UNIT I

Syllabus : Operating System Objectives and Functions, The Evolution of Operating Systems, Developments Leading to Modern Operating Systems, Virtual Machines. BASH Shell scripting : Basic shell commands, shell as a scripting language.

UNIT II

Chapter 2 : Process Description and Control

2-1 to 2-55

Syllabus : Process : Concept of a Process, Process States, Process Description, Process Control (Process creation, Waiting for the process/processes, Loading programs into processes and Process Termination), Execution of the Operating System.

Threads : Processes and Threads, Concept of Multithreading, Types of Threads, Thread programming Using Pthreads.

Scheduling : Types of Scheduling, Scheduling Algorithms, and Thread Scheduling.

UNIT III

Syllabus : Process/thread Synchronization and Mutual Exclusion : Principles of Concurrency, Requirements for Mutual Exclusion, Mutual Exclusion : Hardware Support, Operating System Support (Semaphores and Mutex), Programming Language Support (Monitors).

Classical synchronization problems : Readers/Writers Problem, Producer and Consumer problem, Interprocess communication (Pipes, shared memory : system V).

Deadlock : Principles of Deadlock, Deadlock Modeling, Strategies to deal with deadlock : The Ostrich Algorithm, Deadlock Prevention, Deadlock Avoidance, Deadlock detection and recovery, An Integrated Deadlock Strategy, Example : Dining Philosophers Problem.

UNIT IV

Syllabus : Memory Management : Memory Management Requirements, Memory Partitioning: Fixed Partitioning, Dynamic Partitioning, Buddy System, Relocation, Paging, Segmentation.

Virtual Memory : Hardware and Control Structures, Operating System Software.

UNIT IV

Syllabus : I/O Management and Disk Scheduling : I/O Devices, Organization of the I/O Function, Operating System Design Issues, I/O Buffering, Disk Scheduling(FIFO, SSTF, SCAN, C-SCAN, LOOK, C-LOOK), Disk Cache.
File Management : Overview, File Organization and Access, File Directories, File Sharing, Record Blocking, Secondary Storage Management.

UNIT VI

Syllabus : Need of System Software, study of various components of system software.

Assemblers : Elements of Assembly Language Programming, A simple Assembly Scheme and pass structure of Assemblers.

Chapter 7 : Introduction to Compilers

Syllabus : Introduction to compilers : Phase structure of Compiler and entire compilation process. Introduction to Macro processors, Macro Definition and call, Macro Expansion Loaders and Linkers. General Loader Scheme, Subroutine Linkages, Relocation and linking Linkages, Relocation and linking

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