

**2<sup>nd</sup> OPERATING SYSTEM ASSIGNMENTS FOR 5<sup>th</sup> Semester, CSE-2019**

- Q. 1. What do you mean by race condition, briefly explain with suitable example.
- Q. 2. What are the primitive operations of Semaphore? Difference between binary and counting Semaphore?
- Q. 3. Discuss about Peterson Solution for two process synchronization.
- Q. 4. Describe about the Reader-Writer Problem and give its solution using Semaphore.
- Q.5. Using Semaphore, give an appropriate solution to the classical Dining Philosopher Problem.
- Q.6. what do you mean by Inter Process Communication (IPC) mechanism, Describe different models associated with IPC.
- Q.7. Given some Processes of size 212k, 417k, 112k, and 426k (in order) and memory partition of 100k, 500k, 200k, 300k and 600k (in order). How would each the First-fit, Best-fit and Worst-fit algorithm places these processes in memory. Calculate the internal and external fragmentation in each.
- Q.8. Discuss about noncontiguous paged memory mapping technique, with example.
- Q.9. How Translation Look Aside Buffer (TLB) improves the effective memory access time than simple paging technique, explain in details.
- Q.10. Consider a TLB based paging system. Assume that the entire page table and all the pages are in the physical memory. It takes 15 milliseconds to search the TLB and 75 milliseconds to access the physical memory. If the TLB miss ratio is 0.3, what is the effective memory access time (in milliseconds).
- Q.11. what are the difference between paging and segmentation noncontiguous memory mapping techniques.
- Q.12. what do you mean by virtual memory and discuss about its implementation.
- Q.13. Consider a system with 128MB of main memory and 32 bits logical/virtual address space. Assume that the page size is of 4kB. What is the size of Page Map Table?
- Q.14 a). Describe about inverted page table.
- b) Describe about multi-level paging scheme.
- Q.15. what is the difference between demand paging and pure demand paging.
- Q.16. FIFO page replacement algorithm suffers from Belady's anomaly, explain with suitable example.
- Q.17. Describe about working set model and its use.
- Q.18. Find the no. of page fault using OPTIMAL and MOST RECENT USE (MRU) page replacement algorithm for the following reference string and also discuss about your observations.
- Reference String: 2, 3, 4, 5, 6, 7, 2, 3, 4, 5, 6, 7, 2, 3, 4, 5, 6, 7.
- Q.19 Suppose that a disk has 5000 cylinders numbered from 0 to 4999. The r/w head is currently serving request at cylinder 143 and the previous request was at cylinder 125. The queue of pending requests are: 86, 1470, 913, 1774, 948, 1509, 1022, 1750 and 130 (in order). What is the total distance the r/w head moves to satisfy all the pending requests for SCAN and C-LOOK disc scheduling algorithm?

Q.20. Discuss about RAID (Redundant Array of Independent Disks) storage structure.

N: B-

1. **All the questions in 2<sup>nd</sup> internal examination will be from this assignment only. However, the order and no. of questions in internal exam may vary. Further, you may get some other short questions of 1 mark each in the original question paper.**
2. **All students are needs to submit this assignment within one week after the 2<sup>nd</sup> internal examination. After the deadline no submission will be entertained.**

Rashmi Ranjan Sahoo

Assistant Professor,

Department of CSE,

PMEC, Berhampur

Email: rashmiranjan.cse@pmec.ac.in