

CF Linear Equations User Manual

V 1.0.0.1

1. The **CF Linear Equations** application is a Windows Metro 8.1 app solves systems of linear equations of the form $\mathbf{Ax} = \mathbf{B}$ where:
A is a square matrix.
B is a vector of the same length as the rows and columns of **A**.
x is the calculated vector.
2. When the application is started, the initial screen appears ([Figure 1](#)).

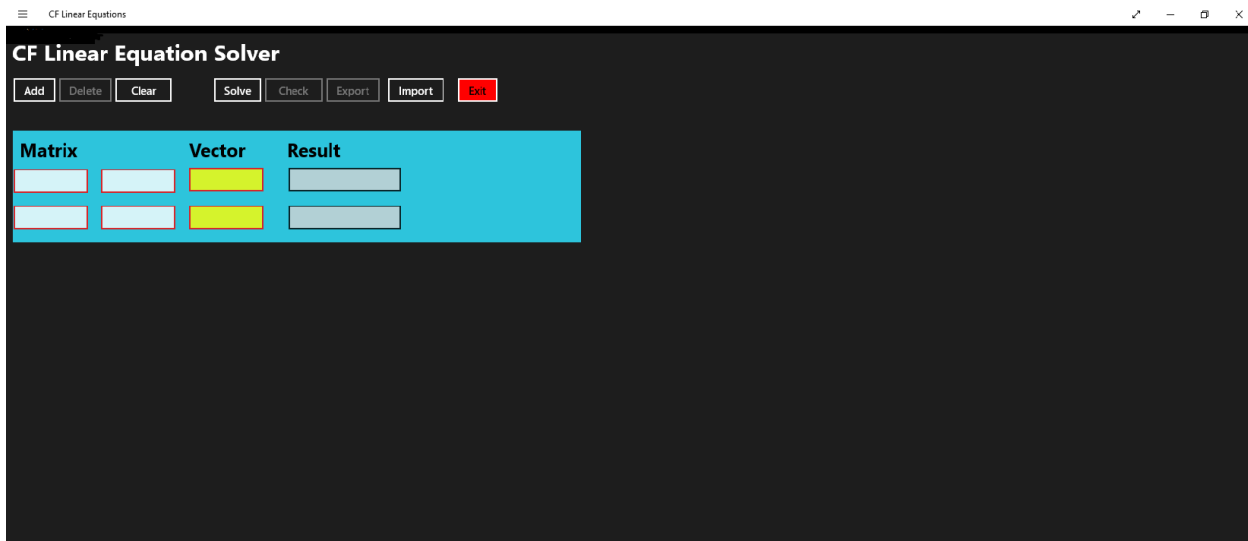


Figure 1 – Initial Screen

- To change the matrix size, click the **Add** button to add a single row/column ([Figure 2](#)). Use the **Delete** button to remove a row/column.

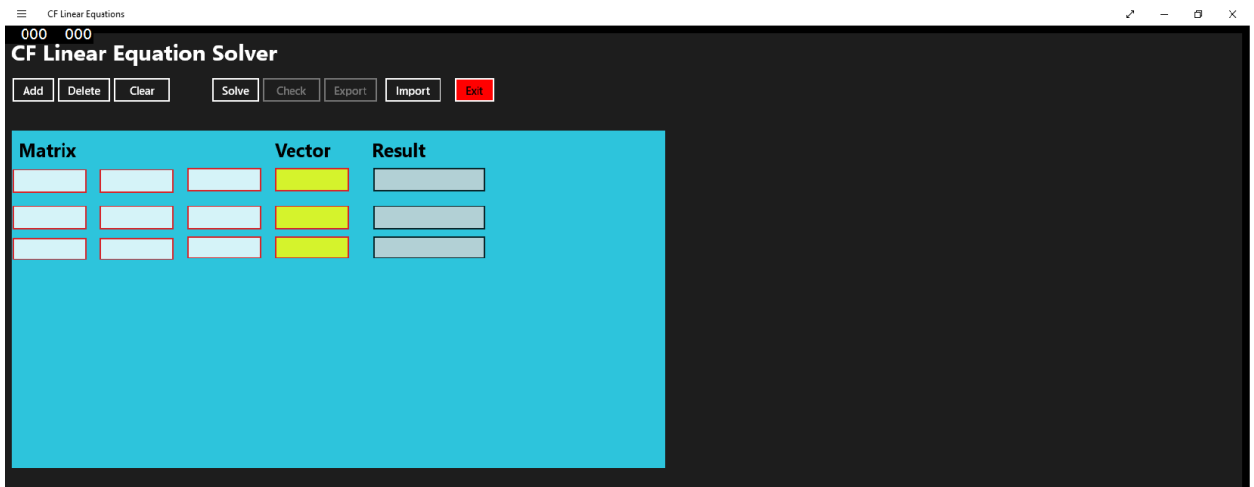


Figure 2 – Screen after Add is clicked.

