**Operating Systems Project 4**

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**Introduction:**

For this project out objective was to find the maximum char ASCII value for each line in a Wikipedia text dump document. We were to do this using OpenMP, pthreads, and MPI.

**Implementation:**

Each program uses a function find\_max which finds the maximum char is each line.

**OpenMP:**

**PThread:**

This program uses a thread\_process function that has each thread open the wiki file and get the line it’s supposed to process. It then get the max character for that line and stores it into an array. For loops are used to traverse the entire file and process each line. Command line arguments are set up to choose max threads and line amounts.

**MPI:**

**Chart, line chart

Description automatically generatedChart, line chart

Description automatically generatedThese graphs measure the runtime of reading the first 500000 lines of the wiki\_dump.txt file**

**Evaluation:**

**OpenMP:**

**PThread:**

**MPI:**

**We can see that runtime is negatively affected by adding more machines. This is most likely because of synchronization errors caused when reading from the file. The code could be optimized for better communication across different machines to know which parts of the file they should read.**