**Review for final test**

**Operating systems**

Definition of OS

Reasons

**Processes**

Process states

Process creations

Interprocess communication

Reasons

Shared-memory system

Message passing system

**Multithreading**

Benefits of multithreaded programming

Multithreading models

**Scheduling algorithms**

Scheduling Criteria

FCFS

SJF

SRTF

Priority

**Deadlocks**

Necessary Conditions for deadlock

Methods for handling deadlocks

Prevention

Avoidance

Resource allocation graph algorithm

Banker’s algorithm

Detection

Wait-for-graph

Deadlock-detection algorithm

**Process Synchronization**

Requirements of solution to the critical-section

TestAndSet() instructions

Readers-writers problem

The bounded-buffer problem

Monitors

**Main Memory**

Binding of data to physical memory

Logical address space vs physical address space

Memory allocation

Dynamic storage allocation

Strategies of selecting the free space

Paging system

The method of implementing paging system

Effective access time

Memory protection in a paging system

Different structures of the page table

Segmentation system

Memory protection in segmentation systems

Fragmentation in both systems

Advantages one system over another one

Virtual memory

Benefits of virtual memory

Demand paging

Steps in handling a page fault

Effective access time

Copy-on-write

Page replacement methods

Second chance algorithm

Allocation of frames

Allocation algorithms

Global vs local

Thrashing

Working-set model

Prepaging

Page size

Program structure

**File system interface and implementation**

File operations

Access methods

Different schemes for defining the logical structure of a directory

Consistency semantics: Unix and Session

**Mass storage structures**

Disk scheduling

Selection of disk scheduling algorithm

Bad blocks

Average I/O time : latency, rotation, transfer

**Distributed systems**

What are motivation factors for building distributed systems?

Network OS vs. Distributed OS

Describe the Remote Procedure Call model for Distributed OS

Network topology

Communication structures