



CALCULATOR

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Preface

We have developed this software to be both simple and complete. This software application enables users of any age group to perform basic mathematical operations (+, -, /, *) including the usage of brackets .

Working on this project was a great learning experience for all three of us. We have tried to cover as many corner cases as possible. We welcome any improvement and suggestions from users' side.

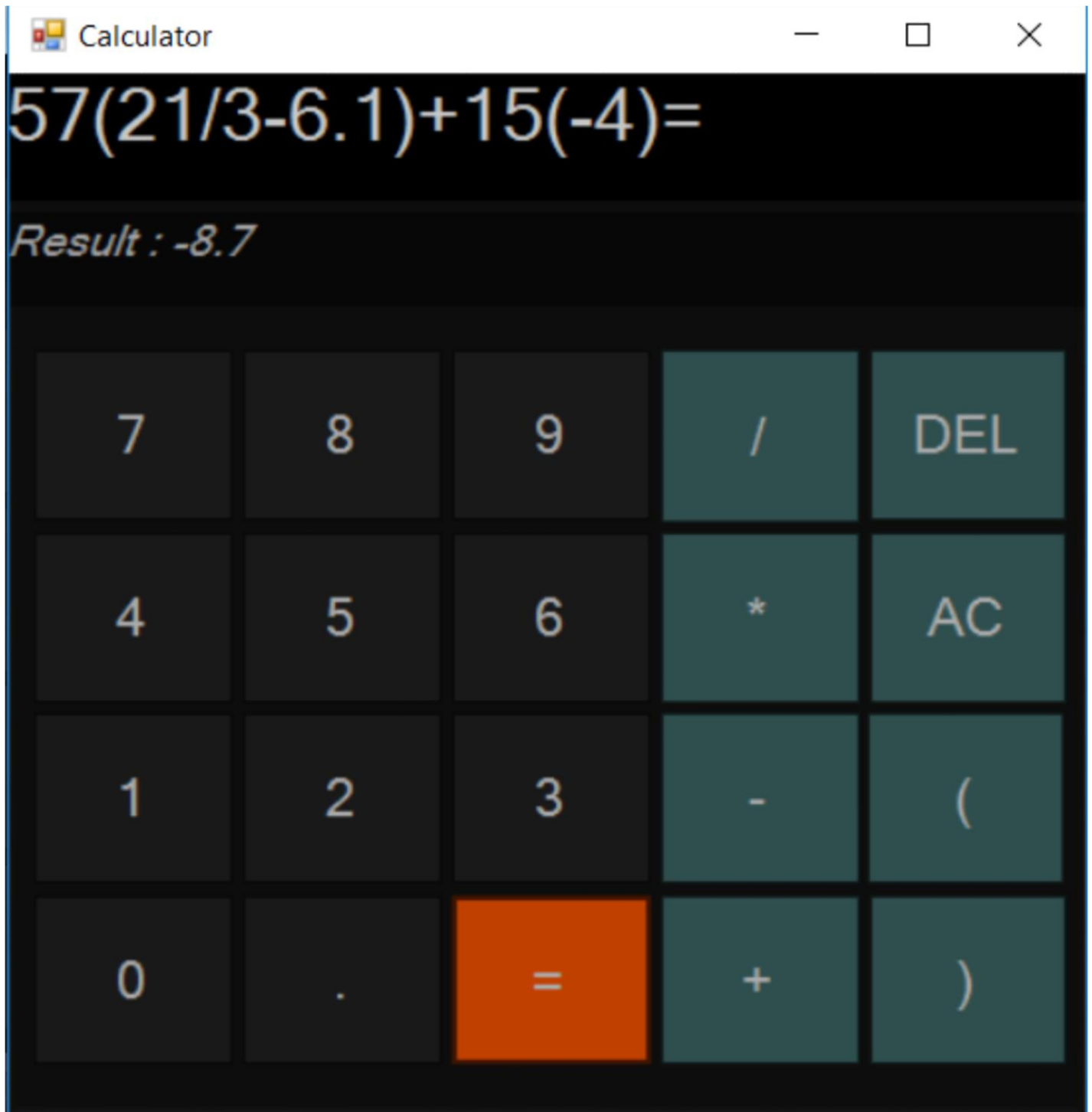
Developers:

