Santa Clara University

Department of Computer Engineering

Advanced Operating Systems (COEN383) - Final (30 points)

Time: 90 minutes

The test is 6 questions covering the topics below:

1. Study parallel processing paradigms in an environment where you have multi-core server? At what level (OS, application, etc.) we can do the parallelization (i.e., to take advantage of multi-core) and which one is more promising and why?

2. A) What techniques OS can help with to minimize TLB misses and their impact on page faults?

   B) What problem(s) you will encounter if you try to migrate a VM while it is running?

3. Can disabling interrupts handle concurrency correct? What are mutexes and condition variables and how they are used?

4. Authentication can be done many ways (e.g., password, card, fingerprint)? What do you think of combining some of these techniques to provide stronger authentication?

5. Few questions about Linux: Shell programming and pipeline. Make sure you understand what is Zombie process? How many modes you can ask for a lock on a resource? And when does a user ask for each mode?

   a. A user at a terminal types the following commands:
      a | b | c &
      d | e | f &
      How many processes are running?

b. …..
c. …..
d. ….....

6. Study Hadoop….
   a. Is Hadoop better for interactive or batch processing jobs?
   b. What is YARN….