Quiz #2

CSE3213 – OS,   Fall 2022,   Total Marks: 10,   Time: 20 Min

1. How can an OS decide to keep the CPU busy for more than 90% of the time for CPU/IO-intensive systems? What are the possible deadlock recovery options?

[2.5+2.5]

2. Explain the process state transition diagram. Explain the necessary for having a Process Control Block.   [3+2]

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CSE3213 – OS,   **Fall 2022,**   **Total Marks: 10,**   **Time: 20 Min**

1. Explain Race condition with any two examples. Discuss the Disabling Interrupt based solution to deal with the race conditions.   [3+2]

2. Draw an RAG that has three separate deadlocks and present a step-by-step solution to detect all of them.   [5]

Quiz #2

CSE3213 – OS,   Fall 2022,   Total Marks: 10,   Time: 20 Min

1. Explain the following
    a. Deadlock   [1]
    b. Conditions that are necessary for a deadlock to happen in a System.   [2]
    c. Resource Allocation Graph   [2]

2. Explain all types of Semaphore Data Structures with their applications.   [5]

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CSE3213 – OS,   **Fall 2022,**   **Total Marks: 10,**   **Time: 20 Min**

1. Discuss the possibilities and options for preventing a deadlock to occur. What is the purpose of Banker's algorithm?   [3+2]
2. Explain the following with example
    a. Busy waiting   [2]
    b. Priority Inversion Problem   [1]
    c. Counting Semaphore   [2]

Quiz #2

1. Draw an RAG that has three separate deadlocks and present a step-by-step solution to detect all of them. [5]

2. In which way the 'Sleep' and 'Wakeup' functions be used to solve the Race condition Problem? How can the 'Priority Inversion' problem be solved? [2.5x2]

Quiz #2

1. Explain the Semaphore data structure with various types and its usage from an Operating System's point of view along with its application procedure. [5]

2. Write a pseudocode solution for the **Reader-writer** problem having similar priority for reader and writer processes incorporating only the following simple modification. [5]

   -The system can have a maximum of five readers parallelly reading in the system

   Explain what will happen if
   a) Reader-1 enters into the system b) Reader-6 enters into the system c) Writer -1 and Writer-2 enter the system while there is at least one reader already available in the system.