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| **SESSION** | **NOV-DEC 2023** |
| **PROGRAM** | **BACHELOR OF COMPUTER APPLICATIONS (BCA)** |
| **SEMESTER** | **II** |
| **COURSE CODE & NAME** | **DCA1201 – OPERATING SYSTEM** |
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**Assignment Set – 1**

**1. Discuss different types of Operating System.**

**Ans 1.**

Operating systems (OS) are the backbone of computer functionality, playing a crucial role in managing hardware resources and providing services for application software. There are various types of operating systems, each designed to cater to different requirements of users and computing environments.

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**2. a. Write a detailed note on FCFS, SJF and Priority scheduling taking suitable examples.**

**b. What is Preemptive and Non-preemptive Scheduling?**

**Ans 2.**

**a. First-Come, First-Served (FCFS) Scheduling**

**First-Come, First-Served (FCFS)** scheduling is the simplest type of CPU scheduling algorithm that organizes processes based on their arrival time. In FCFS, the process that arrives first gets executed first. Consider an example where three processes P1, P2, and P3 arrive in the order P1, P2, P3 at times 0, 2, and 4, respectively. If their execution times are 3, 6, and 1 unit, P1 will start at time 0 and finish at time 3, P2 will start immediately after at time 3 and end at time 9, and finally, P3 starts at time 9 and ends at time 10. The simplicity of FCFS is also its drawback, as it can lead to poor performance in terms of average waiting time,

**3. Discuss Banker’s algorithm deadlock avoidance mechanism.**

**Ans 3.**

Banker's Algorithm is a resource allocation and deadlock avoidance algorithm that tests for the safety of a system by simulating the allocation of predetermined maximum possible amounts of all resources, and then makes an "s-state" check to test for possible activities, before deciding whether allocation should be

**Assignment Set – 2**

**4. a. What is PCB? What information is stored in it?**

**b. What are monitors? Explain. 5+5**

**Ans 4.**

**PCB (Process Control Block) and Monitors in Operating Systems**

**a. Process Control Block (PCB)**

In the realm of operating systems, the Process Control Block (PCB) is a vital data structure. It serves as a repository for information about processes in a computer system. Each process is represented by a PCB, which maintains a comprehensive record of its attributes and state. This data is crucial for the operating system to manage and control processes efficiently.

The PCB typically stores several key pieces of information:

* **Process**

**5. Discuss IPC and critical-section problem along with use of semaphores.**

**Ans 5.**

The Inter-Process Communication (IPC) and the critical-section problem are fundamental concepts in operating systems and concurrent programming. Understanding these concepts is crucial for designing and implementing multi-process and multi-threaded applications. Semaphores play a vital role in addressing these issues, ensuring correct process synchronization and preventing data

**6. Explain the different Multiprocessor Interconnections and types of Multiprocessor Operating Systems.**

**Ans 6.**

Multiprocessor systems, a critical component of modern computing, leverage the power of multiple processors to enhance performance, reliability, and scalability. Understanding the interconnections and operating systems that govern these processors is essential for appreciating their capabilities and limitations.

**Multiprocessor Interconnections**

Multiprocessor interconnections are the networks through which processors within a multiprocessor system