BHARATIYA VIDYA BHAVAN'S

SARDAR PATEL INSTITUTE OF TECHNOLOGY

MUNSHI NAGAR, ANDHERI (WEST), MUMBAI – 400 058, India

(Autonomous College Affiliated to University of Mumbai)

Regular Examination	
Max. Marks: 60	Duration: 2 hr
Class: TYMCA	Semester: V
Course Code: MCA51	Date: 21/11/20
Subject: Distributed Computing and Cloud Computing	Time: 10.30 a.m to 12.30 p.m
Instructions: (1) All questions are compulsory. (2) Assume any necessary data but justify the same.	

Q. No.	Questions	Max. Marks	CO
Q.1 A	Suppose a component of a distributed system suddenly crashes. How will this event inconvenience the users when:(2mks each) (I)The system uses the processor-pool model and the crashed component is a processor in the pool. (II)The system uses the processor-pool model and the crashed component is a user terminal. (III)The system uses the workstation-server model and the crashed component is a server machine. (IV)The system uses the workstation-server model and the crashed component is a user workstation.	8	1_2_1.3.1
B	Identify whether the operation is Idempotent or Non-Idempotent. Justify your answer for each case (i) Read_nextrecord(filename) (ii) Seek(filename:ABC ,position no.5) (iii) Add(5,5) (iv) Append_record(filename,record)	4	1_2_2.1.2
Q.2 A	Consider Processes P0, P1,P2 and P3 each having a unique id as 0,1,2,3 respectively.P3 being the highest is the coordinator. After sometime, P3 crashes . Which Election Algorithm will you suggest ? -1m- Explain the working of the Algorithm w.r.t to above scenario? -6m- Conclude in your approach how many messages are used ? -2m-	8	2_2_2.3.1
B	A LAN based distributed system has a three nodes N1,N2,N3 each having its own clock .The clock of the nodes N1,N2,N3 tick 600,610, and 595 times per second. The system uses external synchronization, in which all three nodes receive the real time every 30 seconds from an external time source and readjust their clocks. What is the maximum clock skew that will occur ?	4	2_2_2.3.1

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<tr><td>Q.3 A</td><td>Discuss relative advantages and Disadvantages of using large block size and small block size in the design of block based Distributed Shared Memory system ? Why do most system designers use Page size for implementing DSM ?
OR
How the shared memory consistency can be maintained in distributed systems with the help of various consistency models? Explain any two in detail.</td><td>6</td><td>2_2_2.2.3</td></tr>
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<tr><td>B</td><td>For the given data find out the the following and Conclude your answer
1. Execution Cost ,Communication cost & Total cost
Strategy I Assignment : t1 ->n1 , t2 ->n1, t3 ->n1, t4 ->n2, t5 ->n2, t6 ->n2.
Strategy II Assignment : t1 ->n1, t2 ->n1, t3 ->n1, t4 ->n1, t5 ->n1, t6 ->n2
Intertask Communication cost
<table>
<tr><td></td><td>t1</td><td>t2</td><td>t3</td><td>t4</td><td>t5</td><td>t6</td></tr>
<tr><td>t1</td><td>0</td><td>5</td><td>3</td><td>0</td><td>0</td><td>11</td></tr>
<tr><td>t2</td><td>5</td><td>0</td><td>7</td><td>11</td><td>2</td><td>0</td></tr>
<tr><td>t3</td><td>3</td><td>7</td><td>0</td><td>0</td><td>10</td><td>0</td></tr>
<tr><td>t4</td><td>0</td><td>11</td><td>0</td><td>0</td><td>4</td><td>0</td></tr>
<tr><td>t5</td><td>0</td><td>3</td><td>10</td><td>4</td><td>0</td><td>0</td></tr>
<tr><td>t6</td><td>11</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr>
</table>
Execution Cost
<table>
<tr><td></td><td>N1</td><td>N2</td></tr>
<tr><td>t1</td><td>5</td><td>10</td></tr>
<tr><td>t2</td><td>2</td><td>---</td></tr>
<tr><td>t3</td><td>4</td><td>4</td></tr>
<tr><td>t4</td><td>6</td><td>3</td></tr>
<tr><td>t5</td><td>5</td><td>2</td></tr>
<tr><td>t6</td><td>--</td><td>4</td></tr>
</table></td><td>6</td><td>3_2_2.2.5</td></tr>
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Q.4A	How would you categorize different address space mechanism? Which is the easiest to Implement?	6	3_2_2.2.4
Q4.B	Suppose you have to design a load balancing algorithm for a distributed system. Examine which of the selfish, altruistic and intermediate priority assignment policies will you use in your algorithm if the distributed system is based on Workstation-server model. OR In your opinion which is the most suitable cache location to access the data faster from Clients perspective , from the following :-Server Main memory, Servers Disk, Client's Disk and Clients Main memory. Conclude your answer by giving suitable Reasons.	6	3_2_2.2.3
Q.5A	Outline the main characteristics of Cloud Computing. OR Demonstrate any one Deployment Models of Cloud in detail.	6	4_2_2.2.2
B	Summarize Identity and Access Management in Cloud Computing.	6	4_2_2.2.2