
LUT
University
Operating Systems and System Programming
LAND
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CURIOUS

Experiment 13

- Assignments
- A9Q.Consider a file system on a disk that has both logical and physical block sizes of 512 bytes. Assume that the information about each file is already in memory. For each of the three allocation strategies (contiguous, linked, and indexed), answer these questions:
- a. How is the logical-to-physical address mapping accomplished in this system? (For the indexed allocation, assume that a file is always less than 512 blocks long.)
- b. If we are currently at logical block 10 (the last block accessed was block 10) and want to access logical block 4, how many physical blocks must be read from the disk?

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- Let Z be the starting file address (block number).
- • Contiguous. Divide the logical address by 512 with X and Y the resulting quotient and remainder respectively.
  - a. Add X to Z to obtain the physical block number. Y is the displacement into that block.
  - b. 1
- • Indexed. Divide the logical address by 512 with X and Y the resulting quotient and remainder respectively.
  - a. Get the index block into memory. Physical block address is contained in the index block at location X. Y is the displacement into the desired physical block.
  - b. 2

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- • Linked. Divide the logical physical address by 511 with X and Y the resulting quotient and remainder respectively.
  - a. Chase down the linked list (getting X + 1 blocks). Y + 1 is the displacement into the last physical block.
  - b. 4

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