UNIT-I

Define Operating System.

Write a short note on Operating System.

List and explain four management functions of Operating System.

List and explain Operating System Services.

What is System call and list different types of System Calls.

Differentiate System call and Standard I/O (API).

Explain Operating System Structure.

Define process and explain different process sates (Process Life Cycle) with neat diagram.

Write a short note on Process Control Block.

What are the different ways to create a process, explain.

What are the different ways to terminate a process, explain.

Write about CPU Scheduling, it’s basic concepts and criteria.

Illustrate any 3 CPU scheduling algorithms.

Write about the various CPU scheduling algorithms

What is Thread? How it differs with process?

Explain Thread scheduling.

Explain Multiple-Processor Scheduling

UNIT-II

Explain race condition with example.

What is Critical Section Problem? Explain Two Process Solution and Multi Process Solution.

What is preemptive kernel and non-preemptive kernel, explain?

Explain Peterson’s Solution for Critical-Section Problem.

Explain Synchronization Hardware? Explain TestAndSet.

Explain semaphore and its types and Semaphore Implementation with no busy waiting.

What are semaphores? How do they implement mutual exclusion?

What is Process Synchronization? What are the classical problems of Synchronization?

Explain Dining-Philosophers Problem with possible solution.

How monitors implement using semaphores and also explain Solution to Dining Philosophers.

What is Monitor and how it takes over Semaphore at Process Synchronization.

What is dead-lock? Explain its characteristics. How can we handle dead-lock in a simple way?

What is Resource-Allocation Graph? How to identify dead lock situation using this, explain with example.

Explain deadlock prevention techniques.

Explain deadlock avoidance techniques.

How to detect deadlock?

Explain Banker’s Algorithm?

Explain techniques of Recovery From Deadlock?

UNIT-III

What is address binding and explain logical and physical address space.

Write a note on swapping.

Explain Contiguous Allocation of main memory.

Explain Dynamic Storage-Allocation Problem

Explain memory mapping.

What is fragmentation? Explain internal and external fragmentation.

Explain paging and Implementation of Page Table.

Explain Hierarchical Paging.

Explain Hashed Page Tables

Explain Inverted Page Tables

What is Segmentation? Explain its Architecture.

What is demand paging? Explain page replacement algorithms.

What is page fault? Explain how a page fault can be handled.

Explain copy on write.

What is page replacement? What is the need of it?

Explain different page replacement algorithms.

What is trashing problem and what causes it?

Write a short note on virtual memory.

UNIT-IV

Explain linked file allocation method.

Explain various file directory structure.

Explain different disk scheduling algorithms.

Explain and compare different file access methods.

Explain the indexed and linked file allocation methods. Discuss the advantages and Disadvantages in those methods.

With necessary diagram explain the different allocation methods of disk space.

Explain the schemes for defining the logical structure of a directory.

What are files and explain the access methods for files? File definition

Write a short on file sharing and protection.

UNIT-V

List and explain features of UNIX Operating System.

UNIX operating system follows layered structured, justify.

List different modes of vi editor and explain different operations of each mode.

Explain file handling utilities of UNIX.

Explain different commands to secure files in UNIX by file permissions.

Explain process utility commands of UNIX.

Explain disk utility commands of UNIX.

Explain networking utility commands of UNIX.

Explain backup and text processing utility commands of UNIX.

Explain input and output redirection in UNIX with examples.

Explain shell responsibilities.

What are the different shells are there, explain with their hierarchical tree.

Explain shell control structures.

Explain loops in UNIX shell scripting.

Develop a shell script which can count no of characters, words and lines of a given file without using “wc”.

Develop a shell script to check given number is palindrome or not.

Develop a shell script which takes file name as a command line argument and create file if not exist and allow user to write something in it.

Develop a shell script to create a command line calculator.

Develop a shell script to copy one file content into another.