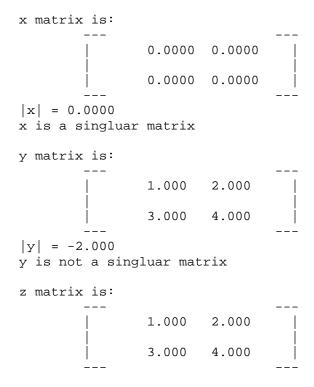
## EGRE 246 Advanced Engineering Programming Using C++ Homework #5 – C++ Classes

This homework must be your own (individual) work as defined in the course syllabus and discussed in class.

1) Implement a Matrix C++ class for 2-by-2 matrices. The matrix elements should be private doubles and the class should include a default constructor that initializes the matrix entries to 0.0, a copy constructor, and a constructor that takes the matrix elements as a list of entries.

The class should include public methods that include an inverse() function that inverts the matrix, a det() function that returns the determinant of the matrix, an isSingular() function that returns a bool that is *true* if the determinant is zero – *false* otherwise, an assign() function that allows new entries to be written into the matrix, and a print() function that prints the entries of the matrix.

A main program to test your implementation of the Matrix class is provided in the hw5.cpp file. You must define the Matrix class in a header file called hw5.h and implement the Matrix class methods in a separate .cpp file. You must make you Matrix class implementation comply with the interface used in the hw5.cpp file and you are not permitted to change the hw5.cpp file in any way. When you run the main program in the hw5.cpp file, the output must look like that shown below:



```
|z| = -2.000
z is not a singluar matrix
z matrix inverse is:
             -2.000 1.000
              1.500 -0.5000
x matrix is:
              0.0000 1.000
               0.0000 1.000
x matrix inverse is:
Error: matrix is singluar - it does not have an inverse
             0.0000 1.000
              0.0000 1.000
y matrix is:
             4.000 3.000
               3.000
                      2.000
y matrix inverse is:
              -2.000 3.000
              3.000
                      -4.000
```

For this homework, submit a zip file with your class definition in hw5.h, your class implementation in a separate .cpp file, and the original hw5.cpp file. Be sure to include a Makefile that compiles your solution.