LAB01 Report

# Quadratic equation Solver

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1. A list of errors that you encountered before being able to run the program:

Fortunately, no errors have been encountered before running the program, syntax errors were thrown while typing the code but fixed as they show up.

1. The table showing the expected results and the observed results:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  |  | Expected | Expected Results | Observed Results |
| a | b | c | delta | Roots |  |
| -1 | 1 | -1 | -3 | No roots | This equation has no roots |
| 1 | 2 | 1 | 0 | x1 = x2 =-1 | Double Roots: X1 = X2 = -1.0 |
| 2 | -10 | 12 | 4 | x1 = 2, x2 = 3 | Two Roots: X = 3.0, X2 = 2.0 |
| 0 | 3 | -2 | 9 | Not a quadratic equation  But we can solve X = 1.5 | ZeroDivisionError:  float division by zero |
| 1 | -6 | 9 | 0 | x1 = x2 = 3 | Double Roots: X1 = X2 = 3.0 |
| 1 | 4 | 3 | 4 | x1 = -3, x2 = -1 | Two Roots: X =-1.0, X2=-3.0 |
| 3 | 0 | 0 | 0 | x1 = x2 = 0 | Double Roots: X1 = X2 = 0.0 |

1. Analysis and observations when comparing the expected and the observed results:

As the table in [part 2](#answer_part_2) shows, expected results and the observed results are merely identical, the only difference is in [case 4](#case4) (**a = 0, b = 3, c = -2**)

In the expected result we were able to calculate the root of the equation even though it is not a quadratic equation however in the observed results we can [see](#zerodivisionerror) that the program throwed a ZeroDivisionError because we were dividing by zero (a = 0) hence the program only expected input to be corelated with the general quadratic equation formula (*ax2+bx+c*).

1. Write your Recommendations to improve the program and do a design (flowchart or pseudocode, not a program), that includes your recommendations:

Recommendations to improve the program are included in the [below flowchart](#flowchart) (*Next page*) representing the ***improved*** ***design*** of the Quadratic Equation Solver.

