

CPSC 8490

PRINCIPLES OF SCIENTIFIC COMPUTING

ASSIGNMENT 1

Problem 1 –

A Linear System Solver has been implemented using LU Factorization with 3 pivoting strategies using MATLAB

The system has been implemented as an iterative LU Solver

sprabha-assign1.rar contains all the files required for this assignment. The contents are

- sprabha-README.pdf
- iterLUFact.m
- FactLC.m
- partialPivot.m
- completePivot.m
- markowitzPivot.m
- cage6.mat
- b.dat
- L.dat
- U.dat
- x.dat

Instructions for running the program

- Extract sprabha-assign1.rar
- Open MATLAB and change the directory to where sprabha-assign1.rar was extracted
- Run the program using the following code
 - o iterLUFact(matFile, b_file, pivot, iter);
 - where matFile is the .mat file from the Matrix Market (Eg: cage6.mat)
 - b_file is an ASCII file which contains the vector b (Eg: b.dat)
 - Pivot is the type of pivoting strategy to be used.
 - o 1 – Partial Pivoting
 - o 2 – Complete Pivoting
 - o 3 – Markowitz Minimum Degree Pivoting
 - iter is the number of iterations to be performed.
- The program is run for 'cage6.mat' for 'b.dat'. The outputs for this example is in L.dat, U.dat, x.dat