SCHOOL OF COMPUTER ENGINEERING
KALINGA INSTITUTE OF INDUSTRIAL TECHNOLOGY
DEEMED TO BE UNIVERSITY
BHUBANESWAR

Course: Operating System (Credits 3) (L-T-P) (3-0-0)
Course Code:CS20002
Session: Spring, 2024

Course Outcomes:

1. Able to understand the difference between different types of modern operating systems, virtual machines and their structure of implementation and applications.
2. Able to understand the difference between process & thread, issues in the scheduling of user-level processes/threads.
3. Able to understand and analyze the use of locks, semaphores, monitors for synchronizing multiprogramming / multithreaded systems and design solutions for multithreaded programs.
4. Able to understand the concepts of deadlock in operating systems and how they can be managed/avoided.
5. Able to understand the design and management concepts along with issues and challenges of main memory, virtual memory, and file system.
6. Able to understand the types of I/O management, disk scheduling, protection and security problems faced by operating systems and how to minimize these problems.

Modified Post-mid-sem. Syllabus				
Deadlock	• Deadlock and its conditions • Resource Allocation Graph	3	Day 16	
	• Handling deadlock • Deadlock prevention		Day 17	
	• Deadlock avoidance • Resource allocation state(Safe/Unsafe State) • Resource Allocation Graph algorithm		Day 18	
	• Deadlock avoidance (Banker's Algorithm) Safety algorithm Resource Request algorithm			
	• Deadlock Detection • Recovery mechanism from deadlock			
Memory Management		5		
	• Multiprogramming memory management using partitioning Fixed Partitioning, Drawbacks		Day 19	
	• Dynamic Partitioning, Drawbacks • Paging		Day 20	
	• Paging implementation with Translation look-aside buffers (TLBs) • Hierarchical paging,		Day 21	
	• Segmentation		Day 22	
	• Virtual Memory and Demand Paging • Dealing with Page faults		Day 23	
	• Page replacement algorithm ◦ First-In-First-Out(FIFO) ◦ Optimal Page Replacement (OPT)			
	• Page replacement algorithm ◦ Least Recently Used (LRU) ◦ Most Recently Used (MRU) • Thrashing			
File Management	• File concept • Access Methods • Directory structure.	3	Day 24	
	• File system mounting • File System structure		Day 25	
	• File system Implementation • Allocation methods • Free space management		Day 26	
I/O Management	• I/O Devices • Device controller • Device Drivers	2	Day 27	

	• Application I/O Interface		Day 28	
Disk Management	• Disk Structure • Disk Scheduling ◦ FCFS ◦ SCAN	1	Day 29	
	• Disk Scheduling ◦ C-SCAN ◦ LOOK ◦ C-LOOK			

Course Coordinator
Spring, 2024