

1ST Internal Examination, 2022

M.Sc. (CS/IT), 3RD Semester

GAUHATI UNIVERSITY

DISTRIBUTED SYSTEMS (CSC3026/INF3026)

Time: $1\frac{1}{2}$ Hours

Total Mark: 30

The figures in the margin indicate full marks for the questions

1. Choose the Correct Answer:

1x5=5

[i]. Which event is concurrent with the vector clock (2, 8, 4)?

- [a]. (3, 9, 5) [c]. (1, 7, 3)
[b]. (3, 8, 4) [d]. (4, 8, 2)

[ii]. The ----- of distributed system is determined primarily by the degree to which new resource- sharing services can be added and be made available for use by a variety of client programs

- [a]. Openness [c]. Transparency
[b]. Resource Sharing [d]. Scalability

[iii]. The transparency that enables accessing local and remote resources using identical operations are called astransparency. (fill in the blank)

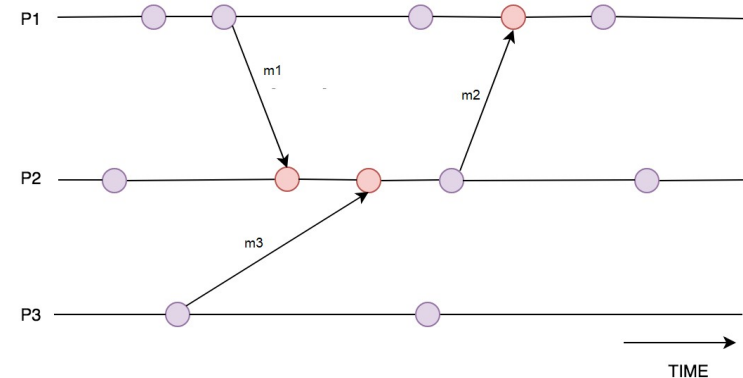
[iv]. Berkely's and Christian's clock synchronization methods are type of _____

- [a]. Logical clock synchronization method
[b]. Physical clock Synchronization method
[c]. Scalar clock synchronization method
[d]. Vector clock synchronization method

[v]. A client's clock reads 3:20:00. The server's clock reads 3:10:00 when they synchronize using the Berkeley algorithm. Assume message delays are negligible. What is the time at the client after synchronization?

- [a]. 3:20:00 [c]. 3:15:00
[b]. 3:15:15 [d]. 3:15:10

2. What is distributed system? State two disadvantages of distributed system. 2+2=4
3. Differentiate between Clock Skew and Clock Drift with example. 2
4. Define any two types of *transparencies* needed in distributed system. 3
5. Explain any two challenges involved in designing distributed system applications. 3
4. Differentiate between *External* and *Internal* Clock synchronization. Explain briefly. 2
5. State the *Happened Before Relationship* in Distributed Event Ordering. 3
6. Consider a system consisting of three processes P1, P2 and P3 as shown below. Synchronize the given system using *Vector Clock*. (N.B. *only show the vector time of each events after synchronization*) 4



7. Write Short notes: (any one)

- (a) Mobile Code and Mobile Agents
(b) Network Time Protocol
(c) Berkeley Algorithm
(d) Object based Architectural Style of Distributed System