

Assignment 3 REPORT

Tushita Sharva, CS21BTECH11022

February 25, 2023

Objective

To implement the mutual exclusion Algorithms

1. Test And Set (TAS)
2. Compare and Swap (CAS)
3. Bounded Waiting with CAS

in C++ and using C++ threads.

Input

The inputs will be read from the text file `inp-params.txt`. The parameters it reads are:

1. Number of threads to be used by the program - n
2. Number of times each thread should enter the function - k
3. λ_1 , the mean of exponential distribution of delay values for t_1 .
4. λ_2 , the mean of exponential distribution of delay values for t_2 .

Analysis

TAS ME analysis

1. At starting when there are 10 threads, the processes tend to end sooner
 2. As the number of threads increase, we get to see that the program takes longer time to execute, because more number of threads implies more number of entries and exits to the critical section and more waiting times.
 3. The waiting time is not as significant in beginning as we can see in the graph. It gradually but not linearly increased as the number of threads increased.
-
1. As the number of threads increase, we get to see that the program takes longer time to execute, because more number of threads implies more number of entries and exits to the critical section and more waiting times.
 2. The waiting time is not as significant in beginning as we can see in the graph. It gradually but not linearly increased as the number of threads increased.
-
1. As the number of threads increase, we get to see that the program takes longer time to execute, because more number of threads implies more number of entries and exits to the critical section and more waiting times.
 2. The waiting time is not as significant in beginning as we can see in the graph. It gradually but not linearly increased as the number of threads increased.

Conclusion

- For all three, initially they all take similar amount of waiting times. They don't have much difference.
- As the number of threads increase, the average waiting time of Bounded-CAS increases more rapidly than the average waiting times of CAS and TAS.
- As the number of threads increase, the worst waiting time of CAS increase more rapidly than TAS and Bounded CAS.
- Though bounded CAS is having performing badly on an average when compared to other algorithms, it is successful in minimising the worst case waiting time.

