Programming Assignment 1
CS5280

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Overview

Implemented BOCC and FOCC-CTA using fine grained locking i.e., for operations read(), write() and tryCommmit() a lock on data-item and transaction is used, instead of a global lock.

Number of transactions

Parameters used to generate the data: $n = 16$, $m = 1000$, $numIters = 20$, $constVal = 1000$, $\lambda = 20$, $numTrans = [1000, 2000, 3000, 4000, 5000]$

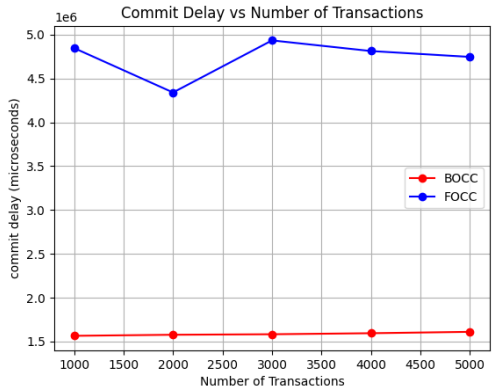

Figure 1: Commit delay vs Number of transactions

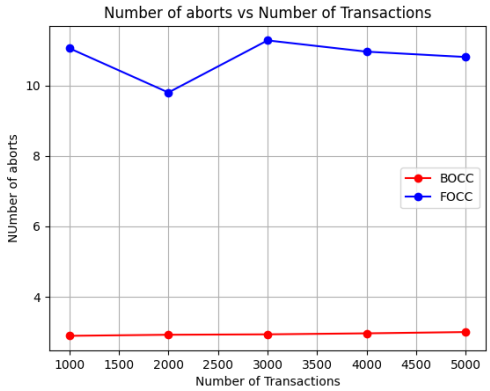

Figure 2: Number of aborts vs Number of transactions

- FOCC-CTA has higher (approx three times) commit delay than BOCC for all number of transactions, as there are more number of aborts in FOCC-CTA.
- Commit delay is almost constant with increase in number of transactions for both BOCC and FOCC-CTA.

- FOCC-CTA has higher number of aborts than BOCC for all number of transactions.
- Number of aborts is also not varying much with increase in number of transactions for both BOCC and FOCC-CTA.

Number of variables

Parameters used to generate the data: $n = 16$, $numTrans = 1000$, $numIters = 20$, $constVal = 1000$, $\lambda = 20$, $m = [1000, 2000, 3000, 4000, 5000]$

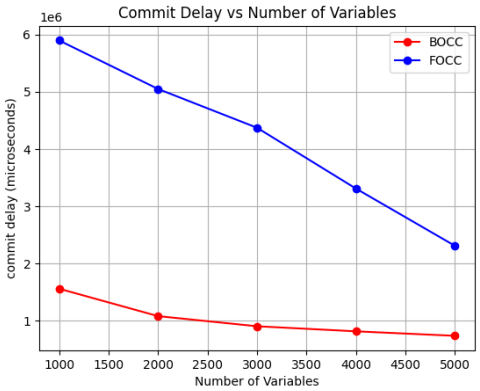

Figure 3: Commit delay vs Number of variables

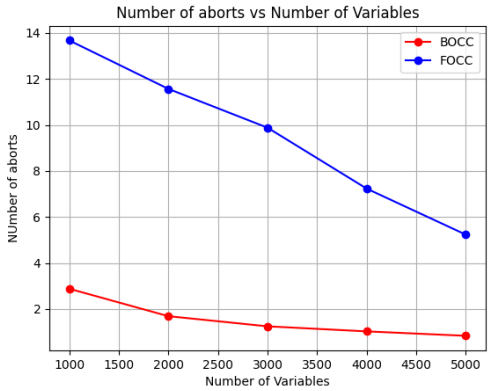

Figure 4: Number of aborts vs Number of variables

- FOCC-CTA has higher commit delay than BOCC for all number of variables, as there are more number of aborts in FOCC-CTA.
- Commit delay is decreasing with increase in number of variables for both BOCC and FOCC-CTA, as with more number of variables, conflicts are less, so less number of aborts.
- FOCC-CTA has higher number of aborts than BOCC for all number of variables.
- Number of aborts is decreasing with increase in number of variables for both BOCC and FOCC-CTA, as with more number of variables, conflicts are less, so less number of aborts.

Number of threads

Parameters used to generate the data: $n = 16$, $m = 1000$, $numTrans = 1000$, $constVal = 1000$, $\lambda = 20$, $numIters = 20$, $numThreads = [2, 4, 8, 16, 32]$

- FOCC-CTA has higher commit delay than BOCC for all number of threads, as there are more number of aborts in FOCC-CTA.

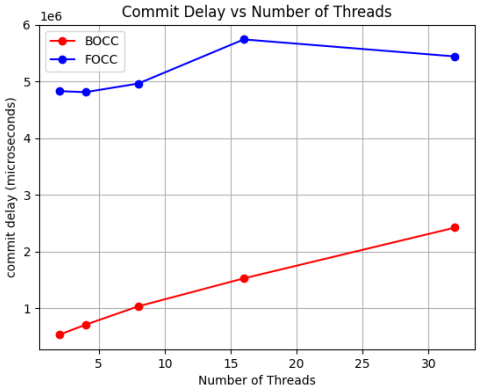

Figure 5: Commit delay vs Number of threads

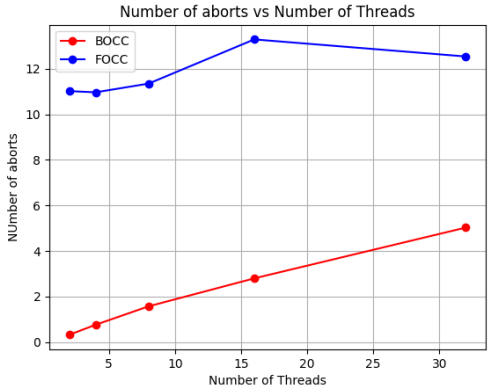

Figure 6: Number of aborts vs Number of threads

- Commit delay increases with increase in number of threads for both BOCC and FOCC-CTA, as with more number of threads, more transactions are running concurrently, so more conflicts and more number of aborts.
- FOCC-CTA has higher number of aborts than BOCC for all number of threads.
- Number of aborts increases with increase in number of threads for both BOCC and FOCC-CTA, as with more number of threads, more transactions are running concurrently, so more conflicts and more number of aborts.