CAP560:OPERATING SYSTEM

L:4 T:0 P:0 Credits:4

Course Outcomes: Through this course students should be able to

- describe the essential elements of operating systems and its types
- use the knowledge about process management and memory management in Operating System
- interpret the various ways to improve the efficiency of system and to use different scheduling algorithms

Unit I

Introduction to operating system : Introduction, Types of operating systems, System components, Operating system services, System calls

Process : Process concept, Process states, Operations on processes

Unit II

Process Management : Process control block, Context switching, Process scheduling, Interprocess communication, Threads and Multithreading, a case study on Windows/Linux

Unit III

CPU Scheduling : Introduction, Types of scheduling, Scheduling Criteria, Scheduling Algorithms, a case study on Windows/Linux

Process Syncronization : Background, Critical section problem, Semaphores, Concept of serializability

Unit IV

Deadlocks : Deadlock Characterization, Methods for handling deadlocks, Deadlock Prevention, Deadlock avoidance, Recovery from Deadlock, a case study on Windows/Linux

Unit V

Memory Management : logical versus physical address space, Address Binding, Dynamic Loading & Dynamic Linking, Overlays, Swapping, Contiguous Allocation, Paging, Segmentation, Segmentation with Paging, Page Replacement Algorithms, Allocation of frames, Thrashing, Working-set model, a case study on Windows/Linux

Unit VI

Protection : Introduction, File Access Methods, Access Matrix

Disk Management : Disk structure, disk scheduling, FCFS scheduling, SSTF scheduling, SCAN scheduling, C-SCAN scheduling, a case study on Windows/Linux

Text Books:

1. OPERATING SYSTEMS CONCEPTS by A SILBERSCHARTZ AND GALVIN, ADDISON-WESLEY

References:

1. OPERATING SYSTEMS CONCEPTS AND DESIGN? by MILAN MILANKOVIC, MCGRAW HILL EDUCATION

2. MODERN OPERATING SYSTEM by ANDREW S. TANENBAUM, PRENTICE HALL

3. THE DESIGN OF THE UNIX OPERATING SYSTEM by MAURICE J. BACH, PEARSON

4. BEGINNING LINUX PROGRAMMING by NEIL MATTHEW, WILEY

5. OPERATING SYSTEMS : PRINCIPLES AND DESIGN by CHOUDHURY, PABITRA PAL, PHI Learning Pvt Ltd