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| **Requirement**  **to Test** | **Test Action** | **Expected Outcome** | **Actual Outcome** |
| 1. Interface displayed when program runs. | 1. Run Program. | D:\git repositories\ISCG6421_Assignment_2\External Docs\pictures\1.bmp |  |
|  | 2. Close program by clicking on X in upper right corner. | Program closes. |  |

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| **Requirement**  **to Test** | **Test Action** | **Expected Outcome** | | **Actual Outcome** |
| 2. Enter an invalid operator calculation. Invalid characters and operations should be handled gracefully. | 1. Run Program. | D:\git repositories\ISCG6421_Assignment_2\External Docs\pictures\1.bmp |  | |
|  | 2. Push Enter. |  | |  |
|  | 3. Enter your calculations here:  $ |  | |  |
|  | 4. Enter your calculations here:  /+ |  | |  |
|  | 5. Enter your calculations here:  # |  | |  |
|  | 6. Enter your calculations here:  = |  | |  |
|  | 7. Enter your calculations here:  \*& |  | |  |
|  | 8. Enter your calculations here:  A |  | |  |
|  | 9. Enter your calculations here:  += |  | |  |
|  | 10. Enter your calculations here:  +G |  | |  |
|  | 12. Enter your calculations here:  +% |  | |  |
|  | 13. Enter your calculations here:  -2A |  | |  |
|  | 14. Click the X in the upper right corner to close the program. | Program Closes. | |  |

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| **Requirement**  **to Test** | **Test Action** | **Expected Outcome** | **Actual Outcome** |
| 3. Start a new calculation. | 1. Run program. | D:\git repositories\ISCG6421_Assignment_2\External Docs\pictures\1.bmp |  |
|  | 2. Open the file menu, and click New. | D:\git repositories\ISCG6421_Assignment_2\External Docs\pictures\1.bmp |  |
|  | 3. Verify the listbox is blank. | The list box is empty. |  |
|  | 4. Type your calculations here:  +10  Push + |  |  |
|  | 5. Open the file menu, and click New. |  |  |
|  | 6. In the Save your Changes dialog, Click No. | D:\git repositories\ISCG6421_Assignment_2\External Docs\pictures\1.bmp |  |
|  | 7. Verify the listbox is blank. | The list box is empty. |  |
|  | 8. Click the X in the upper right corner to close the program. | Program Closes. |  |

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| **Requirement**  **to Test** | **Test Action** | **Expected Outcome** | **Actual Outcome** |
| 4. Open an existing file. | 1. From the project folder “Test files”, copy the file test\_4.cal to C:\temp folder. | The folder c:\temp contains a file, test\_4.cal |  |
|  | 2. Run program. | D:\git repositories\ISCG6421_Assignment_2\External Docs\pictures\1.bmp |  |
|  | 3. Open the file menu, and click Open. |  |  |
|  | 4. Select the file “test\_4.cal” and push open. |  |  |
|  | 5. Click the X in the upper right corner to close the program. | Program Closes. |  |

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| **Requirement**  **to Test** | **Test Action** | **Expected Outcome** | **Actual Outcome** |
| 5. Save a Calculation. | 1. Run program. | D:\git repositories\ISCG6421_Assignment_2\External Docs\pictures\1.bmp |  |
|  | 2. Enter your Calculations here:  +10  Push + |  |  |
|  | 3. Open the file menu, click Save. |  |  |
|  | 4. In the save dialog, enter the name “test\_5” (without quotes) and click save. |  |  |
|  | 5. Click OK. | The Message box disappears. |  |
|  | 6. Enter your Calculations here:  +2  Push + |  |  |
|  | 7. Open the file menu, click Save. |  |  |
|  | 8. Click OK. | The Message box disappears. |  |
|  | 9. Click the X in the upper right corner to close the program. | Program Closes. |  |

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| **Requirement**  **to Test** | **Test Action** | **Expected Outcome** | **Actual Outcome** |
| 6. Save a calculation as another file. | 1. Run program. | D:\git repositories\ISCG6421_Assignment_2\External Docs\pictures\1.bmp |  |
|  | 2. Enter your Calculations here:  -10  Push \* |  |  |
|  | 3. Open the file menu, click Save. |  |  |
|  | 4. In the save dialog, enter the name “test\_6” (without quotes) and click save. |  |  |
|  | 5. Click OK. | The Message box disappears. |  |
|  | 6. Enter your Calculations here:  \*-2  Push + |  |  |
|  | 7. Open the file menu, click Save As. |  |  |
|  | 8. In the save dialog, enter the name “test\_6\_B” (without quotes) and click save. |  |  |
|  | 9. Click OK. | The Message box disappears. |  |
|  | 10. Click the X in the upper right corner to close the program. | Program Closes. |  |

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| **Requirement**  **to Test** | **Test Action** | **Expected Outcome** | **Actual Outcome** |
| 7. Print a calculation. | 1. Run program. | D:\git repositories\ISCG6421_Assignment_2\External Docs\pictures\1.bmp |  |
|  | 2. Enter your Calculations here:  +2  Push + |  |  |
|  | 3. Enter your Calculations here:  +4  Push \* |  |  |
|  | 4. Enter your Calculations here:  \*-6  Push = |  |  |
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| **Requirement**  **to Test** | **Test Action** | **Expected Outcome** | **Actual Outcome** |
| 8. Exit the program. | 1. Run program. | D:\git repositories\ISCG6421_Assignment_2\External Docs\pictures\1.bmp |  |
|  | 2. Click the X in the upper right corner to close the program. | Program Closes. |  |
|  | 3. Run program. | D:\git repositories\ISCG6421_Assignment_2\External Docs\pictures\1.bmp |  |
|  | 4. Open the file menu, click Exit. | Program Closes. |  |

