CSCI 3753 - Godley - Operating Systems

Started on	Thursday, 25 July 2019, 8:25 PM
State	Finished
Completed on	Thursday, 25 July 2019, 8:36 PM
Time taken	11 mins 38 secs
Marks	78.00/78.00
Grade	**10.00** out of 10.00 (**100**%)

Question **1**

Correct

Mark 10.00 out of 10.00

1. Seek time is

the time necessary to move the disk arm to the desired cylinder ✔

2. Rotational latency is

the time necessary for the desired sector to rotate to the disk head ✔

3. Transfer time is

the time necessary to read data from sector on platter ✔

4. Rotational Latency ✔ is usually NOT considered in disk scheduling because

the physical location of logical blocks is not disclosed. ✔

Your answer is correct.

Question **2**

Correct

Mark 11.00 out of 11.00

Suppose that a disk drive has 1,000 cylinders, numbered 0 to 999. The drive is currently serving a request at cylinder 150. The queue of pending requests, in FIFO order, is:

32, 901, 447, 432, 637, 506, 851, 679, 173, 313

Fill in the table below with the order the new requests are serviced.

SSTF

Request:	1	2	3	4	5	6	7	8	9	10
Cylinder:	173 ✔	313 ✔	432 ✔	447 ✔	506 ✔	637 ✔	679 ✔	851 ✔	901 ✔	32 ✔

Using your answer from above, how would you characterize the behavior of SSTF?

Cylinders at the ends are visited less frequently than those in the middle ✔

Correct

Mark 30.00 out of 30.00

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 arm moves to satisfy all the pending requests for each of the following disk-scheduling algorithms?

a. FCFS 13011 ✔

b. SSTF 7586 ✔

c. SCAN 7492 ✔

d. LOOK 7424 ✔

e. C-SCAN 9917 ✔

f. C-LOOK 9137 ✔

Question **4**

Correct

Mark 5.00 out of 5.00

Consider a file system similar to the one used by UNIX (indexed allocation). How many disk operations are required to access the contents of a file at */dir1/dir2/file3* ? Assume that none of the disk blocks is currently being cached.

Total number of disk operations: 4 ✔

Correct

Mark 15.00 out of 15.00

Please notice that the tables pointed to by the indirect pointers are full sized blocks that only stores pointers.

