OS Assignment 5

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1 Contributions

We completed the code together. No such individual contributions.

2 GitHub Repository

`GitHub Repository Link`.

3 Introduction

SimpleMultithreader is a C++ library designed to create Pthreads for parallel computation when the `parallel_for` APIs are invoked in the user program.

4 Features

- Creates Pthreads for parallel computation.
- Modular code to avoid repetitions.
- Evaluation using provided examples without modification.
- Prints total execution time for each `parallel_for` call.
- Prints the sum of all individual execution times.
- Error checking at essential points.

5 Implementation Details

5.1 Structures

Two types of structs have been implemented to handle different types, using enum. The lambda function's signature is contained within the structs as a field.

5.2 Parallel_for APIs

The `parallel_for` APIs break down the size of computation into chunks, assigning each chunk to a separate thread. Two for loops are used—one for thread creation using `pthread_create` and another for thread joining using `pthread_join`.

5.3 Execution Time Measurement

The execution time of each `parallel_for` method call is computed using the `<chrono>` library.

6 Building

Use **make all** to build the Simple Multithreader using the given Makefile in the directory.