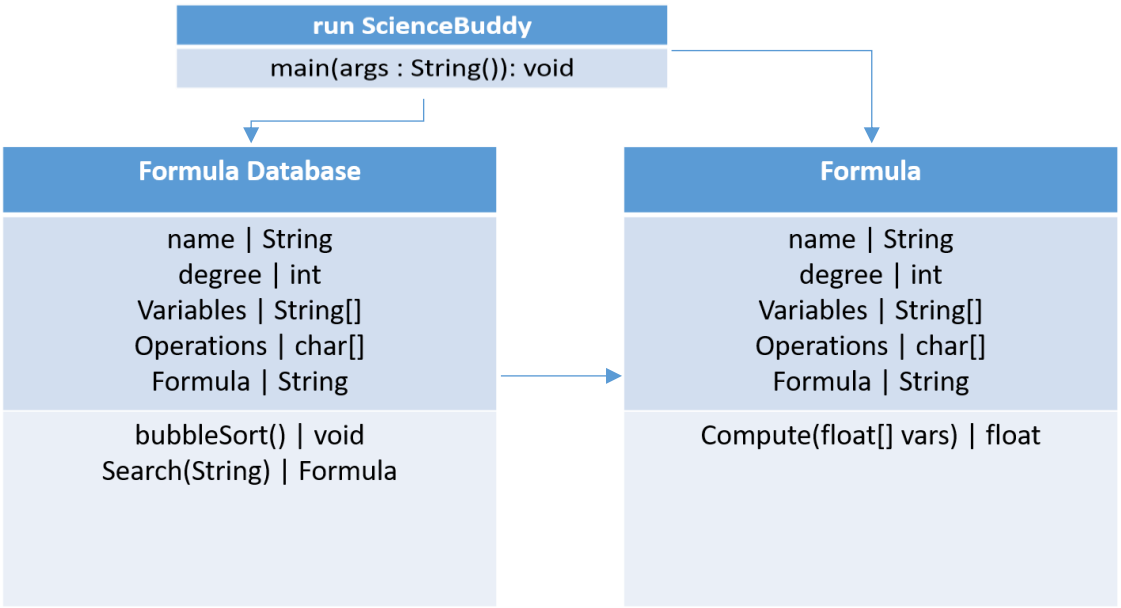
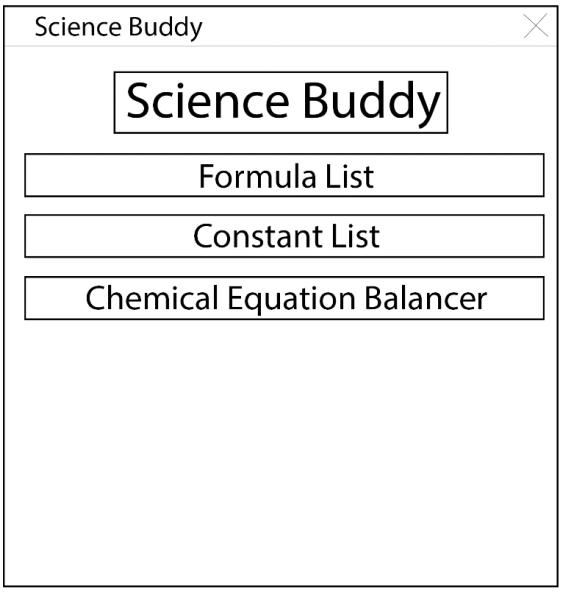
## Part B

