USN ☐☐☐☐☐☐☐☐☐☐

First Semester M.Tech. Degree Examination, December 2011
Advances in Operating Systems

Time: 3 hrs.   Max. Marks:100

Note: *Answer any FIVE full questions.*

1 a. Explain the different views of software as a tool in solving problems.   (06 Marks)
   b. Distinguish operating systems from system software.   (04 Marks)
   c. Briefly explain the six different OS classes based on identifiable strategies adopted. Explain any one in detail.   (10 Marks)

2 a. Distinguish between sequential computation and multithreaded computation.   (08 Marks)
   b. Write a program that performs the following steps :
      i) Read the command line argument, N   ii) For 1 to N, create a new thread to execute simulated work   iii) Terminate after all threads have finished.   (12 Marks)

3 a. Describe the two techniques by which an OS provides kernel service to requesting programs.   (08 Marks)
   b. With a block diagram, explain the UNIX monolithic kernel architecture.   (12 Marks)

4 a. Explain the four primary approaches to OS design.   (10 Marks)
   b. Describe the two classes of OS used for systems, distributed over a network.   (10 Marks)

5 a. Explain how process and resource management is handled by process manager in LINUX OS.   (10 Marks)
   b. With the help of a block diagram, explain the virtual memory manager / system function of windows NT/2000.   (10 Marks)

6 a. With a block diagram, explain the TCP/IP protocol architecture.   (10 Marks)
   b. Explain in detail, the LINUX networking for TCP/IP processing, using sockets.   (10 Marks)

7 a. Explain the client / server architecture for database applications. How does it differ from the generic client / server architecture?   (10 Marks)
   b. What are the benefits of clustering? Explain.   (04 Marks)
   c. Explain the enhancements required to exploit the cluster hardware configuration by a single system OS.   (06 Marks)

8 a. Explain with illustrations, how global states are maintained and the distributed snapshot algorithm to record a consistent global state.   (12 Marks)
   b. Explain the two deadlock prevention techniques, used in distributed systems.   (08 Marks)

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