Project #1

Overview

For this project you will analzye the performance characteristics of two locking strategies on an ordered linked list. You may implement your solution either in C (using pthreads) or in Java.

Part 1: List Lock

Implement a singly-linked ordered list of integers that guards against concurrent access by using a single lock for the entire list (i.e., the lock must be acquired before any operation on the list). This list must support inserting, removing, and searching.

Part 2: Node Lock

Implement a singly-linked ordered list of integers that guards against concurrent access by using a "hand-over-hand" locking strategy. This list must support inserting, removing, and searching.

Part 3: Analysis

Develop a set of experiements to compare these two implementations (i.e., different types of access to the list, different rates of access, etc.). When does each perform well? When does one clearly outperform the other?

Report

Write a report that discusses the characteristics of each list with an emphasis on the experimental analysis. Based on the results from your experiments, explain which locking strategy is best for different access patterns.

Handin

Submit, using `handin`, your source code and paper to `458_hw1` on vogon.