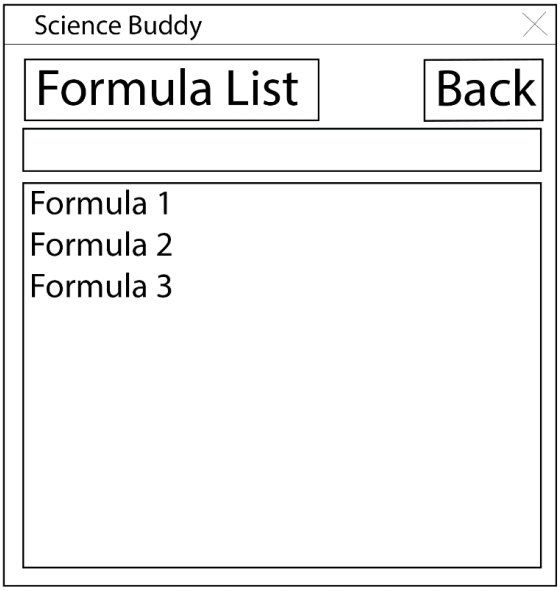
UML Diagram



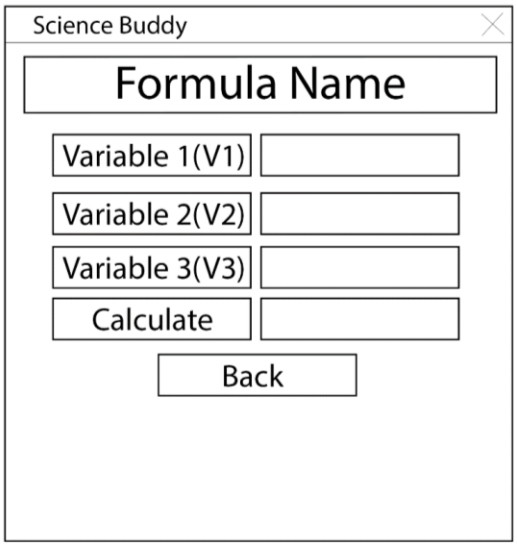

Main Menu Design



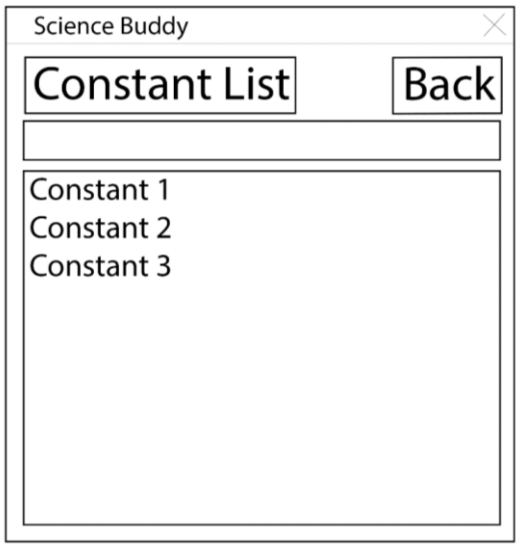

Formula List Design



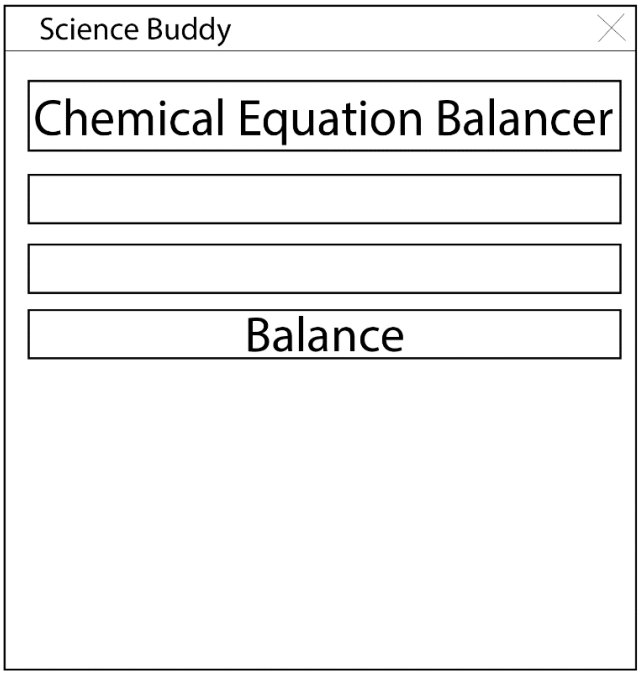
