SNS COLLEGE OF TECHNOLOGY

COIMBATORE – 35

DEPARTMENT OF COMPUTER SIENCE AND ENGINEERING (UG & PG)

Second Year, 4th Semester

2 Marks Question and Answer

Subject Code & Name: 19CSB201- OPERATING SYSTEMS

1. Mention different file attributes.

i) Name

ii)Identifier

iii)Type

iv)Location

v)Size

vi)Protection

vii)Time,date,and user identification

2. Mention different file operations.

` i) Creating a file

ii) Writing a file

iii) Reading a file

iv) Repositioning within a file

v) Deleting a file

vi) Truncating a file

3. Define consistency semantics

- Consistency semantics is an important criterion for evaluating any file system that supports file sharing.
- It is a characterization of the system that specifies the semantics of multiple users accessing a shared file simultaneously.
- In particular these semantics should specify when modifications of data by one user are observable by other users.
- The semantics are typically implemented as code with the file system.

4. Define immutable shared files.

- A unique approach is that of immutable shared files. Once a file is declared as shared by its creator it cannot modified.
- An immutable file has two key properties: Its name may not be reused and its contents may not be altered.
- Thus the name of an immutable file signifies that the contents of the file are fixed rather than the file being a container for variable information.
- The implementation of these semantics in a distributed system is simple because the sharing is disciplined (read-only).

5. How do you give the protection for files?

Protection can be provided in many ways.

- For a small single user system we might provide protection by physically removing the floppy disks and locking them in a disk drawer of file cabinet.
- In a multi-user system, however other mechanisms are needed.

1. Types of Access.
2. Access Control List (ACL).

6. Define packing.

All disk I/O is performed in units of one block(physical record), and all blocks are same size. It is unlikely that the physical record size will exactly match the length of the desired logical record. Logical records may even vary in length. Packing a number of logical records into physical blocks is a common solution to this problem.

7.Compare sequential and direct access.

Sequential access	Direct access
Information in the file is processed in order, one record after the other.	A file is made up of fixed –length logical records that allow programs to read and write records rapidly in no particular order.
Sequential access is based on a tape model of a file, and works as well on sequential access devices as it does on random-access ones.	The direct access method is based on a disk model of a file, since disks allow random access to any file block.
A read operation reads the next portion of the file and automatically advances a file pointer which tracks the I/O location. Similarly, a write appends to the end of the file and advances to the end of the newly a written material.	We have read n, where n is the block number, rather than read next, and write n rather than write next.
Files are belongs to this type	Databases are often of this type.

8.What are the operations performed in the directory?

- Search for a file
- Create a file
- Delete a file
- List a directory
- Rename a file
- Traverse the file system

9.Differentiate the absolute path name and relative path name.

Absolute path name	Relative path name
An absolute path name begins at the root and follows a path down to the specified file, giving the directory names on the path	A relative path name defines a path from the current directory.
Example: C:\programfiles\windows\os\test.doc	Ex: \os\test.doc

10.Define garbage collection.

- Garbage collection involves traversing the entire file system, marking everything that can be accessed.
- Then, a second pass collects everything that is not marked on to a list of free space.(A similar marking procedure can be used to ensure that a traversal or search will cover everything in the file system once and only once).
- Garbage collection is collect the unused file or directory space from the memory and attached to the free space list.
- Garbage collection is necessary only because of possible cycles in the graph.

11. Define cluster.

A disadvantage to linked allocation is the space required for the pointers. The usual solution to this problem is to collect blocks into multiples, called clusters, and to allocate the clusters rather than blocks.

12. What is the classification of users in connection with each file?

Owner: the user who created the file is the owner.

Group: A set of users who are sharing the file and need similar access is a group, or work group.

Universe: All other users in the system constitute the universe.

13. Define anonymous access in FTP.

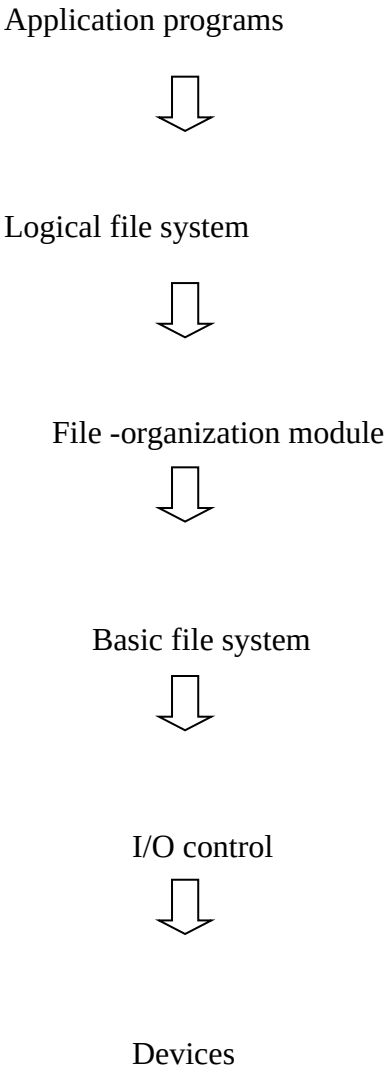
- ftp is used for both anonymous and authenticated access.
- Anonymous access allows a user to transfer files without having an account on the remote system.
- The World Wide Web uses anonymous file exchange almost exclusively.