- Fill in the matrix values and the vector values. Then, click on the **Solve** button to solve the system of equations. ([Figure 3](#)).



Figure 3 – Solved System Display

5. The check the results, click on the **Check** button. The matrix values will be multiplied by the result values and the results will be displayed in the Check column ([Figure 4](#)). Each value in the **Check column** should match the value in the Vector column (Note: there may be some rounding errors, so the match may not be exact).

The screenshot shows the 'CF Linear Equation Solver' application. The title bar indicates 'CF Linear Equations' and '014 000'. The main window has a dark background with a light blue header area. Below the header is a toolbar with buttons: 'Add', 'Delete', 'Clear', 'Solve', 'Check', 'Export', 'Import', and 'Exit'. The main content area is a table with four columns: 'Matrix', 'Vector', 'Result', and 'Check'. The 'Matrix' column has four rows of input fields. The 'Vector' column has four rows of input fields, with the values 3, 3, 1, and 0 highlighted in yellow. The 'Result' column has four rows of input fields. The 'Check' column has four rows of input fields. The values in the 'Check' column are 3, 3, 1, and 0, which correspond to the values in the 'Vector' column.

Matrix	Vector	Result	Check
1	3	1	3
2	3	2	3
0	1	1	1
-1	0	-1	0

Figure 4 – Check Screen

6. Some systems of equations have no solution. In these cases, you will see the display shown in [Figure 5](#):

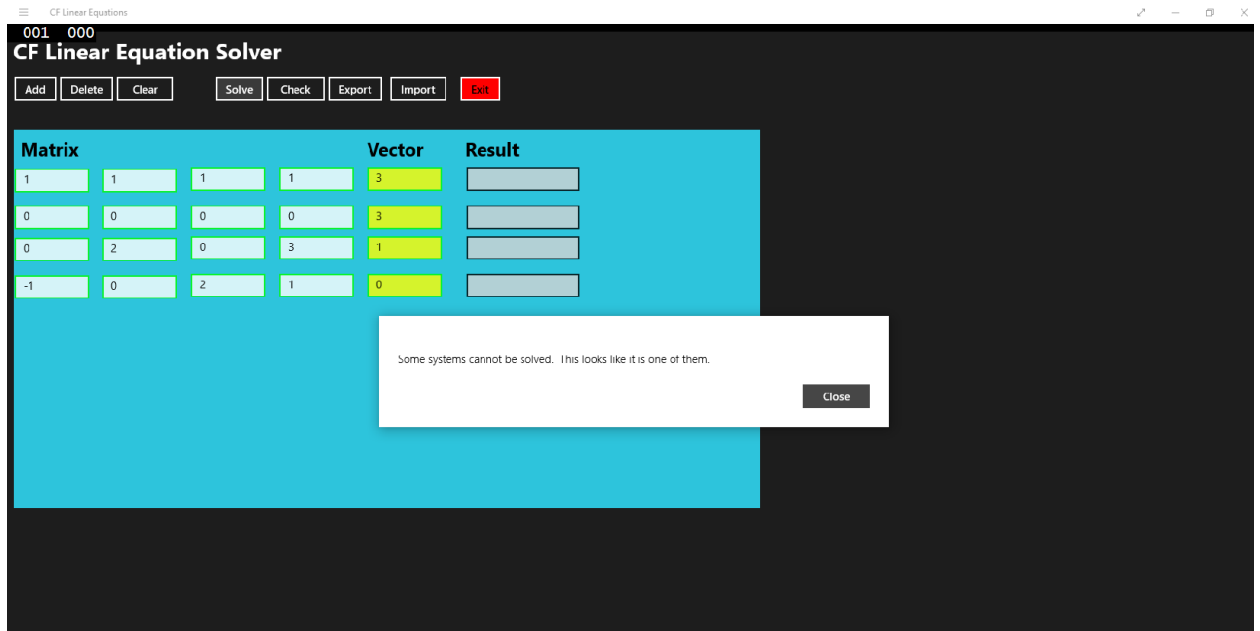


Figure 5 – System with no Solution

7. To clear the values, click on the **Clear** button.

8. You can export a matrix/vector pair to a comma-delimited file by clicking on the **Export** button (Figure 6). You can import a .csv file (properly formatted) using the **Import** button (Figure 7).

