1 Introduction

1.1 What is an operating system?

1.2 Operating system structures.

2 Processes and Threads

2.1 Process states

2.2 Process resources (CB)

2.3 Threads

3 Concurrency

3.1 Introduction to synchronization problems

3.2 Traditional problems: race conditions, producer-consumer, critical sections

3.3 Hardware and software solutions to the critical section problem

3.4 Semaphores

3.5 Monitors

Deadlock

Necessary Conditions Prevention Avoidance Detection and Recovery

Scheduling

Metrics for evaluation Algorithms

Memory Management

Logical and Physical Addresses Allocation, paging, swapping, fragmentation, TLBs.

Virtual Memory

Page replacement algorithms.

File Systems and Disks

File and directory structures File system structure Allocation strategies Disk structures Disk scheduling File caching Alternate file systems structures such as Log Based File Systems (optional)