操作系统作业 5
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1. Consider a RAID organization comprising five disks in total, how many blocks are accessed in order to perform the following operations for RAID-5 and RAID-6?
   a. An update of one block of data
   b. An update of seven continuous blocks of data. Assume that the seven contiguous blocks begin at a boundary of a stripe.

2. Suppose that a disk drive has 5,000 cylinders, numbered 0 to 4999. The drive is currently serving a request at cylinder 2150, and the previous request was at cylinder 1805. The queue of pending requests, in FIFO order, is: 2069, 1212, 2296, 2800, 544, 1618, 356, 1523, 4965, 3681 Starting from the current head position, what is the total distance (in cylinders) that the disk armmoves 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
   f. C-LOOK

3. Explain what open-file table is and why we need it.

4. Explain the concept of file and directory, and what does "755" mean for file permission?

5. Explain the problems of using continuous allocation for file system layout and how to solve them.

6. What are the advantages of the variation of linked allocation that uses a FAT to chain together the blocks of a file? What is the major problem of FAT?

7. Consider a file system similar to the one used by UNIX with indexed allocation, and assume that every file uses only one block. How many disk I/O operations might be required to read the contents of a small local file at */a/b/c* in the following two cases? Should provide the detailed workflow.

   a. Assume that none of the disk blocks and inodes is currently being cached.
   b. Assume that none of the disk blocks is currently being cached but all inodes are in memory.

8. Consider a file system that uses inodes to represent files. Disk blocks are 8-KB in size and a pointer to a disk block requires 4 bytes. This file system has 12 direct disk blocks, plus single, double, and triple indirect disk blocks. What is the maximum size of a file that can be stored in this file system?

9. What is the 8+3 naming convention in FAT32 file system, and how to manage long filenames?

10. How are director entries managed in FAT and Ext file systems?

11. What is the difference between hard link and symbolic link?

12. What are the initial link counts when a regular file or a directory is created? Why?

13. What is the difference between data journaling and metadata journaling? Explain the operation sequence for each of the two journaling methods.

14. What are the three I/O control methods?

15. List at least three kinds of I/O devices and explain how to provide a standard and uniform application I/O interface?

16. What services are provided by the kernel I/O subsystem?