Name: Ahmed Elsayed

Course number: CS 4080 Summer

Project 1 Report

I would like to start with comparing the 4 versions together using an Array of size 10 x 10, randomized value and using the multiplication function.

Version 1 took 5 microseconds to finish, version 2 took 4 microseconds, version 3 took a long 10 microseconds and version 4 using java took 0 microseconds approximately. These results came out of the average of 3 trials for each version. version 1 and 2 were very close to each other but version 3 took the longest strangely even though it is version 2 and version 3 are very similar and only difference is that version 3 pointers are private members in a separate class. Java’s version was the fastest out of all the C++ versions.

The second test is comparing the last two versions together and increase the size of the array and check the time gap between each trial. So I started with 10 x 10 and ended with 100 x100 array. Here are the results.

|  |  |  |
| --- | --- | --- |
| Array size | Version 3 Time (microseconds) | Version 4 Time (microseconds) |
| 20 x 20 | 47 | 0 |
| 50x50 | 990 | 4000 |
| 100 x 100 | 5460 | 17000 |

And Wow, the C++ version 3 is way faster when it comes to larger array sizes. These are very interesting results. So the slowest version of all C++ versions is faster than java in larger arrays.

Let’s compare version 2 and version 3 together and from there we can figure which version is the fastest overall when it comes to very large array sizes and multiplication function.

|  |  |  |
| --- | --- | --- |
| Array size | Version 2 Time (microseconds) | Version 3 Time (microseconds) |
| 20 x 20 | 38 | 47 |
| 50x50 | 705 | 990 |
| 100 x 100 | 4554 | 5460 |

As a result, version 2 is slightly faster than version 3.