Rayat Shikshan Sanstha's,
Rajarshi Chhatrapati Shahu College, Kolhapur
Department of Commerce IT

Class B.Com IT – I **Operating Systems**

Unit 2: Introduction to Operating System

Short Answer

1. Define an operating system. Discuss its main functions.
2. Explain the evolution of operating systems from early systems to modern OS.
3. Differentiate between batch processing and time-sharing systems.
4. List and describe the types of operating systems: Batch, Time-sharing, Real-time, and Distributed.
5. Describe the concept of Monolithic Kernel and Microkernel, and explain their differences.
6. What are the key features of a layered architecture in operating systems?
7. Briefly explain the characteristics and advantages of Hybrid Systems in operating system design.

Long answer questions

1. Explain the process life cycle in detail, including the states a process goes through and what each state means.
2. Discuss the various process scheduling algorithms. Compare the strengths and weaknesses of each (e.g., FCFS, SJF, Round Robin).
3. Define Inter-Process Communication (IPC). Explain the various IPC mechanisms such as message passing and shared memory.
4. Explain memory hierarchy and discuss the different types of memory used in modern computer systems.
5. Discuss the concept of virtual memory and explain its importance in modern operating systems.
6. Explain the concept of page replacement algorithms with examples. Compare the most commonly used algorithms like FIFO, LRU, and Optimal.
7. Explain the various memory allocation strategies (e.g., contiguous, paging, segmentation). Discuss the advantages and disadvantages of each.

Unit 2: File Systems and Security

Short Answer Questions

1. Explain the key concepts and organization of a file system.
2. What are the basic file operations supported by operating systems? Describe each briefly.
3. Discuss the importance of file attributes and permissions in an operating system.
4. List and describe the different directory structures used in file systems.
5. What are the primary objectives of file system recovery and consistency?

Long answer questions

1. Discuss the different file allocation methods (e.g., contiguous allocation, linked allocation, indexed allocation) and their advantages/disadvantages.
2. Explain the process of directory implementation in an operating system. Discuss the different types of directory structures.
3. Describe disk management and optimization techniques. How do these methods improve file system performance?
4. Discuss the various security threats and vulnerabilities that operating systems face. How can they be mitigated?
5. What are the different access control mechanisms used in operating systems? Explain how they help in securing files and resources.
6. Discuss the concepts of encryption and decryption. How do they ensure data security in an operating system?
7. Explain the importance of backup and recovery procedures in file systems. Discuss the different strategies used for data recovery in case of system failure.