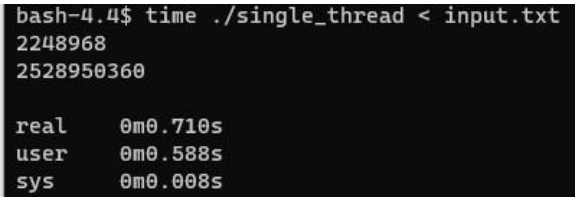
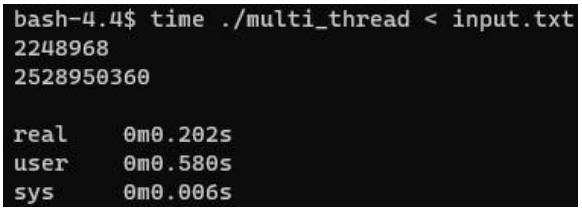
2022 NYCU OS HW2 report

109550164 徐聖哲

Question	Answer
Q1. (5pts) Briefly describe your design for the add, multiple function of matrix, the thread management. Also, describe the number of threads in the Multi-thread program.	I use thread to separate the calculation of matrix. Separate matrix by row, and first add and multiply first 500/thread_number row first , then add the thread result together. For example, thread number = 4, I first compute the result of 125 row, then continue. This way I can speedup the time.

Q2. (15pts)
Try at least 3 kinds of number of threads, and compare the difference in time.(Take screenshots of the time of each case)
Also, explain the results.
	Threads: 2
	`bash-4.4$ time ./multi_thread < input.txt`
	`2248968`
	`2528950360`
	
	`real 0m0.334s`
	`user 0m0.579s`
	`sys 0m0.006s`
	Threads: 4
	`bash-4.4$ time ./multi_thread < input.txt`
	`2248968`
	`2528950360`
	
	`real 0m0.202s`
	`user 0m0.580s`
	`sys 0m0.006s`
	Threads: 10
	`bash-4.4$ time ./multi_thread < input.txt`
	`2248968`
	`2528950360`
	
	`real 0m0.220s`
	`user 0m0.602s`
	`sys 0m0.005s`
	
	explain: First, Since the workshop max thread number is 4, so the time of thread equal or more than 2 will be similiar. Look at the result, we can find that 2 is not as fast as 4 , because more threads will speed the computation step.

Q3. (10pts) Show the best speedup between multi-thread and single-thread. (Take screenshots of the time of single-thread	single-thread:

and multi-thread) Also, explain why multi-thread is faster.	 multi-thread:  explain: Because multi threads can handle jobs at the same time, thus decrease code running time.