Rashi Singh

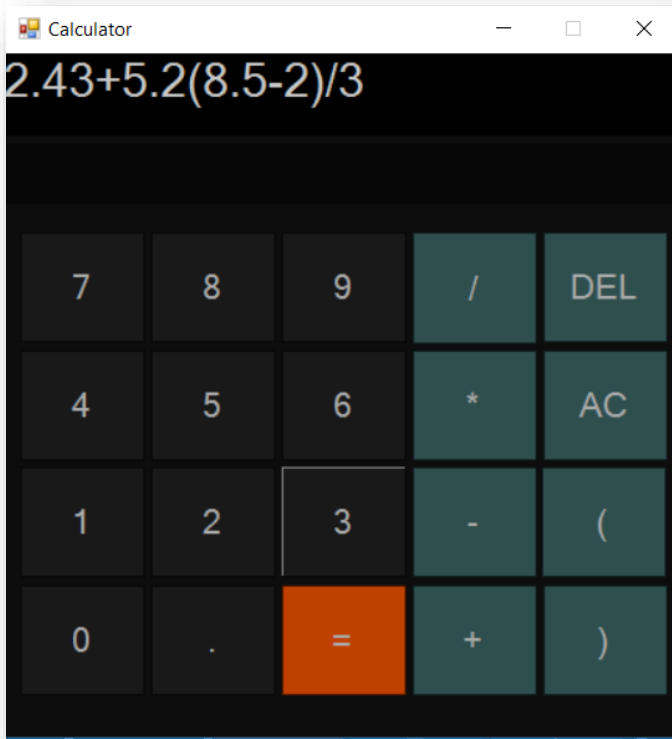
Thahir Mahmood

Kiran Kadam

INTERFACE



User Guide :



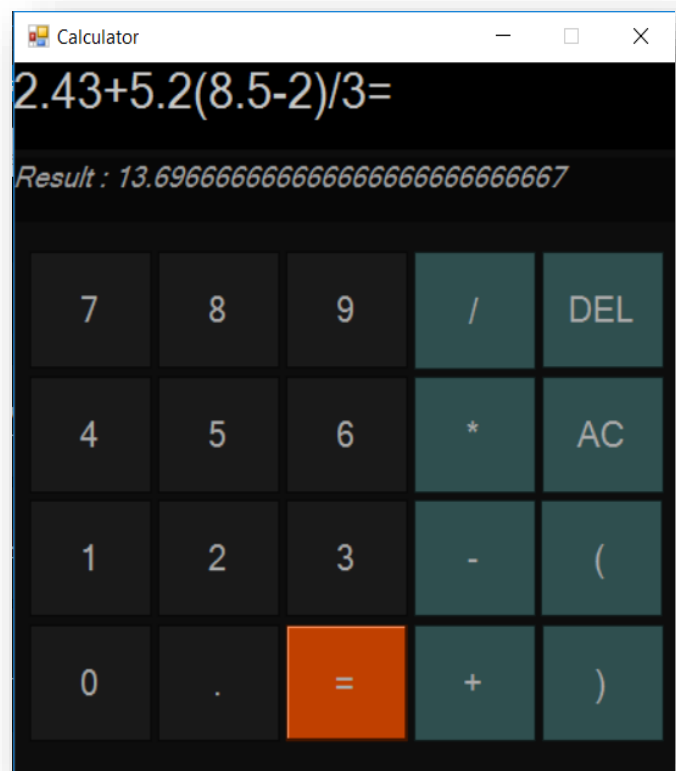
: Input

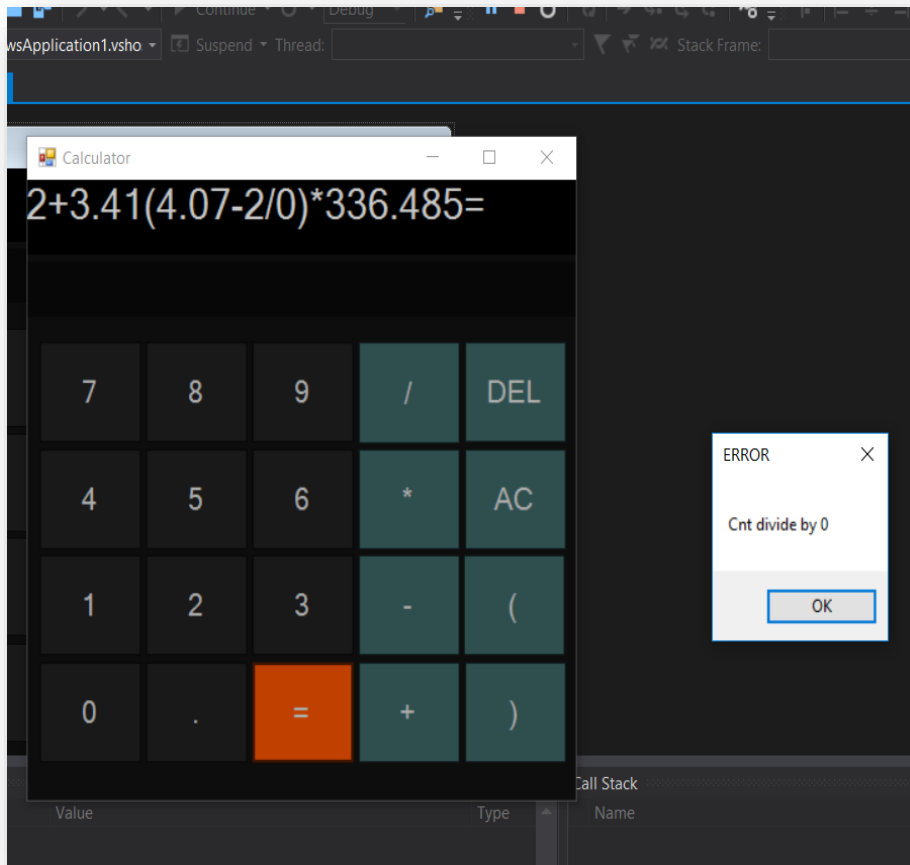
The picture aside displays a sample input given to the calculator.

