Parallel Programming Assignment 3

Parallelising a text editor

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Problem Statement:

Obtain the source code of kilo editor and parallelize it using APIs given in the pthreads library.

Credits:

Himanshu Rai (111601032)
- For discussing the problem and helping me debug the code

Implementation:

I have parallised the editorRowsToString function using threads. Number of threads used are 5.

Observation

a) Time to save a very small file in parallel implementation

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This is a parallel implementation!
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pTest.txt — 1 lines                                                    no ft | 1/1
35 bytes written to disk, Time: 0.000982s
```

b) Time to save a very small file in serial implementation

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This is a serial implementation!
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sTest.txt — 1 lines                                                    no ft | 1/1
33 bytes written to disk, Time: 0.000321s
```

c) Time to save kilo.c in serial implementation

```
Senators, popular election, 527, 541ff.

Seven Years' War, 60ff.

Sevier, John, 218

Seward, W.H., 322, 342

Shafter, General, 492

Shays's rebellion, 142

Sherman, General, 361

Sherman: anti-trust law, 461
  silver act, 458

Shiloh, 361

Shipping. _See_ Commerce

Shipping act, 607

Silver, free, 455ff.

Slavery: colonial, 16f.
  trade, 150
  in Northwest, 219
  decline in North, 316f.
  growth in South, 320ff.
  and the Constitution, 324
  and territories, 325ff.
  compromises, 350
  abolished, 357ff.

Smith, Joseph, 290
bigTest.txt — 11337 lines                                          no ft | 5/11337
606433 bytes written to disk, Time: 0.002017s
```

d) Time to save kilo.c in parallel implementation

```
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  compromises, 350
  abolished, 357ff.

Smith, Joseph, 290
bigTest.txt — 11337 lines                                          no ft | 3/11337
507350 bytes written to disk, Time: 0.004664s
```

e) Time to save a very big file (bigTest.txt) in serial implementation

```
Senators, popular election, 527, 541ff.

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bigTest.txt — 11337 lines                                              no ft | 3/11337
507350 bytes written to disk, Time: 0.004664s
```

Conclusion

The initial serial version of kilo saves in lesser time than the parallel version by a factor of approximately ½.