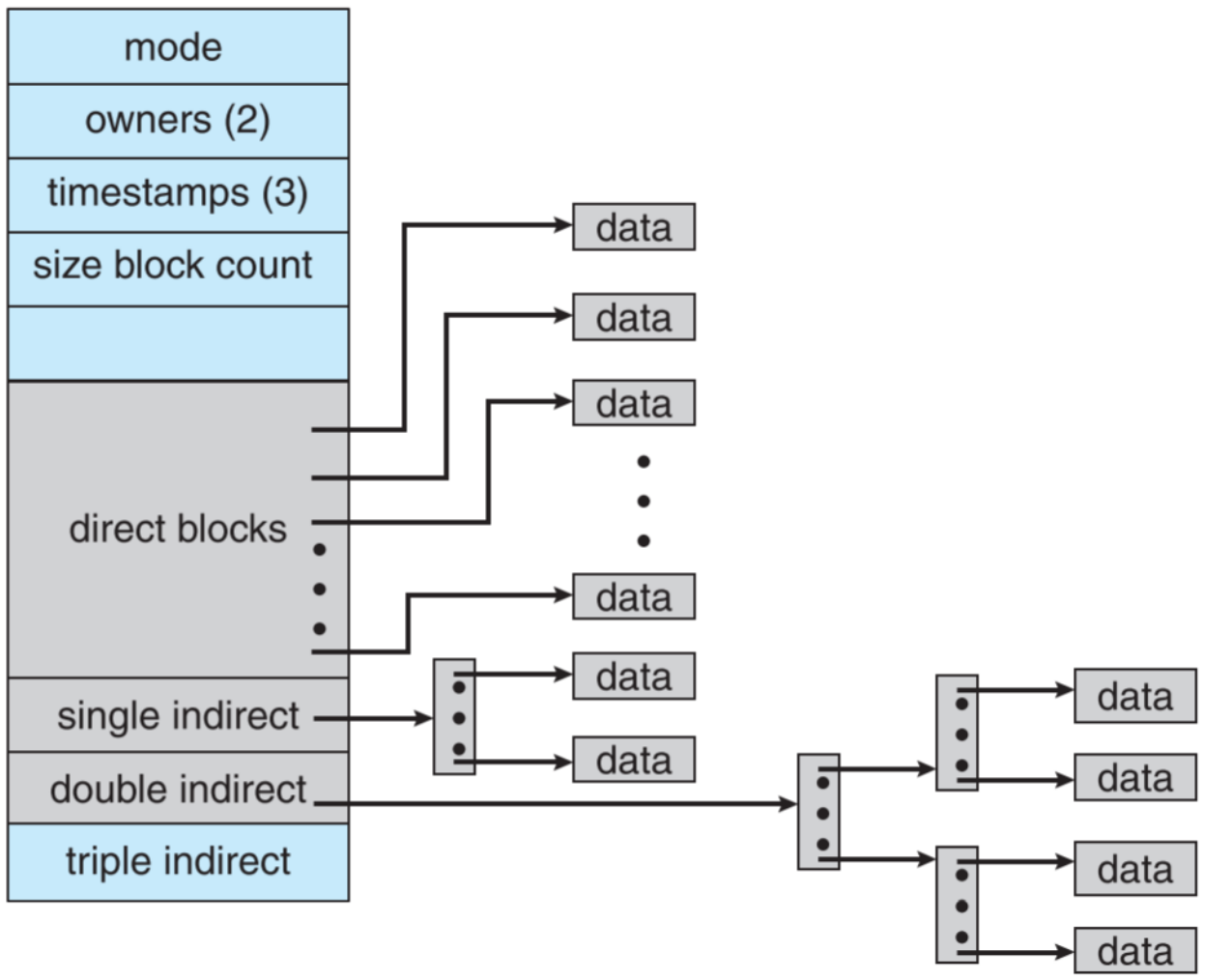

Figure 1. The file system with an inode

Given disk blocks are 4 KB in size and a pointer to a disk block requires 4 bytes, answer the following questions. (Note: all answers have one decimal place only.)

a. What is the maximum size of a file that can be stored in this file system? 4 ✔ TB

b. What percentage of the required storage is overhead if the file is 100K bytes? 3.8 ✔ %

c. What percentage of the required storage is overhead if the file is 1000K bytes? 0.4 ✔ %

Correct

Mark 1.00 out of 1.00

SECTIONS

1

2

3

4

5

6

7

8

9

A transaction that either succeed in their entirety or not at all.	atomic
Both metadata and file data are logged.	journal mod
Only metadata is logged, not file data, and no guarantee file data written before metadata.	writeback mod
Transactions executed by the file system and can be removed from the log.	completed transactions
Only metadata is logged, not file data, and it's guaranteed that file contents are written to disk before associated metadata is marked as committed in the journal.	ordered mode
The actual write of data to disk may occur much later than the entry written to the log.	asynchronous write
Each operation on the file system is written as a record to the log on disk before the operation is actually performed on data on disk.	write-ahead logging

Your answer is correct.

The correct answer is: A transaction that either succeed in their entirety or not at all. → atomic, Both metadata and file data are logged. → journal mod, Only metadata is logged, not file data, and no guarantee file data written before metadata. → writeback mod, Transactions executed by the file system and can be removed from the log. → completed transactions, Only metadata is logged, not file data, and it's guaranteed that file contents are written to disk before associated metadata is marked as committed in the journal. → ordered mode, The actual write of data to disk may occur much later than the entry written to the log. → asynchronous write, Each operation on the file system is written as a record to the log on disk before the operation is actually performed on data on disk. → write-ahead logging

Question **7**

Correct

Mark 5.00 out of 5.00

Consider a Diffie–Hellman key exchange between two hosts Alice and Bob. Assuming p = 29 and base g = 5.

If Alice picked the number a = 3, and Bob picked the number b = 4, what is the shared key value calculated between Alice and Bob?

(integer value only)

Shared Key value: 7

Question **8**

Correct

Mark 1.00 out of 1.00

What are advantages of encrypting data stored in the computer system? (Choose all that apply)

Select one or more:

- [x] a. To protect the data from unauthorized access
- [ ] b. To prove the authentication of the owner of the data
- [x] c. To preserve the data integrity
- [x] d. To maintain the data confidentiality

Your answer is correct.

The correct answers are: To protect the data from unauthorized access, To preserve the data integrity, To maintain the data confidentiality