Calculation Menu Design



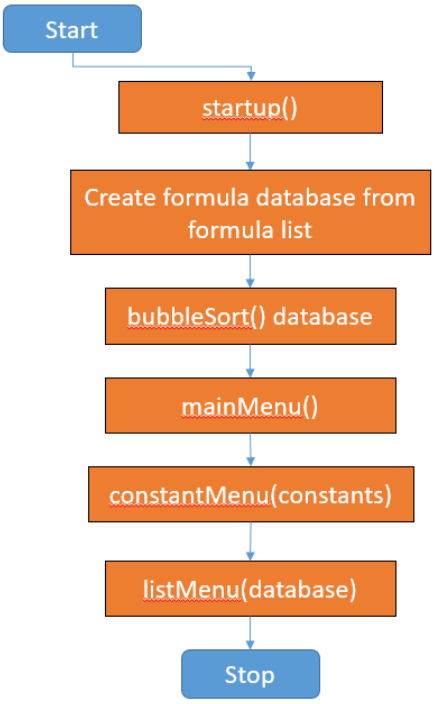

Constant List Menu Design



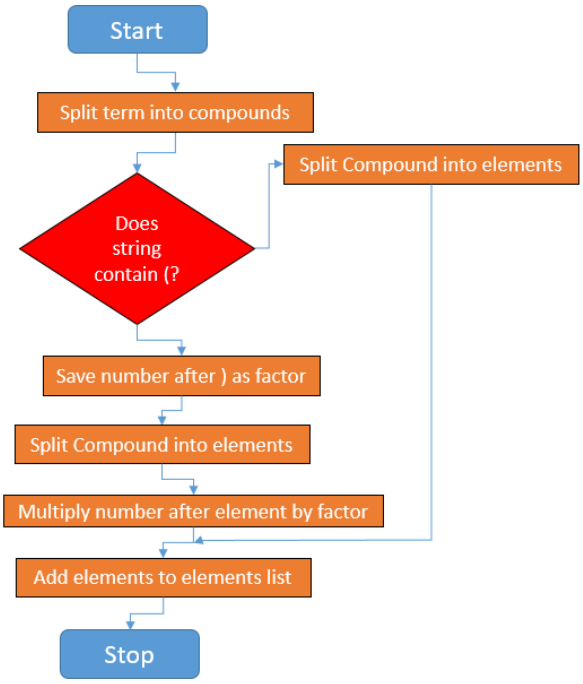

Chemical Equation Balancer Design



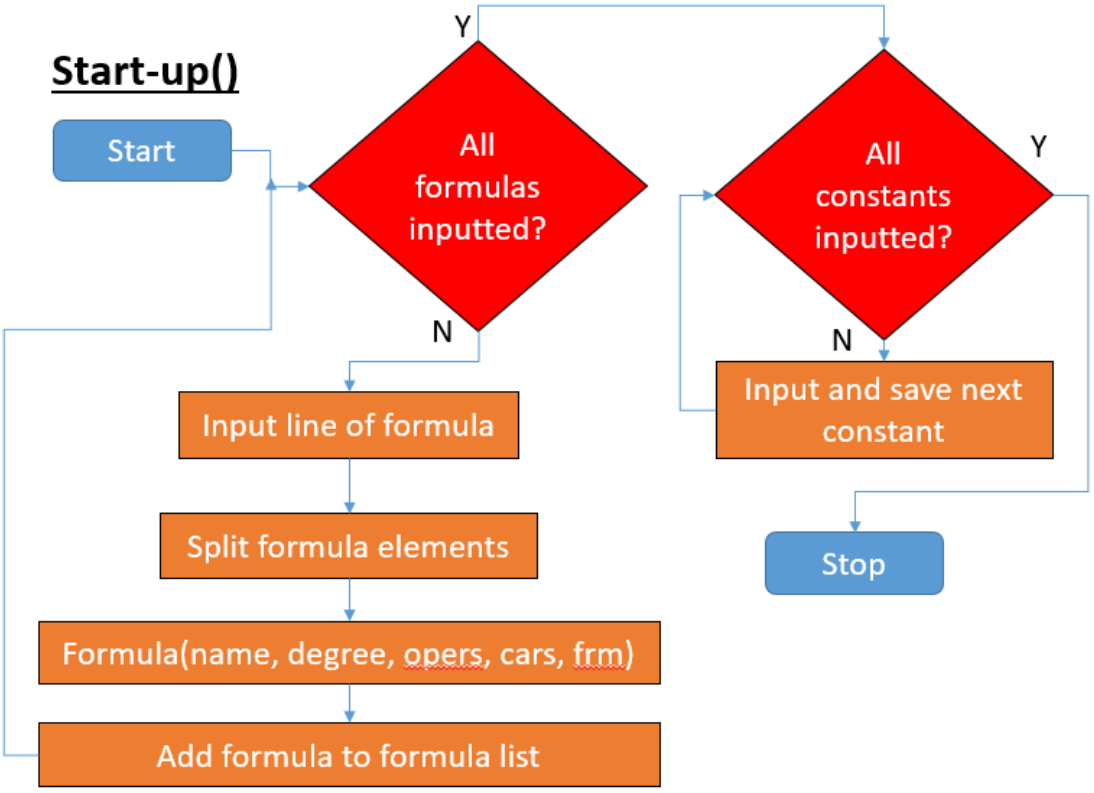
## ScienceBuddy()



