

ChEE 201
Fall 2007
Computer HW 7
Gaussian Elimination and Computer Programming Debugging

There are two major goals to this homework assignment. The first is to **debug a program** that has been written (and that mostly works) for doing Gauss-elimination with partial pivoting. This program was very long to write, taking about four hours of intensive work by the professor, so the bulk of the program has been done for you following the algorithms provided on page 254 of Chapra and Canale (see reading 7 excerpts). The second goal is to **use the provided program to solve a system of linear equations**.

The program is available at the course homework assignments link. Download it and debug it using a system of equations done in class for homework or as an example.

Some notes as you work:

- 1) the spread sheet has the number of equations to be solved in the first cell
- 2) The matrix of coefficients appears next, followed by the b values on the right
- 3) The answers will appear at the bottom of the sheet when the program works correctly
- 4) To attempt to run the macro, go to Tools -> Macro -> Macros -> Run
- 5) Keep track of the errors as you fix them because your grade will be based on removing the debugging problems

Once you have identified and fixed the eight program debugging problems, solve the following problem:

$$\begin{aligned}w + x + y &= 6 \\-17x + y - 3w + 2z &= 2 \\-5z + 4w - 17x + 8y &= 2 \\-2y - 5x + z &= 2\end{aligned}$$

To receive complete credit on this assignment, you should **email a copy of your debugged program and spreadsheet to blowers@engr.arizona.edu by 10 am on November 8th**. You should name your file after your first name and last name.xls. You should include the list of problems you fixed on the program in text format in the spreadsheet file on sheet 2 which is not accessed by the program. Your submitted program should have the matrix for the above system of equations and be followed by the correct answers in the table format provided by the subroutines.