

Filter and Bakery Lock Comparison

Overview

This project compares the performance of two locking algorithms—Filter Lock and Bakery Lock—in a concurrent programming environment. The comparison is based on metrics such as throughput, average entry time, and worst-case entry time, measured under varying numbers of threads and critical section entries.

File and Structure

C++ Files

- **Bakery-CO22BTECH11006.cpp**: Implements the Bakery Lock algorithm.
- **Filter-CO22BTECH11006.cpp**: Implements the Filter Lock algorithm.

Data and Config Files

- **input.txt**: Contains input parameters for the program (number of threads, number of times each thread enters the critical section, time delays for critical section and remainder section).
- **output_filter.txt**: Stores the results for the Filter Lock algorithm.
- **output_bakery.txt**: Stores the results for the Bakery Lock algorithm.

Input

The input file (**input.txt**) should contain four values:

```
n k lambdaCS lambdaRem
```

- **n**: Number of threads.
- **k**: Number of times each thread enters the critical section.
- **lambdaCS**: Average time delay in the critical section (milliseconds).
- **lambdaRem**: Average time delay in the remainder section (milliseconds).

How to Run

Compilation

To compile the C++ files:

```
g++ Bakery-CO22BTECH11006.cpp -o bakery
g++ Filter-CO22BTECH11006.cpp -o filter
```

Execution

To run the compiled files:

```
./bakery
./filter
```

Output

The results are saved in:

- output_filter.txt: Results for Filter Lock.
- output_bakery.txt: Results for Bakery Lock.

The output includes:

- Request and entry times for each thread.
- Request and exit times for each thread.
- Start time, end Time and Total time of code
- Throughput values
- Average and worst-case entry times.
- Logs for mutual exclusion violations (if any).
- Fairness value - Indication of FIFO

Contact

For any questions or further information about this project, please contact:

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