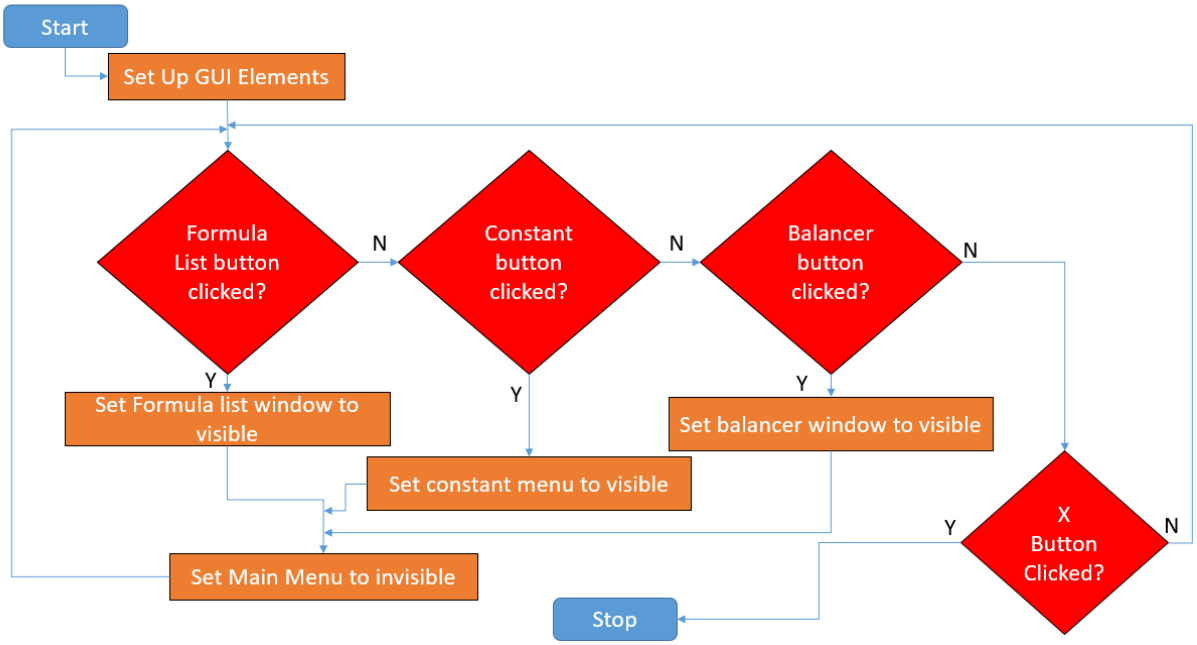

## parser()



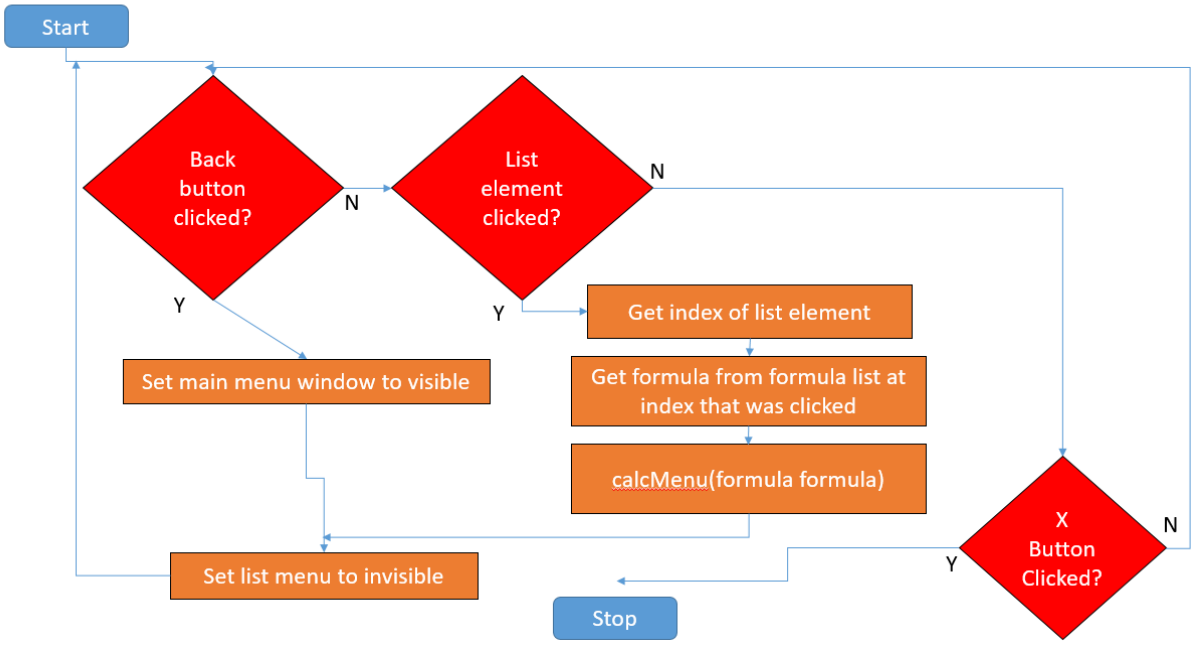

