

第 6 次作业

12.1 None of the disk-scheduling disciplines, except FCFS, is truly fair (starvation may occur).

- a. Explain why this assertion is true.
- b. Describe a way to modify algorithms such as SCAN to ensure fairness.
- c. Explain why fairness is an important goal in a time-sharing system.
- d. Give examples of circumstances in which it is important that the operating system be unfair in serving I/O requests.

12.2 Suppose that a disk drive has 5000 cylinders, numbered 0 to 4999. The drive is currently serving a request at cylinder 143, and the previous request was at cylinder 125. The queue of pending requests, in FIFO order, is

86, 1470, 913, 1774, 948, 1509, 1022, 1750, 130

Starting from the current head position, what is the total distance (in cylinders) that the disk arm moves to satisfy all the pending requests, for each of the following disk-scheduling algorithms?

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

13.1 Consider the following I/O scenarios on a single-user PC.

- a. A mouse used with a graphical user interface
- b. A tape drive on a multitasking operating system (assume no device preallocation is available)
- c. A disk drive containing user files

For each of these I/O scenarios, would you design the operating system to use buffering, spooling, caching, or a combination? Would you use polled I/O, or interrupt-driven I/O? Give reasons for your choices.

13.2 What are the various kinds of performance overheads associated with servicing an interrupt?