

Lab 3 report

6314061 – Quang Tuan Le

February 2023

1 Task 1: Producer consumer

- The execution time is around ~0.018 seconds.

```
[qle010@onyx:~/COP4520/Lab3 191% g++ -fopenmp prod_cons.c -o prod_cons
[qle010@onyx:~/COP4520/Lab3 192% ./prod_cons
In 0.018429 seconds, The sum is 49995000.000000
[qle010@onyx:~/COP4520/Lab3 193% ./prod_cons
In 0.017884 seconds, The sum is 49995000.000000
[qle010@onyx:~/COP4520/Lab3 194% ./prod_cons
In 0.018351 seconds, The sum is 49995000.000000
[qle010@onyx:~/COP4520/Lab3 195% █
```

2 Task 2: Prefix sum

- The execution time of my code for an input array with 4,096 random integers and 4 threads: 0.000216 seconds

```
[qle010@onyx:~/COP4520/Lab3 124% ./prefix_sum
60678
60907
Time elapsed: 229
[qle010@onyx:~/COP4520/Lab3 125% ./prefix_sum
297110
297326
Time elapsed: 216
[qle010@onyx:~/COP4520/Lab3 126% █
```

- The execution time for each of the 4 steps:

Step 1	Step 2	Step 3	Step 4
0.000171 (s)	0.000013 (s)	0.000006 (s)	0.000004 (s)

```
quangle — ssh qle010@onyx.cs.fiu.edu — 81x28
g++ -fopenmp prefix_sum.cpp -o prefix_sum
[ql010@onyx:~/COP4520/Lab3 127% ./prefix_sum
18146
18317
Step 1 - Time elapsed: 171
18321
18334
Step 2 - Time elapsed: 13
18336
18342
Step 3 - Time elapsed: 6
18344
18348
Step 4 - Time elapsed: 4
[ql010@onyx:~/COP4520/Lab3 128% ./prefix_sum
279658
279863
Step 1 - Time elapsed: 205
279867
279870
Step 2 - Time elapsed: 3
279873
279879
Step 3 - Time elapsed: 6
279881
279886
Step 4 - Time elapsed: 5
ql010@onyx:~/COP4520/Lab3 129%
```

3 Task 3: Linked List

N	3.1 Using OpenMP tasks	3.2 Using loop worksharing constructs
N = 5	3.194811 (s)	7.754743 (s)
N = 10	34.998117 (s)	90.198867 (s)

```
quangle — ssh qle010@onyx.cs.fiu.edu — 81x28
ql010@onyx:~/COP4520/Lab3 130% make
gcc -fopenmp linked.c -o linked
ql010@onyx:~/COP4520/Lab3 131% ./linked
Process linked list
  Each linked list node will be processed by function 'processwork()'
  Each ll will compute 5 fibonacci numbers beginning with 38
38 : 39088169
39 : 63245986
40 : 102334155
41 : 165580141
42 : 267914296
43 : 433494437
Compute Time: 3.194811 seconds
ql010@onyx:~/COP4520/Lab3 132%
```