Santa Clara University

Department of Computer Engineering
Advanced Operating Systems (COEN383, Section-1)
Midterm (30 points) Answer all Question
Time: 60 minutes

Name _____

Grades

Problem 1	6	
Problem 2	6	
Problem 3	6	
Problem 4	6	
Problem 5	6	
Total	30	

1. Multiple jobs can run in parallel and finish faster than if they had run sequentially. Suppose that two jobs, each need 20 minutes CPU time, start simultaneously. How long will the last job take to complete if they run sequentially? How long if they run in parallel? Assume 50% I/O wait – 6pts?

   The approximate CPU utilization is = $\{1 - (\text{IO wait})^{\#\text{ of Processes}}\}$

2. You are given the following data about a virtual memory system [6 pts]:
   a) The TLB can hold 1024 entries and can be accessed in 1 clock cycle (1 nsec).
   b) A Page table entry can be found in total of 100 clock cycles or 100 nsec,
   c) The total average page fault time is 6 msec

   If page references are handled by the TLB 99% of the time, and only 0.01% lead to a page fault, what is the effective address-translation time?

3. What would happen if the bitmap or free list in memory containing the information about the free disk blocks was completely lost due to a crash? Is there any way to

recover from this disaster, or it is over to the disk? Discuss your answer for UNIX file system [6 pts]

4. Explain how an OS can facilitate installation of new device without any need for recompiling the OS? [6 pts]

5. A disk rotates at 7200 RPM. It has 500 sectors of 512 bytes around the outer cylinder. How long does it take to read a sector (only consider the data transfer component of the IO)? [6 pts]

PDF Converter

Only two pages were converted.

Please **Sign Up** to convert the full document.

www.freepdfconvert.com/membership