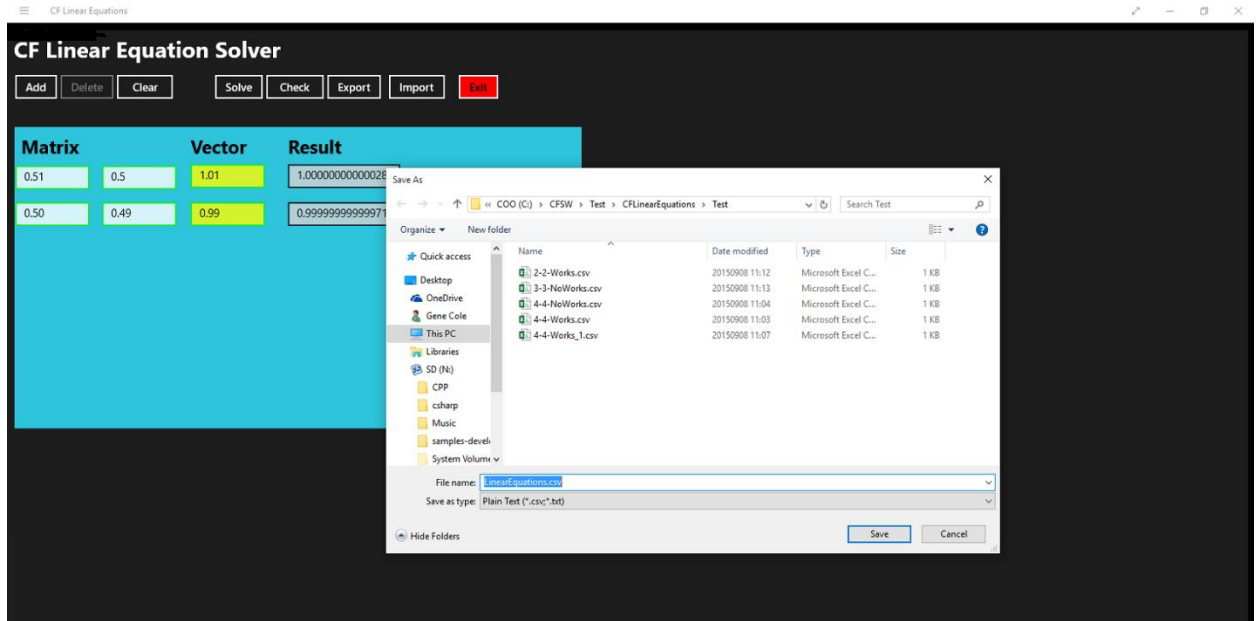


Figure 6 – Export to a .csv file

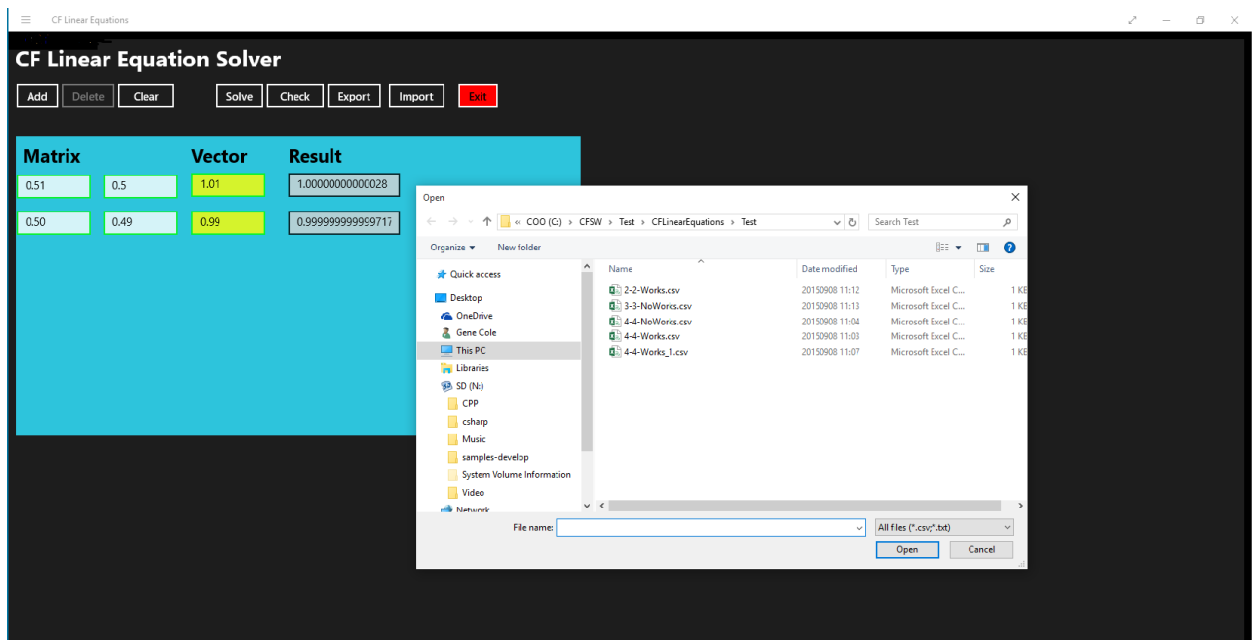


Figure 7 – Import from a .csv file

9. **Errors** – If an input error occurs, a message box will popup. Normally, the error message will be self-explanatory. If an unexpected error happens, please email the text of the error to:

LinEq@cfsw.biz

10. Please email any problem descriptions or improvement suggestions to:

LinEq@cfsw.biz