## Start-up()



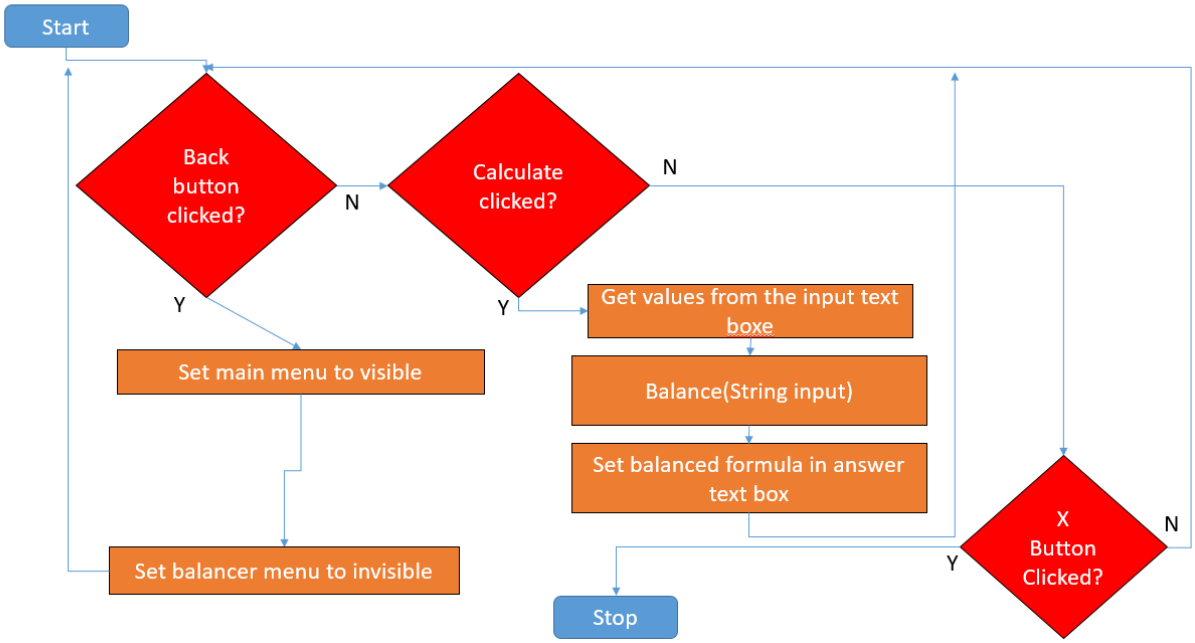
## MainMenu()



