

# Operating System Interview & Assessment Cheatsheet

## 1. Process Management

- Process vs. Thread
- Process states (New, Ready, Running, Waiting, Terminated)
- PCB (Process Control Block)
- Context switching
- Scheduling Algorithms: FCFS, SJF, Round Robin, Priority
- Preemptive vs Non-preemptive

## 2. Thread and Concurrency

- Multithreading, advantages
- User-level vs Kernel-level threads
- Concurrency vs Parallelism
- Race conditions, critical sections
- Synchronization: mutex, semaphore, lock
- Semaphores, Monitors, Condition variables

## 3. Deadlock

- Conditions for deadlock
- Deadlock prevention, avoidance, detection, recovery
- Banker's Algorithm

## 4. Memory Management

- Paging, Segmentation
- Virtual memory
- Page Replacement Algorithms: FIFO, LRU, Optimal
- Thrashing, TLB (Translation Lookaside Buffer)

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## 5. File Systems

- File organization: contiguous, linked, indexed
- Inodes, file descriptors
- Directory structures, mounting, permissions

## 6. Disk Management

- Disk Scheduling: FCFS, SSTF, SCAN, LOOK
- Disk structure and access time

## 7. I/O Management

- Polling vs Interrupts
- DMA (Direct Memory Access)
- Buffering, Spooling

## 8. System Calls & OS Structure

- Common system calls: `fork()`, `exec()`, `wait()`, `exit()`
- OS Types: Monolithic, Microkernel, Layered
- User mode vs Kernel mode

## 9. Linux/Unix Commands

- `ps`, `top`, `kill`, `grep`, `chmod`, `chown`, `ls`, `df`, etc.
- Basic shell scripting

## 10. Advanced Concepts

## **Operating System Interview & Assessment Cheatsheet**

- Multi-core scheduling, Real-time OS
- OS security, Memory-mapped I/O
- Booting process