Documentation for Project 1 Quadratic Equation Solver

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Chapter 1

Introduction

Quadratic Equation Solver aims at developing a Windows Application for the use of Students, Teachers and Parents to learn how a quadratic equation behaves and to check if the student has solved the equation correctly.

1.1 Purpose

This app is made with the purpose of helping students in learning how a quadratic equation behaves and learn about Discriminant and Roots of an equation and visualizing the equation with the help of a Graph. This can also be useful for Parents who are not well versed with Mathematics but want to keep a check if their students are solving the equation correctly or not. This app is being developed as a course project for the Software Engineering course of Indian Institute of Technology Guwahati.

1.2 Document Conventions

While creating this document, we followed the format specified by IEEE. The headings of each topic are in bold. Bullet Points are used for sub-headings and key points.

1.3 Intended Audience

This app is intended for

Windows Users:

1. Students: It will serve the students to keep a check on themselves and keep on learning about Quadratic Equations.

2. Teachers: It will help teachers while checking large number of equations as with the help of this application he/she can quickly calculate Discriminants, Roots and Plot a graph for any Quadratic Equation with Real Coefficients.

1.4 Product Scope

This Application can be used for students who are currently learning about Polynomials and Quadratic Equations. It can be used as a Sub-Application in bigger Projects.

1.5 References

1. Tutorial Point: https://www.tutorialspoint.com/vb.net/
2. Microsoft: https://mva.microsoft.com/en-us/training-courses/visual-basic-fundamentals-for-absolute-beginners-16507
3. Graphs: https://www.linglom.com/programming/vb-net/creating-graph-with-vb-net-part-1-basic-chart/

Chapter 2

User Manual

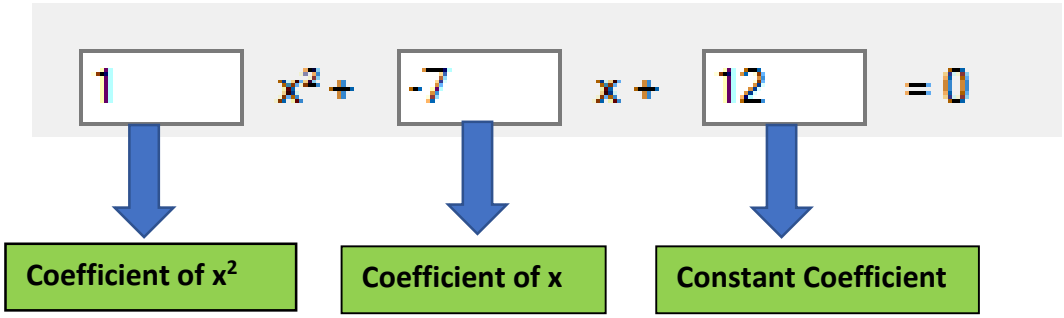
2.1 Inputs

The user has to input three values:

1) Real coefficient of x^2
2) Real coefficient of x
3) Constant real coefficient

If user correctly inputs real values in the input boxes provided, then the Software will give output in a correct manner.

If user by mistake inputs non-real values which includes strings of alphabets/symbols or imaginary numbers, then a Message Box will Pop-Up telling the user to give input in a correct manner



