CalcQuadratic - Israa Moustafa

Write a program that receives multiple sets of value a,b and c , again and again from the user main program.

For each round of input, the main program will check-If value a is equal to zero, the program should display a notification saying that value a need to be re-entered to avoid division by 0 error. If value a is not 0, main program will call function, CalcQuadratic.

In CalcQuadratic, x is calculated by using the following formula:

$$x = \frac{(-b + \sqrt{(b^2 - 4ac)})}{2a}$$

Prior to calculation, the program should check if b2-4ac resulted in negative value or not.

If the value is negative, the program will be terminated to avoid sqrt calculation with negative value.

Else if b2-4ac resulted in positive value, x will be calculated and return to main program.

Back in main, CalcAverage will be called to calculates the sum of all x values, displays the its average together with the counting of input entered by user.

In [2]:
```
import math
```

In [3]:
```
def CalcQuadratic():
    """ This Function calculate this equation: $$ x = \frac{(-b + \sqrt{(b^2 - 4ac})}{



    while True:
        try:
            a = int(input('\nPlease, write (a) value: '))

            if a != 0:
                break

            else:
                print("\nError! (a) shouldn't = 0 to avoid division by 0 error.\nPleas
                continue

        except ValueError:
            print("\nError! Only numbers are accepted. ")
            continue

        else:
            break


    while True:
```

```
        try:
            b = int(input('\nPlease, write (b) value: '))

        except ValueError:
            print("\nError! Only numbers are accepted. ")
            continue

        else:
            break

    while True:
        try:
            c = int(input('\nPlease, write (c) value: '))

        except ValueError:
            print("\nError! Only numbers are accepted. ")
            continue

        else:
            break



    while True:
            sq = (b**2 - 4*a*c)

            if sq >= 0:
                x = (-b + math.sqrt(b**2 - 4*a*c) / 2*a)
                print('\nx = %.2f'%x)
                return x
                break

            else:
                print("\nError! These values aren't accepted to avoid sqrt calculation
                break
```

In [4]:

```
def CalcAverage():
    """ calculates the sum of all x values,
    displays the its average together with the counting of input entered by user """

    print('Hello! Welcome to CalcQuadratic.')

    x_values = []
    x_values.append(CalcQuadratic())

    while True:

        y = input('\nDo you want to add another set of values? Yes/No: ').capitalize()

        if y == 'Yes':
            x_values.append(CalcQuadratic())
            continue

        elif y == 'No':
            #when b2-4ac = negative value, program should stop. In thhis case, will re
            #and so mathematical operations can't be done
            while(None in x_values) :
                x_values.remove(None)
```

```
            if not x_values:
                print("\nThank you for using CalcQuadratic. ")
                break
            else:
                avg = sum(x_values) / len(x_values)
                print("\nYou've entered", len(x_values) , "set(s) for x value calculat
                print("\nThank you for using CalcQuadratic. ")
                break

        elif y != 'Yes' and 'No':
            print("\nPlease choose either Yes/No")
            continue
```

In [5]:
```
CalcAverage()
```

```
Hello! Welcome to CalcQuadratic.

Please, write (a) value: 0

Error! (a) shouldn't = 0 to avoid division by 0 error.
Please re-enter (a):

Please, write (a) value: fgfg

Error! Only numbers are accepted.

Please, write (a) value: 20

Please, write (b) value: 7

Please, write (c) value: 50

Error! These values aren't accepted to avoid sqrt calculation with negative value :

Do you want to add another set of values? Yes/No: nO

Thank you for using CalcQuadratic.
```

In [6]:
```
CalcAverage()
```

```
Hello! Welcome to CalcQuadratic.

Please, write (a) value: 20

Please, write (b) value: 100

Please, write (c) value: 7

x = 871.60

Do you want to add another set of values? Yes/No: yEs

Please, write (a) value: 10

Please, write (b) value: 100

Please, write (c) value: 5

x = 394.97

Do you want to add another set of values? Yes/No: No

You've entered 2 set(s) for x value calculation with average = 633.29

Thank you for using CalcQuadratic.
```