

Question Paper

Exam Date & Time: 01-Jun-2018 (09:30 AM - 12:30 PM)



MANIPAL ACADEMY OF HIGHER EDUCATION

INTERNATIONAL CENTRE FOR APPLIED SCIENCES
II SEMESTER B.Sc. DEGREE MAKE UP- EXAMINATION - MAY / JUNE 2018

DATE: 1 JUNE 2018

TIME : 9.30 AM TO 12.30 PM

Operating Systems [CS 245A]

Marks: 100

Duration: 180 mins.

Answer ANY FIVE full Questions.

Missing data, if any, may be suitably assumed

- 1) Write a short notes on Swapping with help of a neat diagram. What are the issues to be considered while swapping? (10)
 - A)
 - B)
- 2) How is protection of Memory space accomplished explain with help of a diagram. (10)
 - A)
 - B)
- 2) Given the Memory partitions of 100K, 500K, 200K, 300K and 600K (in order) how would each of the FIRST FIT, BEST FIT, and WORST FIT algorithms place processes of 212K, 417K, 112K and 426K (in order)? Which algorithm: makes the most efficient use of memory? (5)
 - A)
 - B)
 - C)
- 3) Differentiate between Internal Fragmentations Vs. External Fragmentation. List out the possible solutions. (5)
 - A)
 - B)
 - C)
- 3) Explain Translation Look-Aside Buffer? (10)
 - A)
 - B)
 - C)
- 3) Write the Bankers Algorithm. Using Bankers Algorithm, find out if the system is in Safe State or not. Calculate NEED MATRIX. Explain in detail all the Data Structures used. Give the Safe Sequence. (20)
 - A)
 - B)
 - C)

MAX		
7	5	3
3	4	4
9	2	2
2	3	3
4	3	3

AVAILABLE		
3	3	2

ALLOCATION		
0	1	0
2	2	2
3	2	2
2	2	2
0	0	2

- 4) Differentiate between Segmentation and Paging (10)
 - A)
 - B)
- 4) Explain the steps in Handling a Page Fault with help of a Diagram. (10)
 - A)
 - B)

- 5) Consider the following page-reference: string 2,3,2,1,5,2,4,5,3,2,5,2 and calculate the page faults that occur for the following replacement algorithms, assuming three frames i) FIFO ii)LRU iii)Optimal. (15)
- A)
- B) Explain what do mean by Belady's Anomaly? Does the above page reference result in Belady's Anomaly? (5)

Page Ref String	2	3	2	1	5	2	4	5	3	2	5	2
frame 0	2	2	2	2	5	5	5	5	3	3	3	3
1		3	3	3	3	2	2	2	2	2	5	5
2				1	1	1	4	4	4	4	4	2
Page fault												

- 6) Explain Microkernells. (5)
- A)
- B) Explain Virtual Machines. (10)
- C) Explain Layered Approach based OS. (5)
- 7) What are the two types of Threads? (5)
- A)
- B) What are Thread Libraries. (5)
- C) Explain the various Threading Models with advantage and disadvantage of each of the Models. (10)
- 9) What are the various services provided by the Operating systems. (5)
- A)
- B) What are the general methods to pass parameters to Operating systems. (5)
- C) What are the various states of a process explain with help of examples. (10)

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