2.2 Outputs

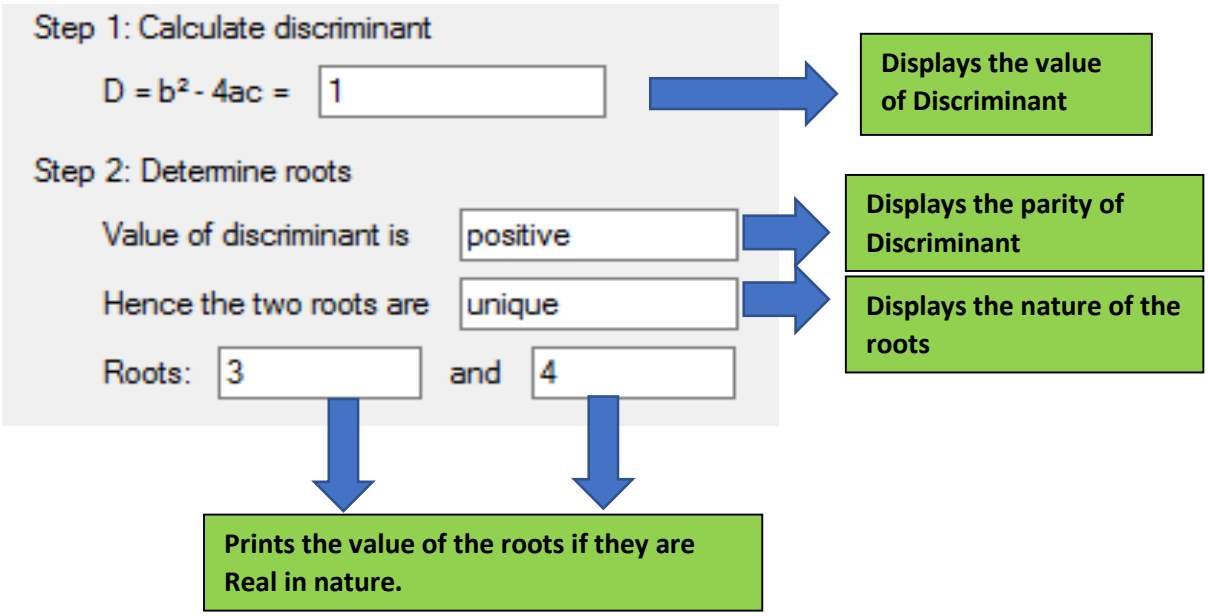
If the user inputs real Coefficients and then clicks on “Calculate the Roots”, then

Step1: Discriminant of the quadratic equation would be displayed

Step2: It will display the parity of the Discriminant calculated and will accordingly display whether both the roots are Real or Imaginary and Coincident or Unique.

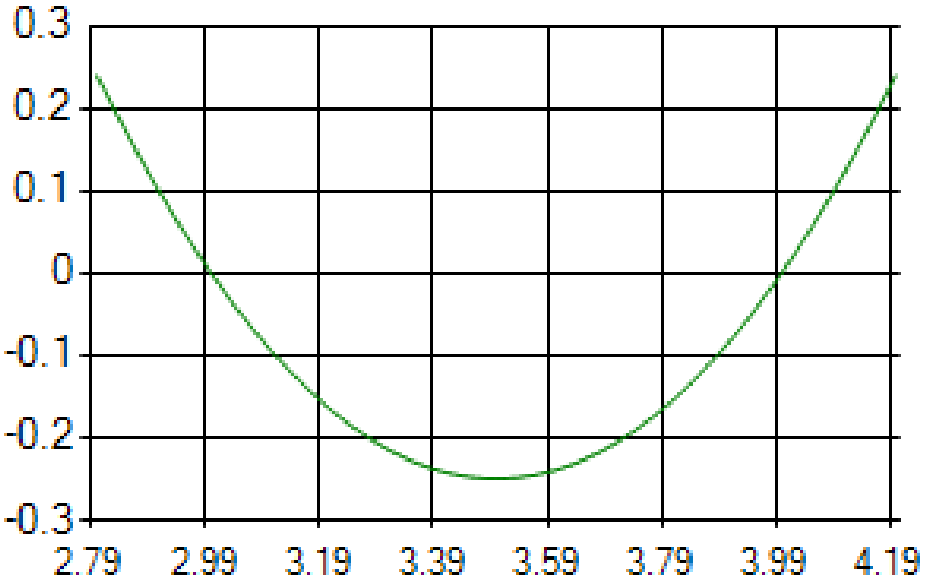
Step3: If both the roots of the equation are Real, then the Software will display them in Text Box provided. But if the roots are Imaginary, then it will just disappear the Text Box.

If the user clicks on “Reset”, then all the Text Boxes and Graph Area would become blank once again, and the user would be able to input the data once again without actually exiting the Software.



2.3 Graphical Representation

If the user inputs real Coefficients, then a Graph will also be shown on the right side of the Software depicting how the Parabolic Equation corresponding to the Equation behaves and changes.



2.4 Setup

Any user can download the setup from the link given below and run the .exe file and follow the instructions as they appear:

https://github.com/ratherlongname/Quadratic-Equation-Solver/releases

Chapter 3

Other Non-functional Requirements

3.1 Reliability

The software is supposed to work properly on all Windows Computers and can be accessed even without Internet. The system may fail when the user tries to put Imaginary Coefficients.

3.2 Availability

The application will be available 24*7 for the Students, Teachers and Parents.

3.3 Portability

This software can easily be transferred to any other Windows Computer/Laptop satisfying the minimum software dependency requirements. The software can be installed on a Windows environment.

3.4 Performance

The performance of the product depends on the hardware(processor) of the device being used.