Users can use both keyboard and the buttons provided in the design to enter the input.

Output:

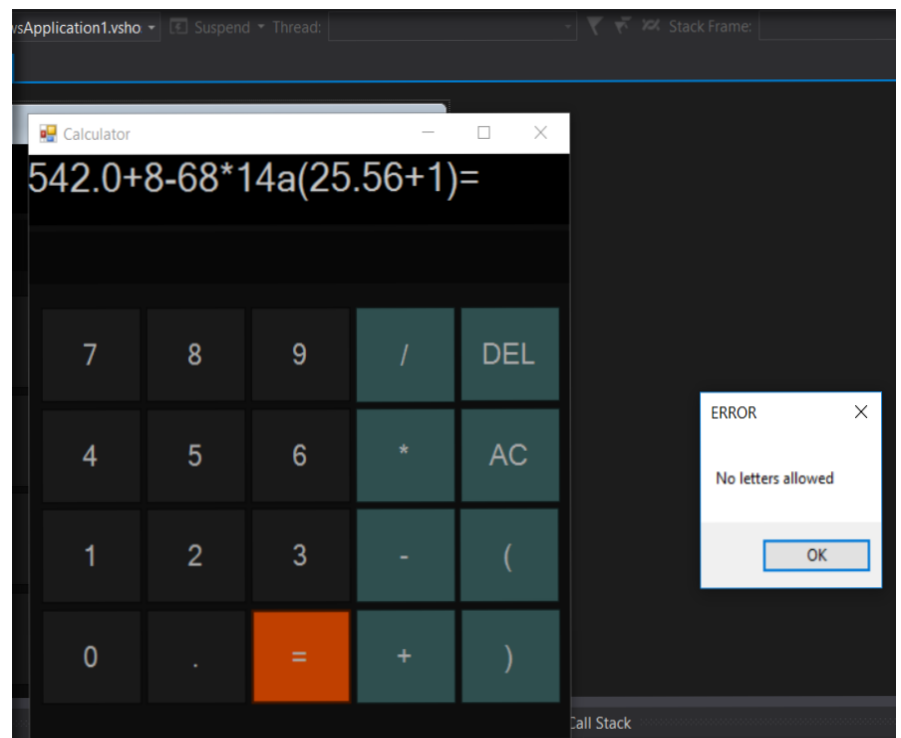
This image captures the result displayed on the calculator when the equals sign (=) is pressed after the sample input given above.

