University of Pune

Pattern 2013

Class:- M.C.A(Commerce) Sem-III

Subject:- Operating System(306)

Sr No	Topic	Ref Book	No of lectures
Chapter 1	**Introduction to Operating System** 1.1Introduction and Definition of Operating System 1.2Types of Operating System 1.3 Open Source Operating System 1.4 Operating system services 1.5 User operating system interface	1,3	3
Chapter 2	**System Structure** 2.1System calls 2.2 Types of System call -Process control system call fork(),exec() -File Management -Device Management -Information maintenance -Communication 2.3 Operating System structure	1	2
Chapter 3	**Process Management** 3.1 Process Concept -Process State - Process control block 3.2 Context switch 3.3 Operation on process-Process creation and termination 3.4 Interprocess Communication	1,2,3	3
Chapter 4	**Multithreaded Programming** 4.1 Overview 4.2 Thread libraries 4.3 Threading Issues	1,2	2
Chapter 5	**Process scheduling** 5.1 Basic concept 5.2 Scheduling criteria	1,2,3	6

	5.3 Scheduling Algorithms (FCFS,SJF, Priority,Round Robin, Multiple queue and Multilevel feedback queue)		
Chapter 6	**Process Synchronization** 6.1 Introduction 6.2 Critical Section problem 6.3 Semaphores Usage and Implemenation 6.4 Classic problem of synchronization -Bounded buffer -Reader Writer - Dining Philosopher problem		5
Chapter 7	**Deadlock** 7.1 Introduction 7.2 Deadlock Characterization 7.3 Methods for handling deadlock 7.4 Resource Allocation graph 7.5 Deadlock Prevention 7.6 Deadlock Avoidance 7.7 Deadlock Detection 7.8 Recovery from deadlock	**1,2,3**	6
Chapter 8	**Memory Management** 8.1 Introduction 8.2Address binding 8.3 logical versus physical address 8.4 Static and Dynamic linking 8.5 Dynamic loading 8.6 Swapping 8.7 Overlays 8.8 Contiguous memory allocation -MFT -MVT 8.9 Non Contiguous allocation -Paging - Segmentation 8.10 Virtual Memory Management 8.11Demand Paging 8.12 Page Replacement Algorithm(FIFO, Optimal ,LFU,LRU,LRU approximation using reference bit, MRU,MFU	1,2,3	10

	and Second chance algorithm)		
Chapter 9	**File Management** 9.1 Introduction 9.2 Access method - Sequential -Direct access 9.3Directory Structure 9.4 Allocation Methods -Contiguous Allocation -Linked Allocation -Indexed Allocation 9.5Allocation method 9.6 Free Space Management -Bit Vector -Linked List -Grouping -Counting	1,2,3	6
Chapter 10	**I/O System** 10.1Introduction 10.2 I/O Hardware 10.3Application of I/O Interface 10.4Kernel I/O System 10.5 Disk Scheduling -FCFS -Shortest Seek time first -Scan -C-Scan -Look -C Look	1,3	5

Reference Books

1. Operating System Concepts – Silberschatz, Galvin and Gagne (8th edition)
2. Operating System Principles and design –Pabitra Pal Chaudhary
3. System Programming and Operating System-D M Dhamdhere, Tata Mc Graw Hill Publication