14. What is the disadvantage of two level directory structures?

The two level directory structures effectively isolate one user from another. This isolation is an advantage when the users are completely independent, but is a disadvantage when the users

want to cooperate on some task and to access one another's files. Some systems simply do not allow local user files to be accessed by other users.

15. Draw the diagram for layered file system.



16. Define i) Boot control block ii) Partitioned control block

i)

- A Boot control block can contain information needed by the system to boot an operating from that partition.
- If the disk does not contain an operating system, this block can be empty.
- It is typically the first block of a partition.
- In UFS(Unix File System),this is called the boot block; in NTFS, it is the partition boot sector.

ii)

- A partitioned control block contains partition details, such as the number of blocks in the partition, size of the blocks, free-block count and free –block pointers, and free FCB count and FCB pointers.
- In UFS this is called a super block; in NTFS, it is the master file table.

17.Define RAW disk.

- Raw disk is used where no file system is appropriate.
- Unix swap space can use a raw partition, as it uses its own format on disk and does not use a file system.
- Raw disk can also hold information needed by disk RAID systems, such as bitmaps indicating which blocks are mirrored and which have changed and need to be mirrored.
- Similarly, raw disk can contain a miniature database holding RAID configuration information, such as which disks are members of each RAID set.

18.Mention two important function of VFS.

Virtual File System serves two important functions as follows

1.It separates file-system-generic operations from their implementation by defining a clean VFS interface. Several implementations for the VFS interface may coexist on the same machine, allowing transparent access to different types of file systems mounted locally.

2.The VFS is based on a file-representation structure, called a vnode, that contains a numerical designator for a network-wide unique file.(UNIX inodes are unique within only a single file system).This network-wide uniqueness is required for support of network file systems. The kernel maintains one vnode structure for each active node(file or directory).

19.What are the ways we implement the directory?

1.Linear list

2.Hash table

20. What is FAT?

- An important variation on the linked allocation method is the use of a File Allocation Table(FAT).
- A benefit is that random access time is improved.
- This simple but efficient method of disk-space allocation is used by the MS-DOS and OS/2 operating systems.
- A section of disk at the beginning of each partition is set aside to contain the table. The table has one entry for each disk block, and is indexed by block number.
- The FAT is used much as is a linked list. The directory entry contains the block number of the first block of the file.
- The table entry indexed by that block number then contains the block number of the next block in the file.

21. How do you manage the free space?

- Bit vector
- Linked list
- Grouping
- Counting

22.What is the job of consistency checker?

The consistency checker compares the data in the directory structure with the data blocks on disk, and tries to fix any inconsistencies it finds.

23.Define Journaling or Log-based transaction-oriented.

Frequently in computer science, algorithms and technologies transition from their original use to other applicable areas. Log-based-recovery algorithms are mainly used in database. These logging algorithms have been applied successfully to the problem of consistency checking. The resulting implementations are known as Log-based transaction-oriented (or Journaling) file systems.

24 What are synchronous writes and asynchronous writes?

Synchronous writes occur in the order in which the disk subsystem receives them, and the writes are not buffered. Thus calling routine must wait for the data to reach the disk drive before it can proceed.

Asynchronous writes are done the majority of the time. In an asynchronous write the data is stored in the cache and returns control to the caller.

25.What are difference between the RAM disk and disk cache?

RAM disk	Disk cache
A section of memory is set aside and treated as a RAM disk or Virtual disk.	Some systems maintain a separate section of memory for a disk cache, where blocks are kept under the assumption that they will be used again shortly.
The contents of the RAM disk are totally user controlled.	The disk caches are under the control of the operating system.

26. What is page cache?

The page cache uses virtual-memory techniques to cache the file data as pages rather than as file-system-oriented blocks. Caching file data using virtual addresses is far more efficient than caching through physical disk blocks.

27.Define Double caching.

Double caching requires caching file-system data twice. First, reading file-system from the disk block and storing them in the buffer cache. Second, the contents of the file in the buffer cache must be copied into the page cache.

28. What are the advantages of Linked allocation and Indexed allocation?

Advantages of Linked allocation: It solves the external-fragmentation and size-declaration problems of contiguous allocation. Advantages of Indexed allocation: It supports the efficient direct access methods over the disk. It also solves the external-fragmentation and size-declaration problems of contiguous allocation.