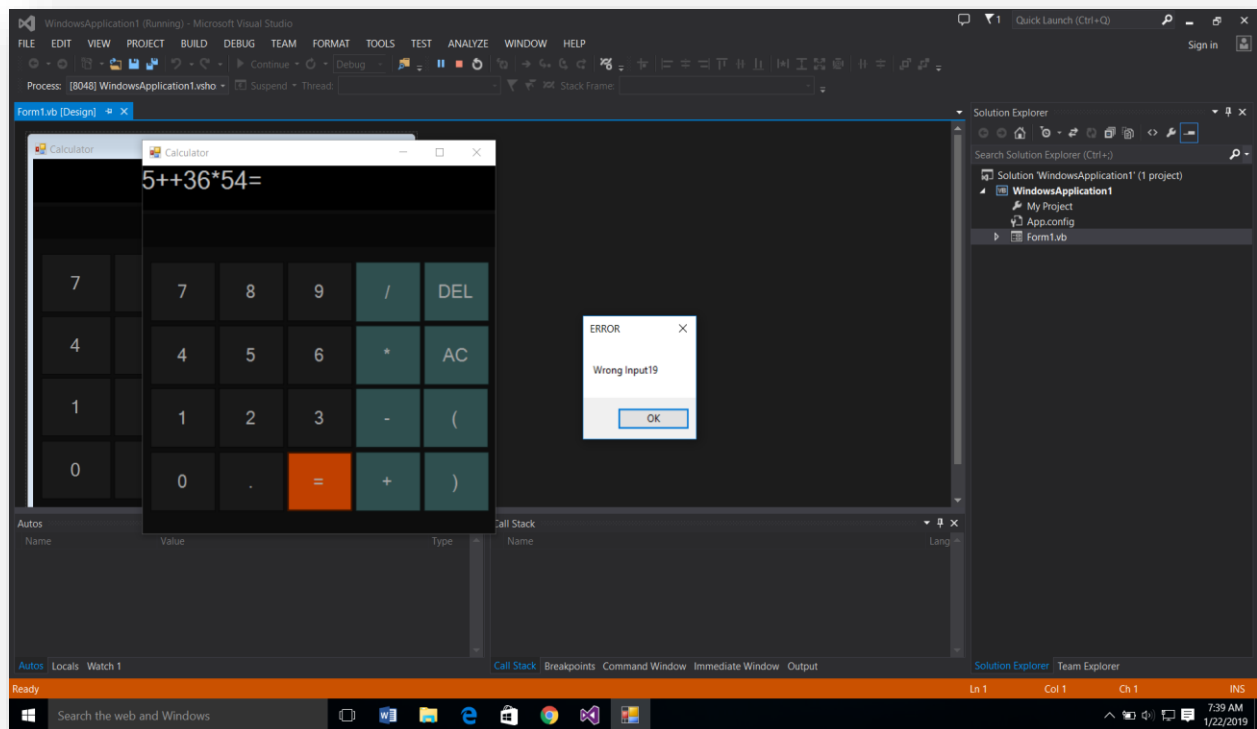




If a user enters an input containing divide by zero, then it will show an error message.

If any character other than Mathematical operators and operands is entered error message is displayed.





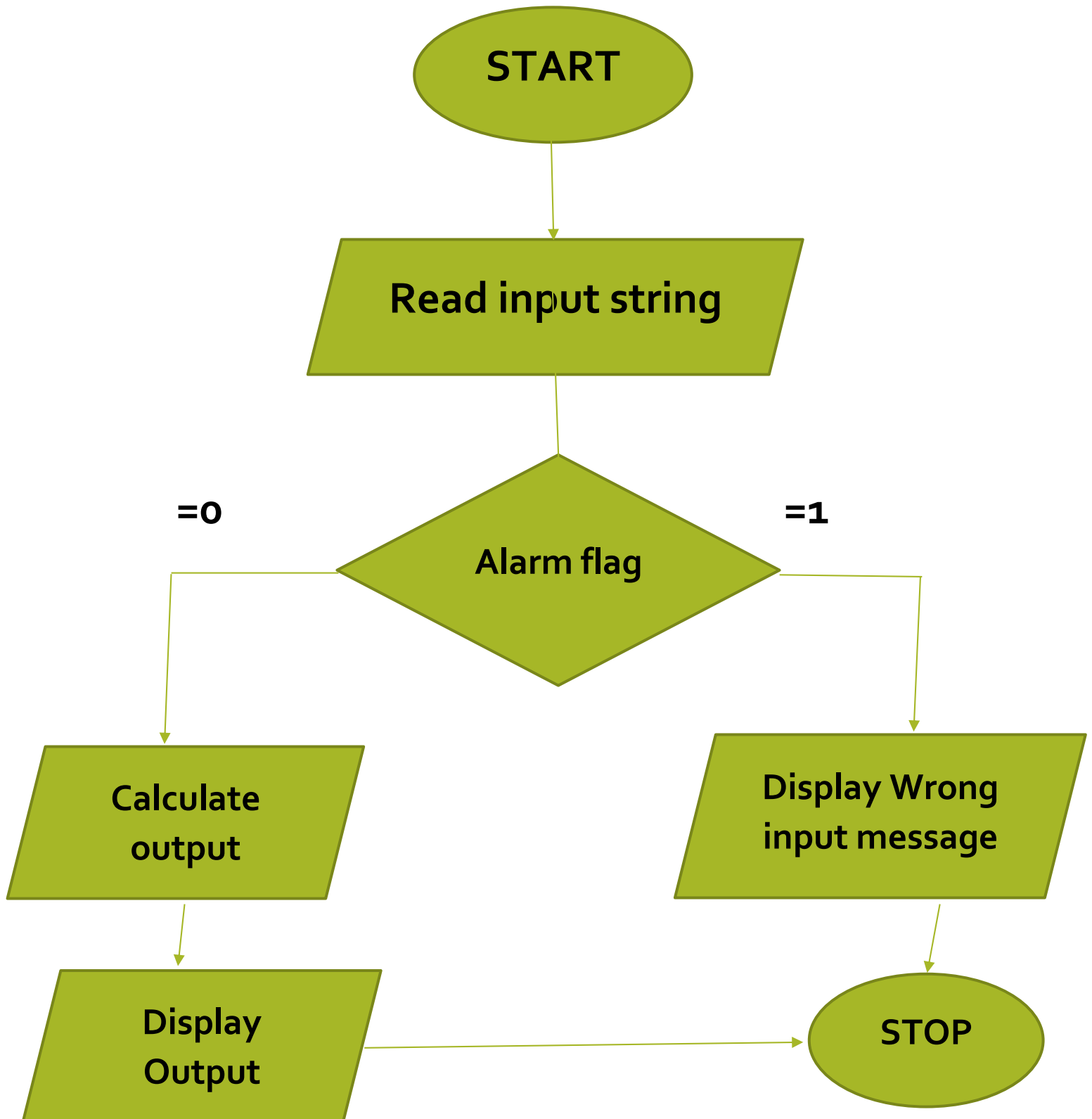
If any wrong expression (in terms of mathematical domain) will lead to error message .

