

CSE 542/498J HWP 2: File System Disk Scheduling

Assigned: Tues, Sep 10

Due: Tues, Oct 1, 11:00AM

Late submissions will not be accepted

For this homework, we will continue with our implementation of the simple file system (that was built on top of our own simulated disk storage system). The disk storage system simulator will now simulate a realistic disk with seek latency, rotational latency and transfer rates. The seek time, transfer time and rotational latency can vary up to 2 seconds depending on the current disk head location. You can assume that the disk subsystem does not cache buffers and that the file system knows the current location of the disk head. Chapter 14 of the text book discusses various disk scheduling algorithm. For this home work, you will implement two different disk scheduling algorithms one of which is optimized for sequential accesses and the other for random access patterns. You will use the same access trace and compare the performance of your algorithm from HWP1 and your two current algorithms.

Submission

Submit your project, along with a succinct report called REPORT.txt (plain text is fine) describing your approach, the merits of your approach and compilation instructions. You will turn in your complete project as a single tar file. On wizard, please use `~surendar/Public/bin/turnin HWP2 <your tar file>` to submit your assignment. You can submit your assignment multiple times. I will only use the latest submission. To see the files that you had submitted, try `turnin HWP2`. Remember, I may randomly choose students who will be asked to explain their approach in person.

Evaluate your implementation on the following issues in the REPORT.txt:

- **Caching:** Newer hard disks support buffering in the disk subsystem themselves. Explain the implications of such buffering for your disk scheduling algorithms.
- **Access patterns:** File system access patterns affect the performance. Discuss the access pattern that will benefit from your implementation strategy **and** the access pattern that will perform poorly for your system.