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| **Requirement**  **to Test** | **Test Action** | **Expected Outcome** | **Actual Outcome** |
| 9. Delete a calculation line. | 1. Run program. | D:\git repositories\ISCG6421_Assignment_2\External Docs\pictures\1.bmp |  |
|  | 2. Enter your Calculations here:  +5  Push \* |  |  |
|  | 3. Enter your Calculations here:  \*-10  Push + |  |  |
|  | 4. Enter your Calculations here:  +20  Push + |  |  |
|  | 5. Click on the line:  \* -10 |  |  |
|  | 6. Click Delete. |  |  |
|  | 7. Click the X in the upper right corner of the Main Form. | Program Closes. |  |

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| **Requirement**  **to Test** | **Test Action** | **Expected Outcome** | **Actual Outcome** |
| 10. Update a calculation line. | 1. Run program. | D:\git repositories\ISCG6421_Assignment_2\External Docs\pictures\1.bmp |  |
|  | 2. Enter your Calculations here:  +5  Push \* |  |  |
|  | 3. Enter your Calculations here:  \*-10  Push + |  |  |
|  | 4. Enter your Calculations here:  +20  Push + |  |  |
|  | 5. Click on the line:  \* -10 |  |  |
|  | 6. To make changes select a line in the list first:  \* 5 |  |  |
|  | 7. Click Update. |  |  |
|  | 8. Click the X in the upper right corner of the Main Form. | Program Closes. |  |

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| **Requirement**  **to Test** | **Test Action** | **Expected Outcome** | **Actual Outcome** |
| 11. Insert a calculation line. | 1. Run program. | D:\git repositories\ISCG6421_Assignment_2\External Docs\pictures\1.bmp |  |
|  | 2. Enter your Calculations here:  +5  Push \* |  |  |
|  | 3. Enter your Calculations here:  \*-10  Push + |  |  |
|  | 4. Enter your Calculations here:  +20  Push + |  |  |
|  | 5. Click on the line:  \* -10 |  |  |
|  | 6. To make changes select a line in the list first:  + 5 |  |  |
|  | 7. Click Insert. |  |  |
|  | 8. Click the X in the upper right corner of the Main Form. | Program Closes. |  |

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| **Requirement**  **to Test** | **Test Action** | **Expected Outcome** | **Actual Outcome** |
| 12. Verify default saving folder and extension. | 1. Run program. | D:\git repositories\ISCG6421_Assignment_2\External Docs\pictures\1.bmp |  |

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| **Requirement**  **to Test** | **Test Action** | **Expected Outcome** | **Actual Outcome** |
| 13. Calculation which has only one addition and a total. | 1. Run program. | D:\git repositories\ISCG6421_Assignment_2\External Docs\pictures\1.bmp |  |

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| **Requirement**  **to Test** | **Test Action** | **Expected Outcome** | **Actual Outcome** |
| 14. Calculation which has only one subtraction and a total. | 1. Run program. | D:\git repositories\ISCG6421_Assignment_2\External Docs\pictures\1.bmp |  |

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| **Requirement**  **to Test** | **Test Action** | **Expected Outcome** | **Actual Outcome** |
| 15. Calculation which has only one division and a total. | 1. Run program. | D:\git repositories\ISCG6421_Assignment_2\External Docs\pictures\1.bmp |  |

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| **Requirement**  **to Test** | **Test Action** | **Expected Outcome** | **Actual Outcome** |
| 16. Calculation which has only one multiplication and a total. | 1. Run program. | D:\git repositories\ISCG6421_Assignment_2\External Docs\pictures\1.bmp |  |

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| **Requirement**  **to Test** | **Test Action** | **Expected Outcome** | **Actual Outcome** |
| 17. Calculation which has one addition, one subtraction, one division, and one multiplication in order, and a total. | 1. Run program. | D:\git repositories\ISCG6421_Assignment_2\External Docs\pictures\1.bmp |  |

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| **Requirement**  **to Test** | **Test Action** | **Expected Outcome** | **Actual Outcome** |
| 18. Calculation which has 2 calculations, a subtotal, 2 calculations then a total. | 1. Run program. | D:\git repositories\ISCG6421_Assignment_2\External Docs\pictures\1.bmp |  |

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| **Requirement**  **to Test** | **Test Action** | **Expected Outcome** | **Actual Outcome** |
| 19. Calculation which has 3 calculations, a total, then 2 calculations. | 1. Run program. | D:\git repositories\ISCG6421_Assignment_2\External Docs\pictures\1.bmp |  |

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| **Requirement**  **to Test** | **Test Action** | **Expected Outcome** | **Actual Outcome** |
| 20. Calculation which has 3 calculations, a subtotal, 2 calculations, a subtotal, 2 calculations, a total, followed by one calculation. | 1. Run program. | D:\git repositories\ISCG6421_Assignment_2\External Docs\pictures\1.bmp |  |

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| **Requirement**  **to Test** | **Test Action** | **Expected Outcome** | **Actual Outcome** |
| 21. Check the user is warned about unsaved data when exiting the application, or closing the form. | 1. Run program. | D:\git repositories\ISCG6421_Assignment_2\External Docs\pictures\1.bmp |  |
|  | 2. Enter your Calculations here:  +4  Push / |  |  |
|  | 3. Click the X in the upper right corner to close the program. |  |  |
|  | 4. Click No. | Program Closes. |  |