

GOVERNMENT DEGREE COLLEGE, NANDIKOTKUR

DEPARTMENT OF COMPUTER APPLICATIONS

OPERATING SYSTEMS

UNIT-I: Introduction to Operating Systems

Short Answer Questions:

1. What is an operating system, and what are its main functions?
2. Briefly describe the evolution of operating systems.
3. Explain the structure of a basic operating system.
4. List the types of computer system architectures.
5. What are operating system services?
6. Define system calls and their importance in OS functionality.
7. Give an overview of the UNIX operating system.
8. List some basic features of the UNIX operating system.

Long Answer Questions:

1. Discuss the history and evolution of operating systems, highlighting key milestones.
2. Explain the different structures of operating systems with examples.
3. Describe the user operating system interface and the role of system calls.
4. Write a detailed comparison of the features of UNIX and modern operating systems.

UNIT-II: Process Management

Short Answer Questions:

1. What is a process in an operating system?
2. Describe the basic operations on processes.
3. How do client-server systems handle process communication?
4. Define process scheduling and its significance.

5. What are the key criteria for evaluating scheduling algorithms?
6. List some common CPU scheduling algorithms.
7. Explain how CPU scheduling is managed in UNIX.

Long Answer Questions:

1. Discuss process management and its key components in an operating system.
2. Explain various scheduling algorithms and their suitability for different environments.
3. Describe the process communication mechanisms used in client-server systems.
4. Compare different process scheduling algorithms and explain which are used in UNIX.

UNIT-III: Synchronization and Deadlocks

Short Answer Questions:

1. What is process synchronization, and why is it important?
2. Define semaphores and their usage.
3. What is the critical section problem?
4. List and briefly describe classic problems of synchronization.
5. Define deadlock and its characteristics.
6. What are the necessary and sufficient conditions for a deadlock to occur?
7. Explain deadlock avoidance.

Long Answer Questions:

1. Discuss the concept of semaphores, including their implementation and use in process synchronization.
2. Describe the critical section problem and approaches to solve it.
3. Explain deadlock prevention, avoidance, detection, and recovery with examples.
4. Write a detailed note on classic synchronization problems and their solutions.

UNIT-IV: Memory Management

Short Answer Questions:

1. What is memory management in an operating system?
2. Describe the concept of swapping.
3. Explain contiguous memory allocation and its limitations.
4. What is paging? Provide an example.
5. Define segmentation in memory management.
6. List different page replacement algorithms.
7. How does memory management work in UNIX?

Long Answer Questions:

1. Discuss different memory management techniques, including their advantages and disadvantages.
2. Explain paging and segmentation with examples.
3. Describe various page replacement algorithms and their importance in efficient memory management.
4. Compare memory management in UNIX with other operating systems.

UNIT-V: Files and Directories in UNIX

Short Answer Questions:

1. What is a file in UNIX, and how is it managed?
2. Explain the directory structure in UNIX.
3. List some common file operations.
4. What are file allocation methods?
5. How does UNIX file system implementation differ from Windows?
6. Describe file system implementation in UNIX.

Long Answer Questions:

1. Explain the file and directory structure in UNIX with examples.

2. Discuss various file allocation methods and their suitability for different applications.
3. Compare file system implementations in UNIX and Windows.
4. Write a detailed note on file operations and directory structures in UNIX.