

COMP SCI 3004/7064 Operating Systems

Tutorial IV-b

1. All the disk-scheduling discipline, except FCFS scheduling, are not truly fair (starvation may occur).

- a. Explain why this assertion is true.
- b. Describe a scheme to ensure fairness.
- c. Explain why fairness is an important goal in a time-scheduling system.

2. Suppose that the head of a moving-head disk with 200 tracks, numbered from 0 to 199, is currently serving a request at track 143 and has just finished a request at track 125. The queue of requests is kept in the FIFO order:

86, 147, 91, 177, 94, 150, 102, 175, 130.

What is the total number of head movements needed to satisfy these requests for the following disk-scheduling algorithms?

- a. FCFS scheduling
- b. SSTF scheduling
- c. SCAN scheduling
- d. LOOK scheduling
- e. C-SCAN scheduling

3. Write a monitor-type program (see Chapter 6) for the C-SCAN disk scheduling algorithm.

4. SSTF scheduling tends to favor mid-range cylinders over the innermost and outermost cylinders. Explain why this assertion is true.

5. Requests are not usually uniformly distributed. For example, the cylinders on which the file directory structures reside are accessed more frequently than are most files. Suppose that you know 50 percent of the requests are for a small fixed number of cylinders.

- a. Which of the scheduling algorithms discussed in Chapter 12 would be best?
 - b. Can you suggest a new scheduling algorithm for this case? If can, describe your algorithm.
- 6.** What are the tradeoffs involved in re-reading code pages from the file system rather than using swap space to store them?