

Distributed Computing [DC]

B.E. Sem. VIII [CMPN]

EVALUATION SYSTEM

	Time	Marks
Theory Exam	3 Hrs.	100
Oral Exam	–	25
Term Work	–	25

SYLLABUS

Objective : This course aims to build concepts regarding the fundamental principles of distributed systems. The design issues and distributed system concepts are covered

Pre-requisites : Operating Systems and Computer network.

1. Fundamentals

Distributed computing, system model, distributed operating system, designing operating system, Introduction to DCE.

2. Message Passing

Desirable features message passing system, Issues in message passing, synchronization, buffering, mult Datagram messages , Encoding and decoding of message data, Process addressing, Failure handling, Group communication.

3. Remote procedure call

RPC model, Transparency of RPC, implementing RPC mechanism, Stub generation, Marshaling arguments and Results, Server Management, Parameter-passing Semantics , call Semantics, Communication protocols for RPCs, Complicated RPC Client server binding, Exception Handling , Security, special types of RPCs, RPCs in Heterogeneous Environments, Lightweight RPC, Optimizations for better performance.

4. Distributed Shared Memory

General architecture of DSM systems, Design and implementation of DSM, Granularity, structure of shared memory space, consistency models, Replacement Strategy, Thrashing, other approaches to DSM, Heterogeneous DSM, and Advantages of DSM.

5. Synchronization

Clock synchronization, event ordering, mutual exclusion, Deadlock, Election Algorithm.

6. Resource and Process Management

Desirable Features of global Scheduling algorithm, Task assignment approach, Load balancing approach, load sharing approach, Introduction to process management, process migration, Threads.

7. Distributed File Systems

Introduction, good features of DFS, File models, File Accessing models, File sharing Semantics, File-Caching Schemes, File Replication, Fault Tolerance, Atomic Transactions and design principles.

8. Naming

Introduction, Desirable features of Naming system, Fundamental concepts, System oriented Names, Object locating mechanisms, human oriented Names, Name Caches and Naming and Security.

References

1. Distributed Operating Systems : Concepts and design (*Pradeep K Sinha*) IEEE computer society press
2. Distributed Operating System (*A. Tanuenbaum*) Pearson Edition
3. Distributed Systems Architecture : Middleware approach (*PUDER, ROMER*) ELSEVIER publication.
4. Distributed Systems : Concepts and design (*G. Coulouris, J. Dollimore and T. Kindberg*) Pearson Edition.
5. Advanced Concepts in Operating Systems (*M. Singhal, N. Shivaratri*) TMH.