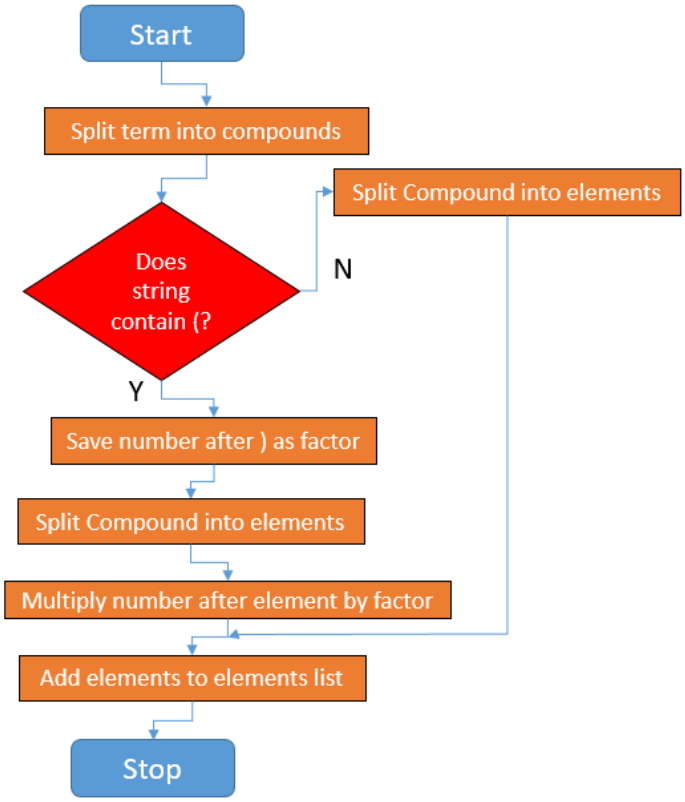

## listMenu()



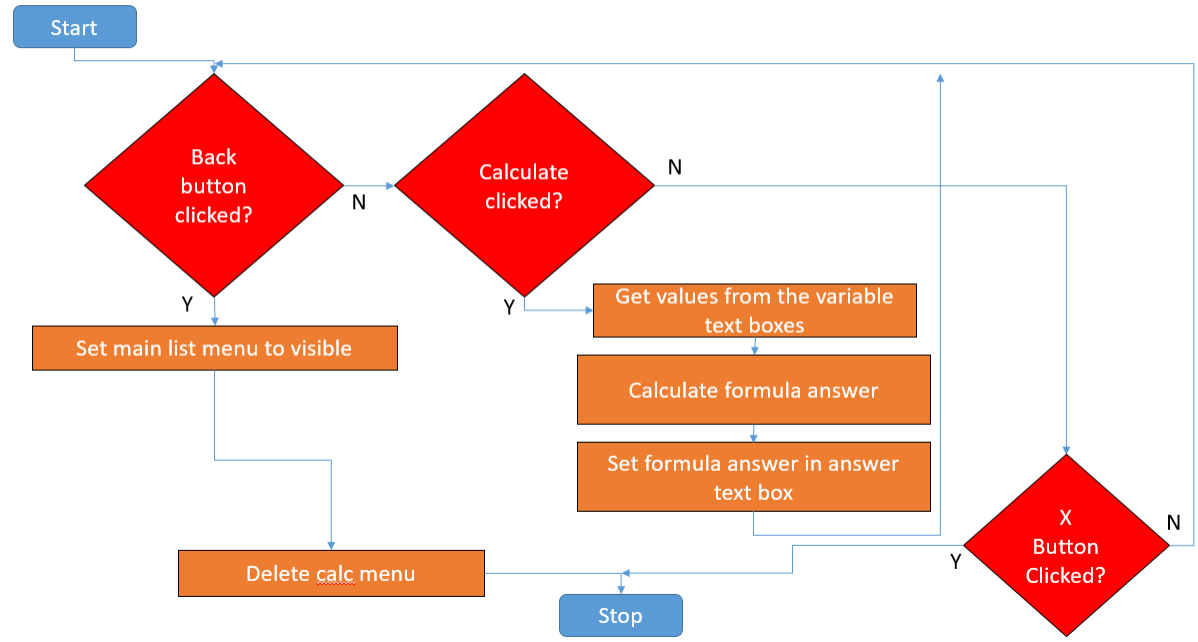
## balancer()



