Homework – Chapter 11

Upload to GradeScope – instead of filling in my template, you will be given a chance to select regions of your submission that contain your answer.

1. Why is disk scheduling still highly relevant for solid state drives?

2. Look-up technical specs for two 512GB solid state drives, find cheapest and most expensive on Newegg or some other favorite huckster. Report on the performance characteristics of these two drives, and compare and contrast any key differences. Is the more expensive drive worth it?
3. In part 2, one of your key specs *should* have included cache sizes. Why do SSD's need cache, anyway?

Programming Assignment.
Alice and Bobby have a HUUUGE data set of *n* 512 byte records. But they are all jumbled. Alice says, quite smugly, that she is really clutch at using streams programming, so she wrote a solution to quicksort the data file using seeks, freads, and fwrites. Bobby, quite timidly after being spanked around all semester, suggests that using mmap() and low-level I/O will be faster. Your goal is to help them answer this question. To get started, their code is available on the D2L site. There are a bunch of "//TODO" comments in the two files, you'll need to write these lines of code. You do not need to make any other changes to these programs.

NOTE: *Do not quicksort the same file twice – use the generate program to make new files between runs!!!*

Fill in the //TODO and upload your code to gradescope. AND, answer the following questions:

4. Which one was faster, Alice's streams I/O or Bobby's mmap()?

5. Read about "stable" sorts, and explain why both of these two are twerps.