CS402

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| **Homework #1** |

1.

(a).

For histograms, please see the spice.xlsx and tex.xlsx.

(b).

|  |  |  |
| --- | --- | --- |
|  | spice | tex |
| frequency of writes | 66538 | 104513 |
| frequency of reads | 150699 | 130655 |

In these two trace files, we can know that CPU do reads more than writes.

2.

For the code, please see hw1.java

Design idea: This program will let user input “1” or “2” to choose to generate two rectangle integer matrices or double matrix. The size is predefined. After reading the user input, the program will automatically multiply these two random matrices in two ways(algorithms). Finally, the time spent by the two algorithms will be print out in nano second.

Hint: The program will print out both two matrix and the result matrix, in order to see all the output please make sure you remove the console output limitation, or you can common some print code.

(a).

Algorithm 1

|  |  |  |
| --- | --- | --- |
|  | MacBook Pro (Retina, 13-inch, Early 2015) | ThinkPad |
| description | OS: MacBook Pro (Retina, 13-inch, Early 2015),64-bit  Manufacturer: Apple  CPU: 2.7 GHz Dual-Core Intel Core i5  Memory: 8 GB 1867 MHz DDR3  Storage: 30.55GB used out of 120GB | OS: Windows 10 pro, 64-bit  Manufacturer: Lenovo  CPU: Intel Quad-Core i5-7300U CPU @2.60GHz 2.71 GHz  Memory: 8GB(7.84GB) usable  Storage: 223GB used out of 238GB |
| Compiler | Eclipse | Eclipse |
| Int Average time  (8 times average) | 38499331 | 21922547 |
| Double Average time  (8 times average) | 34552776 | 27466131 |

(b)

Algorithm 2

|  |  |  |
| --- | --- | --- |
| OS | MacBook Pro (Retina, 13-inch, Early 2015) | ThinkPad |
| Description: | OS: MacBook Pro (Retina, 13-inch, Early 2015),64-bit  Manufacturer: Apple  CPU: 2.7 GHz Dual-Core Intel Core i5  Memory: 8 GB 1867 MHz DDR3  Storage: 30.55GB used out of 120GB | OS: Windows 10 pro, 64-bit  Manufacturer: Lenovo  CPU: Intel Quad-Core i5-7300U CPU @2.60GHz 2.71 GHz  Memory: 8GB(7.84GB) usable  Storage: 223GB used out of 238GB |
| Compiler | Eclipse | Eclipse |
| Int Average time  (8 times average) | 65735753 | 49391591 |
| Double Average time  (8 times average) | 69368935 | 68639335 |

Please see the time.xslx for time table.

In most case, PC faster than Mac. The processor of PC is better and more expensive than Mac. The performance ratio the same as the clock rate ratio of the two systems and PC is more cost-effective.

Github:

<https://github.com/ychen319-iit/CS402>