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Code No: A0504, A5804

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

M.Tech I Semester Examinations, March/April-2011

OPERATING SYSTEMS

(COMMON TO COMPUTER SCIENCE, COMPUTER SCIENCE &
ENGINEERING)

Time: 3hours

Max. Marks: 60

Answer any five questions
All questions carry equal marks

1. a) Discuss the features of the following Operating Systems
 ii) Distributed Systems
 iii) Real Time Systems
 b) Discuss the virtual machines with examples. [12]
- 2.a) Explain Inter process Communication in detail.
 b) Burst times of 5 processes (p1, p2, p3, p4, p5) are 10, 1, 2, 4, and 5 units respectively. The Processes are assumed to have arrived in the order from p1 to p5. Draw the Gantt charts illustrating the execution of these processes using FCFS, SJF scheduling.[12]
3. Consider the following page reference string 1, 2, 3, 4, 2, 1, 5, 6, 2, 1, 2, 3, 7, 6, 3, 2, 1, 2, 3, 6 .how many page faults would occur for the following replacement algorithms assuming three and four frames. Remember that all frames are initially empty. So, your first unique pages will all cost one page-fault each.
 i) LRU replacement
 ii) FIFO replacement
 iii) Optimal replacement [12]
- 4.a) Describe the following directory structures
 i)Single- Level Directory
 ii)Two-Level Directory
 iii) Tree-Structured Directories
 b) Consider the following snapshot of a system

	<u>Allocation</u>			<u>max</u>			<u>available</u>		
	A	B	C	A	B	C	A	B	C
P0	0	1	0	7	5	3	3	3	2
P1	2	0	0	3	2	2			
P2	3	0	2	9	0	2			
P3	2	1	1	2	2	2			
P4	0	0	2	4	3	3			

Answer the following questions using the banker's algorithm:

- i)What is the content of the matrix Need?
 ii) What will be the safe sequence?
 iii) If a request from process P4 arrives for (3, 3, 0). Can the request be granted immediately. [12]

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5. a) Explain monitors
b) Discuss Dining-Philosophers problem. [12]
6. Explain remote procedure call for communication in Distributed systems. [12]
7. Explain how mutual exclusion can be achieved in Distributed systems. [12]
8. Write a note on Deadlocks Prevention in Distributed Systems. [12]

FIRSTRANKER