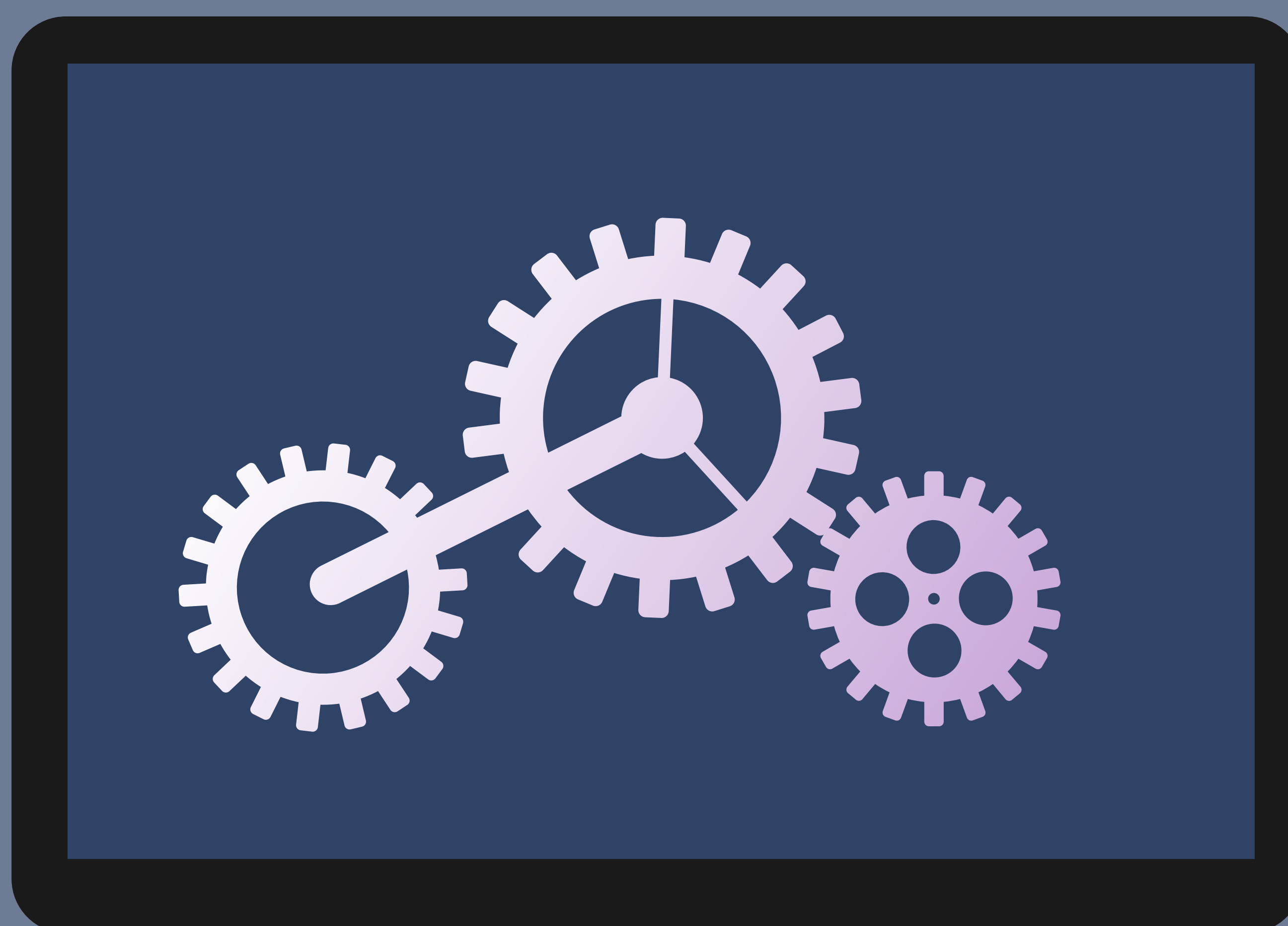




GeeksforGeeks

OPERATING SYSTEM



DETAILED COURSE SYLLABUS

BASIC CONCEPTS:

- Operating System for GATE
- Functions and GOAL of Operating System
- Process | Process States•Process Control Block
- Process state transition diagram
- Multi Programming
- Multi Tasking
- Context Switch

CPU SCHEDULING:

- Introduction to CPU Scheduling
- CPU and I/O Burst Cycle
- Preemptive and Nonpreemptive Scheduling
- CPU Scheduling Performance criteria
- First Come First Serve CPU scheduling
- Convoy Effect
- Priority CPU Scheduling | Non Preemptive
- Preemptive Priority Scheduling
- Shortest Job First (SJF) CPU Scheduling
- Shortest Remaining Time First Scheduling
- Longest Job First (LJF) CPU Scheduling
- Longest remaining time first scheduling
- Round-Robin CPU Scheduling
- CPU Scheduling with CPU & I/O Burst Time
- SJF with CPU & I/O Burst Time
- SRTF with CPU & I/O Burst Time
- Shortest Job First CPU Scheduling with predicted burst time
- Highest Response Ratio Next(HRRN)
- Multilevel Queue Scheduling
- Multilevel Feedback-Queue Scheduling

PROCESS SYNCHRONIZATION:

- Introduction of Process Synchronization
- Critical Section & Race Condition
- Critical Section Problem | Condition to process synchronization
- Busy Wait and Spin Lock

- Lock Variable Synchronization Mechanism
- Test and Set Instruction
- Turn Variable | Strict Alteration Method
- Interested variable
- Peterson's Solution
- Semaphores | Wait, Signal Operation
- Binary Semaphore
- Counting Semaphore
- Producer Consumer Problem
- Printer-Spooler Problem
- Readers-writers Problem
- Dining philosophers Problem
- Examples of Counting Semaphore Basic Wait and Signal
- Examples of Binary Semaphore
- Examples of producer consumer problem with semaphore

DEADLOCK:

- Introduction to Deadlock
- Deadlock Characteristics
- Deadlock Example _Basic PYQ
- Resource Allocation Graph
- Deadlocks Handling Methods
- Deadlock Prevention
- Deadlock Avoidance
- Resource Allocation Graph Algorithm
- Bankers Algorithm
- Deadlock Detection And Recovery

MEMORY MANAGEMENT:

- Memory Management
- Degree of multiprogramming
- Contiguous and nonContiguous Memory management
- Fixed size Partitioning | Internal Fragmentation
- Variable size Partitioning
- First Fit, Next Fit, Best Fit, Worst Fit Memory Allocation
- Examples on First Fit,Best Fit and Worst fit
- Overlays
- Paging Part-1
- Paging Part-2

- Paging Part-3
- Physical Address and Logical Address Space
- Address Translation
- Translation Lookaside Buffer
- Paging : Numerical Session-1
- Paging : Numerical Session-2
- Page Table Entries
- Multi Level Paging
- 2-Level Paging
- Inverted Paging
- Thrashing
- Segmentation
- Segmented Paging
- Virtual Memory
- Page Replacement
- Page Fault
- FIFO Page Replacement
- Belady's Anomaly in FIFO page Replacement
- Optimal Page Replacement algorithm
- Least Recently Used Page Replacement Algorithm
- Most recently used page replacement Algorithm

DISK MANAGEMENT:

- Disk Access Time
- Disk Scheduling
- FCFS Disk scheduling
- SSTF Disk scheduling
- SCAN Disk Scheduling
- C-Scan Disk Scheduling
- LOOK Disk Scheduling
- C-LOOK Disk Scheduling