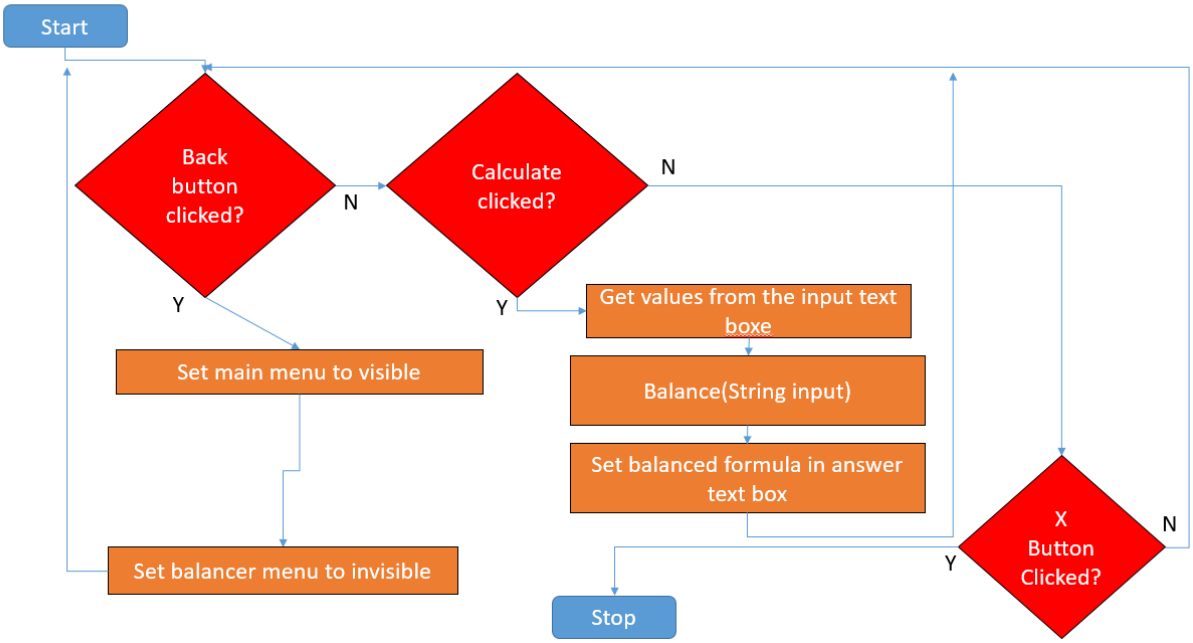

## parser()



## calcMenu()




## balancer()



Test Plan

| # | Explanation of test | Aim of Test | Result |
|---|---|---|---|
| 1 | List of formulas can be viewed in the formula list | To ensure that the program correctly inputs the formulas from the txt file | All the formulas will be able to be seen in the formula list |
| 2a | Input text into the variable and chemical formula textboxes | Ensures that the user can input into the program | All inputted text shows in the textbox on screen |
| 2b | When the calculate, button is clicked answer is outputted to text box | Ensure that the program correctly outputs an answer for a given input | The correct answer for the calculation is outputted |
| 3 | Constant menu opens successfully and all constants appear correctly | Ensure that the constant correctly configure in the constant window | All constants can be viewed and selected |
| 4 | The program successfully filters the formula list when user adds to the search line | Ensure that the search bar works as intended | The formula should alter viewable formulas based on the text input in the search bar. |
| 5 | When the balance button is clicked the correctly balanced formula is outputted to text box | Ensure that the program correctly outputs a balanced formula for the unbalanced input | The properly balanced formula is outputted |
| 6 | All navigating buttons (menu specific, back, x buttons) do the desired function such as opening a new window returning to a previous window and stopping and exiting the program | Ensure that the program is easy to navigate for the user | All buttons work as intended without causing errors. |

Word Count: 261