OS HW4

108820018 蔡翔宇

* 11.2

|  |  |  |
| --- | --- | --- |
|  | Sequential | Random |
| Contiguous | Works well, it just need a traversal through the contiguous blocks. | Works well, you can easily determine the adjacent blocks containing |
| Linked | Acceptable, just simply follow the link. | Poor, since it needs to follow the links until the file accessed is found. |
| Indexed | Works well, you just need to sequentially access the indexes. | Works well, it’s easy to find the block occupied by the file. |

* 11.8

8K/4 = 2K

12\*8K + 2K\*8K + 2K\*2K\*8K + 2K\*2K\*2K\*8K = 64 TB

* 12.3

FIFO order:

2069, 1212, 2296, 2800, 544, 1618, 356, 1523, 4965, 3681

Sorted: 2150

356, 544, 1212, 1523, 1618, 2069, 2296, 2800, 3681, 4965

1. FCFS

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| position | 2150 | 2069 | 1212 | 2296 | 2800 | 544 | 1618 | 356 | 1523 | 4965 | 3681 | total |
| moved |  | 81 | 857 | 1084 | 504 | 2256 | 1074 | 1262 | 1167 | 3442 | 1284 | 13011 |

Total moved distance: **13011**

1. SSTF

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| position | 2150 | 2069 | 2296 | 2800 | 3681 | 4965 | 1618 | 1523 | 1212 | 544 | 356 | total |
| moved |  | 81 | 227 | 504 | 881 | 1284 | 3347 | 95 | 311 | 668 | 188 | 7586 |

Total moved distance: **7586**

1. SCAN

Toward 4999

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| position | 2150 | 2296 | 2800 | 3681 | 4965 | 4999 | 2069 | 1618 | 1523 | 1212 | 544 | 356 | total |
| moved |  | 146 | 504 | 881 | 1284 | 34 | 2930 | 451 | 95 | 311 | 668 | 188 | 7492 |

Total moved distance: **7492**

Toward 0

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| position | 2150 | 2069 | 1618 | 1523 | 1212 | 544 | 356 | 0 | 2296 | 2800 | 3681 | 4965 | total |
| moved |  | 81 | 451 | 95 | 311 | 668 | 188 | 356 | 2296 | 504 | 881 | 1284 | 7115 |

Total moved distance: **7115**

1. C-SCAN

Toward 4999

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| position | 2150 | 2296 | 2800 | 3681 | 4965 | 4999 | 0 | 356 | 544 | 1212 | 1523 | 1618 | 2069 | total |
| moved |  | 146 | 504 | 881 | 1284 | 34 | 4999 | 356 | 188 | 668 | 311 | 95 | 451 | 9917 |

Total moved distance: **9917**

Toward 0

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| position | 2150 | 2069 | 1618 | 1523 | 1212 | 544 | 356 | 0 | 4999 | 4965 | 3681 | 2800 | 2296 | total |
| moved |  | 81 | 451 | 95 | 311 | 668 | 188 | 356 | 4999 | 34 | 1284 | 881 | 504 | 9852 |

Total moved distance: **9852**

* 12.10

It depends on the disk amount in the RAID system.

1. A RAID Level 5 comprising of a parity block for every set of four blocks spread over five disks can support 4 to 5 operations simultaneously. A RAID Level 1 comprising of two disks can support 2 simultaneous operations. Of course, there is greater flexibility in RAID Level 1 as to which copy of a block could be accessed and that could provide performance benefits by taking into account position of disk head.
2. RAID Level 5 organization achieves greater bandwidth for accesses to multiple contiguous blocks since the adjacent blocks could be simultaneously accessed. Such bandwidth improvements are not possible in RAID Level 1.

* 12.12

Frequently updated data should be stored on RAID Level 1 disks, while data that is more frequently read as opposed to being written should be stored in RAID Level 5 disks since it reads fast but writes slow.