第 11 章作业

11.13

11.13 Suppose that a disk drive has 5,000 cylinders, numbered 0 to 4,999. The drive is currently serving a request at cylinder 2,150, and the previous request was at cylinder 1,805. The queue of pending requests, in FIFO order, is:

2,069; 1,212; 2,296; 2,800; 544; 1,618; 356; 1,523; 4,965; 3,681

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. SCAN

c. C-SCAN

答:

a.

2150 → 2096 → 1212 → 2296 → 2800 → 544 → 1618 → 356 → 1523 → 4965 → 3681

distance = 54 + 844 + 1084 + 504 + 2256 + 1074 + 1262 + 1167 + 3442 + 1284 = 12971

b.

2150 → 2296 → 2800 → 3681 → 4965 → 4999 → 2069 → 1618 → 1523 → 1212 → 544 → 356

distance = 146 + 504 + 1385 + 1284 + 34 + 2930 + 451 + 95 + 311 + 668 + 188 = 7996

c.

2150→ 2296→ 2800 → 3681 → 4965 → 4999 → 0 → 356 → 544 → 1212 → 1523 → 1618 → 2096

distance = 146 + 504 + 1385 + 1284 + 34 + 4999 + 356 + 188 + 668 + 311 + 95 + 451 = 10421

11.20

11.20 Consider a RAID level 5 organization comprising five disks, with the parity for sets of four blocks on four disks stored on the fifth disk. How many blocks are accessed in order to perform the following?

a. A write of one block of data

b. A write of seven continuous blocks of data

答:

a.

A write of one block of data requires the following:

read of the parity block,

read of the old data stored in the target block,

computation of the new parity based on the differences between the and the target block,

write of the parity block and the target block.

b.

A write of seven contiguous blocks of data requires the following:

write of the seven contiguous blocks,

write of the parity block of the first four blocks,

read of the eight block

computation of the parity for the next set of four blocks,

write of the corresponding parity block onto disk.