PES UNIVERSITY

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Department of Computer Science & Engg

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UE19CS254: Operating Systems

UNIT 2 Question Bank

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	Chapter 4
1.	What resources are required to Creating threads?
2.	Under what circumstances user level threads are better than the kernel level threads?
3.	What is a thread?
4.	What are the benefits of multithreaded programming?
5.	Compare user threads and kernel threads.
6.	List two programming examples of multithreading giving improved performance over a single-threaded solution.
7.	What are the challenges of multicore programming
8.	What are the types of threads
9.	How the threads are scheduled
10.	Explain the thread API's supported in Linux
11.	Explain different threading models
	Chapter 6 Process Synchronization
1.	What are semaphores? Explain how it can be used to implement mutual exclusion
2.	Define critical section? Ans: If a system consist on n processes {P0, P1,……., Pn-1}.Each process has a segment of code called a critical section, in which the process may be changing common variables, updating a table , writing a file. The important feature of this system is that, when one process is in its critical section, no other process is to be allowed to execute in its critical section.
3.	What is critical section? What requirement should be satisfied for a solution to the critical section problem?
4.	Explain the readers/writer's problem
5.	What is the term busy waiting? What other kinds of waiting are there in an OS? Can busy waiting be avoided altogether? Explain.
6.	Describe the Bounded - buffer problem and give a solution for the same using semaphores. Write the structure of producer and consumer processes
7.	What is critical section problem and what are the requirements that need to be satisfied by any solution to critical section problem? Give a solution to a 2-process critical section problem.
8.	What do you mean by binary semaphore and counting semaphore? With C struct, explain implementation of wait () and signal.
9.	Explain solution to dining philosopher's problem using monitor.
10.	What are semaphores? Explain solution to producer-consumer problem using semaphores
11.	What are the requirements that a solution to the critical section problem must satisfy?

12.	Define: Critical section problem.
13.	Name two hardware instructions and their definitions which can be used for implementing mutual exclusion
14.	Name some classic problem of synchronization?
15.	Define entry section and exit section.
Chapter 7 Deadlocks	
1.	Why is deadlock state more critical than starvation?
2.	Describe resource allocation graph with a deadlock, with a cycle but no deadlock. What are two options for breaking deadlock?
3.	Describe necessary conditions for a deadlock situation to arise.
4.	Explain different methods to handle deadlocks.
5.	What is resource-allocation graph? Ans: Deadlocks can be described more precisely in terms of a directed graph called a system resource allocation graph. This graph consists of a set of vertices V and a set of edges E. The set of vertices V is partitioned into two different types of nodes; P the set consisting of all active processes in the system and R the set consisting of all resource types in the system.
6.	Explain the methods for deadlock prevention
7.	Given 3 processes A,B and C, three resources x,y and z and following events, a. A requests x ii) A requests y iii) B requests y iv) B requests z v) C requests z vi) C requests x vii) C requests y Assume that requested resources should always be allocated to the request process if it is available. Draw the resource allocation graph for the sequences. And also mention whether it is a deadlock? If it is, how to recover the deadlock.
8.	What is deadlock? Explain the necessary conditions for its occurrence.
9.	Define Deadlock.
10.	Can a multithreaded solution using multiple user-level threads achieve better performance on a multiprocessor system than on a single processor system?