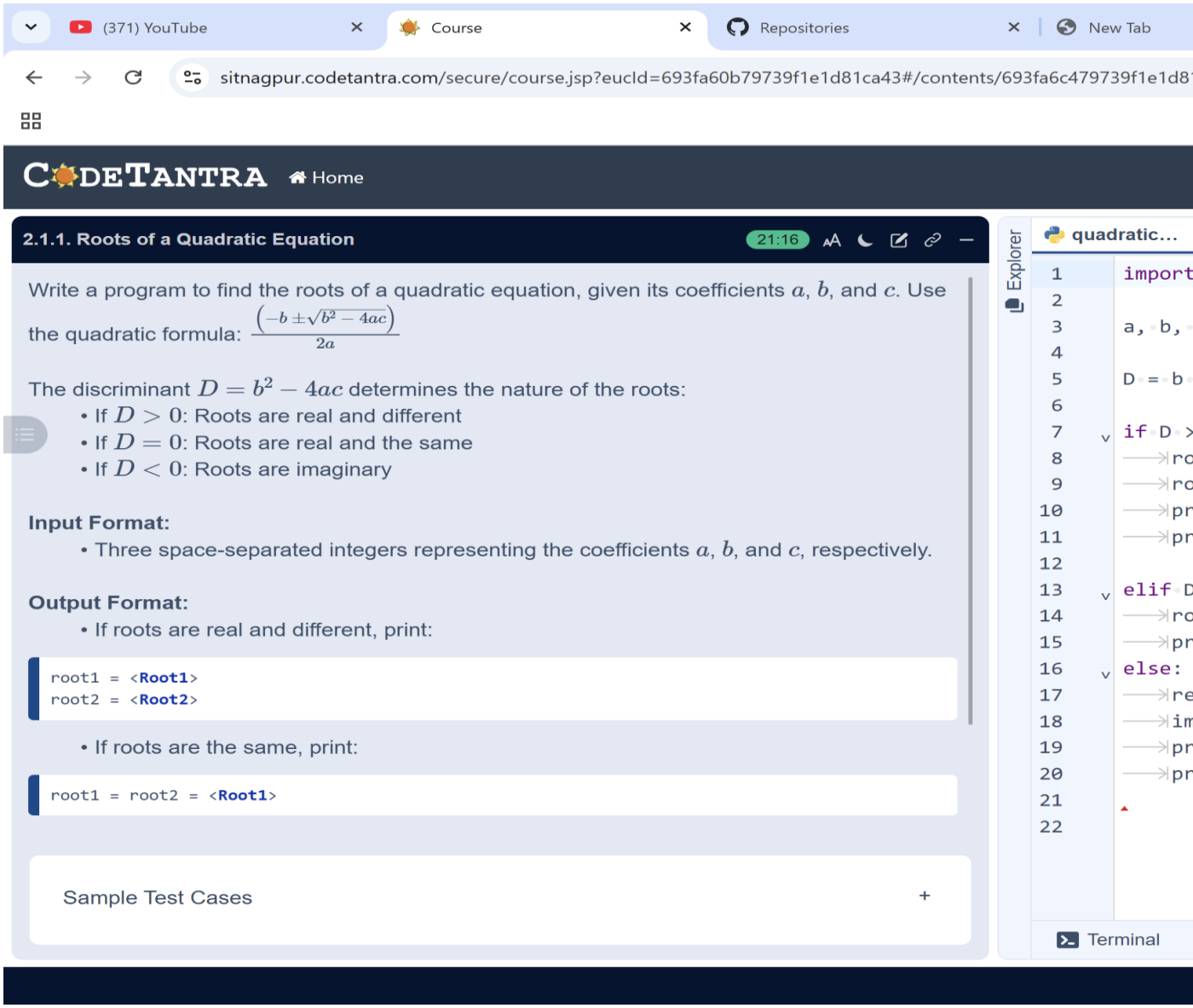
Print
root1 = real_part + imaginary_part i
root2 = real_part − imaginary_part i

Step 5: Stop

Flowchart:-

To Find the Roots of a Quadratic Equation

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Home
2.1.1. Roots of a Quadratic Equation
21:16
Write a program to find the roots of a quadratic equation, given its coefficients a, b, and c. Use the quadratic formula: $\frac{\left(-b \pm \sqrt{b^2 - 4ac}\right)}{2a}$
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
+
Explorer
quadratic...
1 import
2
3 a, b,
4
5 D = b
6
7 if D >
8 ro
9 ro
10 pr
11 pr
12
13 elif D
14 ro
15 pr
16 else:
17 re
18 im
19 pr
20 pr
21
22
Terminal