Key Specifications:

- DEL - Deletes a character at a time.
- AC - Clears the display.
- 0,1,2, .. ,9 - These are the number keys used for giving input.
- +, -, *, / - Mathematical operators
- . - Decimal point .
- () - Opening and closing brackets .

Technical Guide:

Flow Chart



➤ Widgets:

RichTextBox:

1. RichTextBox1 - It is used for taking user inputs.
2. RichTextBox2 - It is used to display calculated results.

Buttons:

1. Button1 - Appends '1' to the input
2. Button2 - Appends '2' to the input
3. Button3 - Appends '3' to the input
4. Button4 - Appends '4' to the input
5. Button5 - Appends '5' to the input
6. Button6 - Appends '6' to the input
7. Button7 - Appends '7' to the input
8. Button8 - Appends '8' to the input
9. Button9 - Appends '9' to the input
10. Button_o - Appends 'o' to the input
11. Decimal_point - Appends '.' To the input
12. Equal - Displays the result in RichTextBox2
13. Add - Appends arithmetic PLUS operator to RichTextBox1
14. Subtract - Appends arithmetic MINUS

operator to RichTextBox1

- 15. Multiply - Appends arithmetic '*' operation to RichTextBox1
- 16. Divide - Appends arithmetic '/' operation to RichTextBox1
- 17. Left_Bracket - Appends '(' to the input
- 18. Right_Bracket - Appends ')' to the input
- 19. Clear_Screen - Clears both RichTextBoxes
- 20. backspace - Deletes last entered character to RichTextBox1

➤ **Functionality:**

It mainly consists of two parts –

- ⇒ Giving input to the calculator as string of expression. And
- ⇒ Displaying the calculated result.

First of all, user should enter mathematically correct input (with one exception of divide by zero case where it gives error message), any ambiguity (like entering a alphabet) in input will cause error message.

This input should be entered in RichTextBox1 provided '=' at the end of expression.

Second aspect of the functionality is to display output on the screen, it is done so after user enters '=' key to RichTextBox1. And the answer is displayed in RichTextBox2.

Software Progress Report:

16 January, 2019

Worked on idea of implementation and found out an algorithm.

17 January, 2019

Explained algorithm and idea for implementing the algorithm.
(Milestone 1)

18 January, 2019

We wrote around half the part of our code.

19 January, 2019

Completed whole code.

20 January, 2019

We did debugging with inline indentation.

21 January, 2019

Showed working code and did documentation for final submission.
(Milestone 2)

22 January, 2019

Final Submission

Bibliography:

1. <https://docs.microsoft.com/en-us/.net/visual-basic/>
2. <https://www.youtube.com/watch?v=mM3zB3QWuv8&list=PLC6o1DEA22187BBF1>
3. <https://www.youtube.com/watch?v=3FkWddODLno>
4. <https://www.technologyuk.net/software-development/wbnet/control-arrays-calculator.shtml>