

Dr B R Ambedkar National Institute of Technology, Jalandhar

B Tech (Computer Science & Engineering)

CSX –332, Advanced Operating Systems (SET-B)**End Semester Examination, July 2020**

Duration: 90 Minutes

Max. Marks: 30

Date: 27th July 2020

Marks Distribution & Mapping of Questions with Course Outcomes (COs)										
Question Number	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>				
Marks	<u>5</u>	<u>5</u>	<u>5</u>	<u>5</u>	<u>5</u>	<u>5</u>				
CO No.	<u>1</u>	<u>3</u>	<u>3</u>	<u>2</u>	<u>1</u>	<u>3</u>				
Learning Level	<u>L</u>	<u>M</u>	<u>H</u>	<u>M</u>	<u>H</u>	<u>H</u>				

Note:

1. Attempt all the questions.
2. Write the answers in hard copy (on A4 or any other sheet available) using blue/black pen with their sign on top and bottom of each page. Also put page numbers on upper right corner of each page of the answer booklet.
3. The time allowed for writing examination is 90 minutes. Extra 20 minutes are allowed for scanning and sending the answer booklet.
4. Follow the instructions regarding submission of answer booklet as issued by examination section.

1. Suppose that you have n client machines connected to a server m . Consider a client n_i wants to synchronize its time with time server. Table shows the server responses with RTT and timestamp. Which one of these times should the client use to set its clock? To what time should it set it? Estimate the accuracy of the setting with respect to the server's clock. Further, if you discovered that time between sending and receiving a message in the system concerned is at least 8 ms, do your answers change?

Round-trip (ms)	Time (hr:min:sec)
22	10:54:23.674
25	10:54:25.450
20	10:54:28.342

2. Consider a chain of processes P_1, P_2, \dots, P_n implementing a multitiered client-server architecture. Process P_1 is client of process P_{i+1} , and P_i will return a reply to P_{i-1} only after receiving a reply from P_{i+1} . What are the main problems with this organization when taking a look at the request-reply performance at process P_1 ?
3. What are deadlock handling strategies in distributed systems? What is control organization for distributed deadlock detection? Discuss an algorithm which can remove phantom deadlocks?
4. To what extent does Sun NFS deviate from one-copy file update semantics? Construct a scenario in which two user-level processes sharing a file would operate correctly in a single UNIX host but would observe inconsistencies when running in different hosts.
5. State, with proper justification, which protocol, TCP or UDP, you prefer for the given application scenarios. Assume no firewall protection that may lead to blocking of particular protocol.
 - i. Live broadcasting of an IPL cricket match over the internet
 - ii. Email or Instant Messenger
 - iii. Sign-in to your Internet banking
 - iv. VoIP Application
 - v. Transferring a very large file
 - vi. Searching Windows directory service for a very small value
6. In the view of your online examination going on, you need to design a distributed system based application that allow the faculties to setup the exams. Describe the three major security related issues for such a system.