CS636 Analysis of Concurrent Programs
Assignment 2

April 12, 2025

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Ans: Problem - 1

Commands Used

g++ problem1.cpp -O3 -std=c++17 -latomic -lpthread -o problem1.out

./problem1 -ops=10000000 -rns=1 -add=50 -rem=40

Results

NUM OPS: 10000000 **ADD:** 7000000 **REM:** 2000000 **FIND:** 1000000

Running with 1 thread...
Insert time (ms): 2469
Delete time (ms): 19
Search time (ms): 9

Running with 2 threads...
Insert time (ms): 975
Delete time (ms): 9
Search time (ms): 9

Running with 4 threads...
Insert time (ms): 697
Delete time (ms): 6

Search time (ms): 4

Running with 8 threads...
Insert time (ms): 454
Delete time (ms): 4
Search time (ms): 2

Running with 16 threads...
Insert time (ms): 753
Delete time (ms): 1
Search time (ms): 0

Ans: # Problem - 2

Commands Used

g++ problem2.cpp -O3 -std=c++17 -latomic -lpthread -o problem2.out

./problem2.out -ops=10000000 -t=8 For unit testing output = ./problem2.out -ops=20 -t=1/2/4/8/16 -test

Results

./problem2.out -ops=10000000 -t=8
Threads: 8
Total time (ms) for enq/deq: 1

Unit Testing -
./problem2.out -ops=20 -t=8 -test

Running Correctness Test with 20 Operations...

[*Deq*] -1
[*Deq*] -1
[*Deq*] -1
[*Enq*] 7797
[*Enq*] 1429
[*Enq*] 565

[*Enq*] 9386
[*Enq*] 9923
[*Enq*] 6117
[*Deq*] 7797

Threads: 8 (Correctness Test)
Total time (ms) for enq/deq: 1

Ans: **Problem - 3**

Commands Used

g++ problem3.cpp -O3 -std=c++17 -latomic -lpthread -o problem3.out

./problem3.out -ops=10000000 -add=60

Results