

Operating System Project Phase 1

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1 Overview

The first phase of this project includes three implementations. The program will read specified number of samples from the input array stored in the file. It will then determine how many parts should the array be divided into. It uses "divide-and-conquer" parameters. After each part of specified numbers been sorted by each thread, another thread will be created to merge all the sorted data back to a single array.

There are three functions used in this program: print-routine, sorter and merger. Print-routine is used to print out arrays in certain format. The print-out includes: threadID, index of the sorted array and the sorted list. Sorter is a realization of bubble sorting algorithm. And the function merge is used to merge sorted arrays in different threads.

2 Screenshot

```
/Users/kishi/CLionProjects/test_multithread_v1/cmake-build-debug/test_multithread_v1
num_threads=2

The original list: 8 50 74 59 131 73 145 79 124 110 41 166 93 43 188 104 128 130 41 13
Thread id is 0.
Sort from list[0] to list[9].

Sorted List:
8 50 59 73 74 79 110 124 131 145
-----

Thread id is 1.
Sort from list[10] to list[19].

Sorted List:
13 41 41 43 93 104 128 130 166 188
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The sorted list:8 50 59 73 74 79 110 124 131 145 13 41 41 43 93 104 128 130 166 188
Thread id is 2.
The FINAL sorted list:8 13 41 41 43 50 59 73 74 79 93 104 110 124 128 130 131 145 166 188
Process finished with exit code 0
```

3 Improvements needed

As for the code I submitted, it can only sort and merge two threads. And the array is generated by random function instead of being read from a .txt file. Those are two points need to be improved in the future.