Preparatory Questions

1) Diff between process and thread
2) How many procs are created if fork() is called n times nested
3) What is cascading termination
4) Explain fork
5) What are the diff types of schedulers
6) What's virtual memory
7) Thread pools
8) Function of execvp command
9) Diff between response time and turnaround time
10) What's a dispatcher
11) Diff between short and long term schedulers
12) What's a fork bomb
13) What is dispatch latency ?
14) Diff between dispatcher and scheduler.
15) Diff types of scheduling queues
16) Types of scheduling algos
17) What proc id is returned to child when fork is called?
18) Convoy effect FCFS?
19) What does wait() do?
20) Explain multilevel Job Scheduling
21) What is processor affinity?
22) Types of parallelism

Answers:

PROC	THREAD
Any program in execution	A segment of a process
Has resource ownership	-NA-
Slower to create and destroy	Faster
	All threads share some common area with the main process.

1) 2^n
2) The process by which, when a parent process terminates, then recursively all of its children also terminate
3) The process by which a copy of an existing process is created, which resumes execution from the point just after it was forked
4) Types of schedulers:

Long term: LOW FREQUENCY; Maintains optimal degree of multiprogramming

    a) Short term: HIGH FREQUENCY; Increases process execution rate
    b) Medium term: MODERATE FREQUENCY; sends process from running to ready (like when process waits for I/O)

https://www.techtud.com/computer-science-and-information-technology/operating-system/process-scheduling/different-types

^ PK REDDY

5) *Virtual memory* is a *memory* management **capability of an operating system** (OS) that uses hardware and software to allow a computer **to compensate for physical *memory* shortages** by temporarily transferring data from random access *memory* (*RAM*) to disk storage.

6) Thread Pools: In cases of servers which are continuously accepting requests, creating a new thread every time a new request is made is time consuming. Therefore, the OS creates a "pool" of threads beforehand that wait for a new request.

7) The exec family of functions replaces the current running process with a new process. Therefore, can be used to execute a C file from the current C file, or a shell command etc.

8) **Response time**: The time interval between the submission of a process to the time the execution of that process begins.
Turnaround Time: The time interval between the submission of a process and the time of completion of that process.

9) The dispatcher is the module that **gives a process control over the CPU after it has been selected by the short-term scheduler**.

10)   **Long-term Scheduler** selects the process from the **Job Pool** and then load them in the **Ready Queue** for execution. On the other hand, the **Short-Term Scheduler** selects the process from the **Ready Queue** and allocate **CPU** to it for execution.

OR

Short term scheduler: Executes a lot more frequently, and its primary function is to **increase process execution rate**

Long term scheduler: Executes between long time intervals, but primary aim is to **maintain a healthy degree of MULTIPROGRAMMING**

11) **Fork Bomb** is a program which harms a system by making it run out of memory. It **forks** processes infinitely to fill memory.

12) The time dispatcher takes to move process from ready to running state.
    ~ The average time a process spends in the ready queue

13) The dispatcher is the module that gives a process control over the CPU after it has been selected by the short-term scheduler.
    This involves Switching context, switching to user mode and jumping to proper location to restart program.

14) 1. Ready queue
    2. Waiting queue:
          Eg. Device Queues
    3. Job queue

15) Types of scheduling algos
    https://www.studytonight.com/operating-system/cpu-scheduling

    a) FCFS: jo pehele, use bhejdo
    b) ShortestJobFirst: minority quota (shortest CPU bursts first)
    c) Priority scheduling: Caste system (more priority, lower wait, first you come) [SJF is also a priority scheduler vaise]
    d) RoundRobin: time quantums are allocated, finish it within that or be interrupted (resume later)
    e) Multilevel queue scheduling: There exist multiple queues of execution wherein the queues are given priority and are emptied acc to that priority
    f) Multilevel Feedback scheduling: Multiple queues with increasing quantum times. A process that waits in a level for too long may be degraded to higher quantum level. If a process exceeds it's limit time quantum, it goes down to lower level queue.

16) It is zero. Pid == 0 means child, else, parent, if negative then creation of child unsuccesful.

// answer please of 19,20,21….