Performance Analysis

I wanted to get some running time according to input size of sparse matrix.

So I added some clock code, and putting random number in matrix code in my code,

and executed it ten times per example.

10\*10 50\*50 100\*100 500\*500 1000\*1000

0.015 0.015 0.015 0.085 0.385

0.001 0.031 0.021 0.085 0.269

0.001 0.015 0.004 0.097 0.223

0.016 0.015 0.022 0.099 0.354

0.015 0.015 0.036 0.084 0.216

0.015 0.002 0.015 0.100 0.269

0.009 0.004 0.017 0.100 0.298

0.018 0.015 0.015 0.084 0.270

0.002 0.015 0.016 0.184 0.200

0.015 0.022 0.015 0.115 0.285

The limitation of the number of non-zero elements is 10000, so the probability of non-zero elements is 0.2 until 100\*100. 500\*500 and 1000\*1000’s probability is 0.1.

I can see running time of program until 100\*100 is almost fixed to 0.01sec roughly, but it increased quite sharply from 500\*500.

Moreover, I think my time complexity of program is O(a\*b+m). Because biggest degree of operation is a\*b. I have two-dimensional for-loop to get numbers in input file from file to code’s array. And also I do some actions if number is non-zero. m is a variable that contains the number of non-zero elements.