CSE 5441 LAB2 Report

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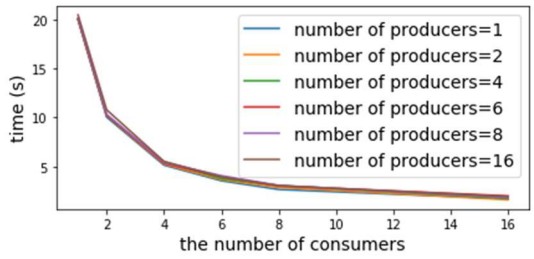
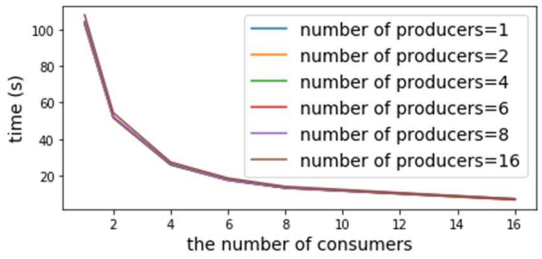
A brief explanation describing how my changes ensure mutual exclusion

I use “# pragma omp critical” in both “insert_data” and “extract_data”.Every time one producer or one consumer goes into the critical section and check wheter they can insert data or extract data. Once they meet the requirement, they perform operatioins and leave the critical section. Otherwise, they leave the critical section directly.

I use “# pragma omp atomic prod_done_count++;” while producer finish reading. When the last produer finishes reading, it sends nconsumers “-1”.

A chart which illustrates the scalability of my parallel solution





The best combinations of producers and consumers

The best is number of producers = 1 and number of consumers = 16. First, since consumers are doing heavy jobs (usleep), more consumers can split the workload and make the progam run faster. Second, producers do not do heavy job, increasing the number of producers leads to higher parallel overhead, which makes the program run slower.

Any unusual or unexpected results

No.