CS 3502 OPERATING SYSTEMS Fall 2017

ASSIGNMENT NO. 6

I/O Device (Disk) Scheduling Techniques.

Three simulation models are implemented in C++ and use Psim3. The models apply the disk scheduling algorithms for FCFS, SSTF, and SCAN. These models use the normal distribution for generating a queue of I/O requests. The C++ file implementations are:

dsfcfsn.cpp

dssstfn.cpp

dscann.cpp

Structure your report according to the outline described in the instructions provided previously.

Respond to the general questions in the syllabus for assignments, and the following additional questions:

Answer the following questions:

1. How would you modify the programs that implement the disk scheduling policies to reflect a disk with 30\% faster seek time, and 40\% faster transfer time. How does this affect the performance of the disk management?

2. How would you modify the models to use different values of the standard deviation. What would this change represent?

4. Compare the FCFS disk scheduling policy with the other three. Use several values for the workload parameters. Can you reach any conclusion that would generalize why FCFS is the least favorable policy to use, and which of the other three should be used? Give your arguments.

Additional questions:

Why are the techniques used in the models called disk scheduling techniques?

What is the main problem that this model is helping you to understand?

What can you observe by analyzing the trace from the simulation runs?

What are the results for this type of model?

What are the main differences with previous models of OS (in this course)?

How can you compute the waiting time (average) for these disk requests?

Follow the general report structure. Your observations, comments and conclusions are very important.