

1) Page fault:

A page fault is an exception / error that is raised by the memory management unit if a process accesses a memory page without it being loaded into the memory.

The page fault is detected by the memory management.

2) purpose of virtual memory:

Virtual memory provides virtual address mapping between applications and hardware memory.

It provides many functions, including multitasking, allowing multiple processes to access the same shared library in memory, swapping and other functions.

3) Attributes of file:

Name  
Identifier  
Owner  
type  
location  
size  
identification  
protection

File operations:

Creating a file  
Reading a file  
Writing a file  
Repositioning a file  
Truncating a file  
Deleting a file.

4)

### Seek time

Time required by read/write head to move from one track to other.

Most disk scheduling <sup>only</sup> use seek time

It can be reduced if

Subsequent request belongs to same track or near

### Rotational latency

Time required by read/write head to move from one sector to other.

Most disk scheduling doesn't consider rotational latency.

It can be reduced if subsequent request belongs to adjacent sector

### 5) Goals of file protection:

The main goals of file protection in an operating system are:

Confidentiality

Integrity

Availability

Accountability of files

Ensuring the security of sensitive data.

### 6) Different types of Directory structure:

\* Single-level directory

\* Two-level directory

\* Tree structure or hierarchical directory.

\* Acyclic graph directory

\* General graph directory structure

### 7) Page size is always power of 2:

• Paging is implemented by breaking up an address into a

page and offset number.

• It is most efficient to break the address into  $X$  page bits and  $Y$  offset bits rather than doing by arithmetic operations.

• Since each bit represents a power of 2, splitting an address between bits results in page size that is power of 2.

### 8) Advantages of contiguous allocation of disk space:

→ It is simple to implement.

→ we will get excellent read performance

→ Supports Random Access into files.

→ Efficient technique for memory management.

9) Features of Swap space Management:  
Important features of swap space management include determining the size and location of the swap space, how it is allocated, which pages of memory to swap out to disk, monitoring usage and adjusting settings for how aggressively the system should swap memory to disk.

10) Need for Disk Scheduling:

- A process can make multiple I/O requests and multiple processes run at the same time.
- Two or more requests may be far from each other so can result in greater disk arm movement.
- Hard drives are one of the slowest parts of the computer system, and thus need to be accessed in an efficient manner.

11) iOS

- Its kernel type is Hybrid
- It is mainly written in C, C++, Objective-C, assembly language and Swift
- Swift is majorly used for iOS application development
- File transfer in iOS is more difficult

Android OS

- Its kernel type is Linux-based.
- It is mainly written using C, C++, Java and other languages.
- Java and Kotlin are majorly used for Android application development.
- File transfer in Android is easier

12) SDK framework:

A SDK framework is a set of tools that developers can use to create software applications for a specific platform. It includes pre-built components and documentation that make it easier to develop applications and ensure they work well with the program.

## 2 Marks

13. why should we use virtual memory?

- \* Memory Space problem
- \* Data Security
- \* Memory Fragmentation and Errors

14. what is Thrashing? What are the causes of Thrashing.

When the system spends most of its time Shuttling pages between the main memory and the secondary memory due to frequent page faults. This is thrashing.

This causes the system to spend excessive amounts of time paging data between physical memory and disk leading to poor performance.

15. File: list out the attributes and operations of file.

File: A file can be defined as a data structure which stores the sequence of records. Files are stored in a file system, which may exist on a disk or in the MM.

Attributes:

Name  
Identifier  
Type  
Location  
Size  
Protection  
Time and Date.

Operation:

Read  
Write  
open  
close

16. Identify two important functions of virtual file system (VFS) layer, in the context of file system implementation

\* Abstraction and Portability

\* File System Integration.

17. Differentiate absolute path from relative path

Absolute path

It points to a specific location in the file system.

It is also referred to as full path or file path

It refers to the location of a file or directory relative to the root directory

Relative path

It points to the location of a directory

It is also referred to as non-absolute path.

It refers to the location of a file or directory relative to the current directory.

18. What problems could occur if a system allowed a file system to be mounted simultaneously at more than one location?

\* Inconsistent File Access:

\* Data Duplication and Inconsistency

\* Resource wastage

\* Performance overhead

\* File System corruption

19. Name the entries of file control Block.

- \* File Name
- \* File Type
- \* File size
- \* File permissions
- \* File location
- \* File pointer
- \* File status
- \* File creation and modification
- \* File Owner and Group
- \* File pointers or links
- \* File Metadata
- \* File Access control list.

20. What is the need for disk scheduling.

A process can make multiple I/O requests and multiple processes run at the same time.

Two or more requests may be far from each other so can result in greater disk arm movement.

21. List the allocation methods of a disk space.

- \* Contiguous allocation
- \* linked allocation
- \* Indexed allocation
- \* File allocation table
- \* Multi level indexing

22. Define seek time and rotational latency.

Seek time

→ Time required by read/write head to move from one track to other.

→ It can be reduced if subsequent request belongs to same track or near

## Rotational Latency

- Time required by read/write head to move from one sector to other.
- It can be reduced if subsequent request belongs to adjacent sector.

23) Write the importance of Swap-space management.

Importances of swap space management include

- \* Determining the size and location of the swap space.
- \* how it is allocated
- \* which pages of memory to swap out to disk.
- \* monitoring usage and adjusting settings for how aggressively the system should swap memory to disk

24. What is android SDK framework? list out some android frameworks that you had used recently.

The android SDK (software Development Kit) framework provides developers with a set of tools, libraries and APIs to build android application.

frameworks:

- \* Android Jetpack
- \* Retrofit:
- \* Glide
- \* Dagger
- \* Firebase