MOHAMMED SATHAK A J COLLEGE OF ENGINEERING

Siruseri IT park, OMR, Chennai - 603103

LESSON PLAN

Department of Computer Science and Engineering

Name of the Subject	Distributed Systems	Name of the handling Faculty	
Subject Code	CS8603	Year / Sem	III/VI
Acad Year	2021-2022	Batch	2019-2023

Course Objective

Understanding foundation of Distributed systems

Introduce the idea of peer to peer services and file system.

Understand in detail the system level and support required for distributed systems.

Understand the issues involved in studying process and resource management

Course Outcome

Upon completion of the course, the students will be able to:

CO1 :Elucidate the foundations and issues of distributed systems

CO2:Gain knowledge about distributed shared memory

CO3 :TO gain knowledge the file accessing model and various services in distributed system

CO4 :Describe the features of peer-to-peer and distributed shared memory systems.

CO5 :Discuss resource and process management in distributed system

Lesson Plan

Sl. No.	Topic(s)	T / R* Book	Periods Required	Mode of Teaching (BB / PPT / NPTEL / MOOC / etc)	Blooms Level (L1-L6)	CO	PO
	UNIT I INTRODUCTION						
1	Introduction, Relation to computer system components, motivation	**T1**	**1**	**BB**	**L2**	CO1	PO1
2	relation to parallel systems, Message passing system vs shared memory	**T1**	**1**	**BB**	**L2**	CO1	PO1
3	synchrounus vs asynchronous, Design issues and challenges	**T1**	**1**	**BB**	**L1**	CO1	PO1
4	Models of distributed computation, distributed program, model of distributed executions	**T1**	**1**	**BB**	**L1**	CO1	PO1
5	Models of communication network,	**T1/W1**	**1**	**BB**	**L2**	CO1	PO1
6	global state cuts, past and future cones of an event	**T1/W2**	**1**	**BB**	**L3**	CO1	PO1
7	Models of process communication,	**T1/W1**	**1**	**BB**	**L4**	CO1	PO1
8	logical time, scalar time	**T1/W2**	**1**	**BB**	**L5**	CO1	PO2
9	Vectot time, physical clock synchronization	**T1/W1**	**1**	**BB**	**L2**	CO1	PO2

Suggested Activity: Assignment / Case Studies / Tuorials/ Quiz / Mini Projects / Model Developed/others Planned if any **Assignment**

Evaluation method: Assignments and direct Interaction during intervals

	UNIT II MESSAGE ORDERING & SNAPSHOTS						
10	Message ordering and group communication: Message ordering Paradigms,	**T1**	**1**	**PPT/BB**	**L2**	CO2	PO1
11	Asynchronous Executions with Synchronous communication	**T1**	**1**	**PPT/BB**	**L2**	CO2	PO1
12	Synchronous program order on a Asynchronous system	**T1**	**1**	**PPT/BB**	**L3**	CO2	PO2

13	Group Communication,	**T1/W1**	**1**	**PPT/BB**	**L2**	CO2	PO2
14	Causal Order	**T1**	**1**	**PPT/BB**	**L3**	CO2	PO2
15	Total Order,	**T1**	**1**	**PPT/BB**	**L2**	CO2	PO2
16	Global state and Snapshot Recording Algorithms introduction	**T1**	**1**	**PPT/BB**	**L3**	CO2	PO3
17	system Models and defenitions	**T1**	**1**	**PPT/BB**	**L4**	CO2	PO2
18	Snapshot Algorithm for FIFO Channels	**T1**	**1**	**PPT/BB**	**L3**	CO2	PO2
Suggested Activity: Assignment / Case Studies / Tuorials/ Quiz / Mini Projects / Model Developed/others Planned if any : Assignment							
Evaluation method: Mark Based							
UNIT III DISTRIBUTED MUTEX & DEADLOCK							
19	Distributed Mutual Exclusion Algorithms: Introduction	**T1**	**1**	**BB**	**L2**	CO3	PO1, PO2
20	Preliminaries, Lamports algorithm	**T1**	**1**	**BB**	**L2**	CO3	PO1-3
21	Ricart Agarawala algorithm, Maekawa's algorithm	**T1**	**1**	**BB**	**L2**	CO3	PO1-3
22	Suzuki- Kasami's broadcast Algorithm	**T1/W1**	**1**	**BB**	**L2**	CO3	PO1-3
23	Dead Detection in distributed systems: Introduction	**T1**	**1**	**BB**	**L3**	CO3	PO1-3
24	System Models, Preliminaries	**T1**	**1**	**BB**	**L2**	CO3	PO2
25	Models of deadlocks	**T1**	**1**	**BB**	**L2**	CO3	PO2
26	Knapp's Classification	**T1**	**1**	**BB**	**L3**	CO3	PO2
27	Algorithm for Single resource model.	**T1**	**1**	**BB**	**L2**	CO3	PO1
28	Algorithm for AND Model , OR model	**T1**	**1**	**BB**	**L2**	CO3	PO1-3
Suggested Activity: Assignment / Case Studies / Tuorials/ Quiz / Mini Projects / Model Developed/others Planned if any : Assignment							
Evaluation method: Mark Based							
UNIT IV RECOVERY & CONSENSUS							
29	Checkpointing and rollback recovery introduction	**T1**	**1**	**BB**	**L2**	CO4	PO1
30	Background and defenitions	**T1**	**1**	**BB**	**L1**	CO4	PO2
31	issues in failure Recovery, Checkpoint based recovery	**T1/W1**	**1**	**BB**	**L2**	CO4	PO1-3
32	Log Based Rollback Recovery, Co-Ordinated Checkpointing Algorithm	**T1**	**1**	**BB**	**L3**	CO4	PO2
33	Algorithm for Asynchronous Checkpointing and Recovery	**T1**	**1**	**BB**	**L2**	CO4	PO2
34	Cosensus Agreement Algorithms: problem Definition	**T1**	**1**	**BB**	**L3**	CO4	PO1-3
35	Overview and results	**T1**	**1**	**BB**	**L3**	CO4	PO1-3
36	Agreement in a failure	**T1**	**1**	**BB**	**L3**	CO4	PO1-3
37	Agreement in Synchronous systems with failures	**T1**	**1**	**BB**	**L4**	CO4	PO2
Suggested Activity: Assignment / Case Studies / Tuorials/ Quiz / Mini Projects / Model Developed/others Planned if any : Quiz							
Evaluation method: Mark Based							
UNIT V P2P & DISTRIBUTED SHARED MEMORY							

38	P2P, Introduction , data indexing overlays	**T1**	**1**	**PPT/BB**	**L2**	CO5	PO2
39	chord	**T1**	**1**	**PPT/BB**	**L2**	CO5	PO2
40	Content addressable networks	**T1/W1**	**1**	**PPT/BB**	**L2**	CO5	PO1-3
41	Tapestry	**T1**	**1**	**PPT/BB**	**L2**	CO5	PO1
42	Distributed shared Memory	**T1**	**1**	**PPT/BB**	**L3**	CO5	PO2
43	abstraction and advantages	**T1**	**1**	**PPT/BB**	**L3**	CO5	PO1-3
44	Memory Consistency Models	**T1/W1**	**2**	**PPT/BB**	**L3**	CO5	PO2
45	Shared memory Mutual Exclusion	**T1**	**1**	**PPT/BB**	**L3**	CO5	PO2

Suggested Activity: Assignment / Case Studies / Tuorials/ Quiz / Mini Projects / Model Developed/others Planned if any : Assignment

Evaluation method: Mark Based

Content Beyond the Syllabus Planned

1	Cloud Computing
2	Map Reduce

Text Books

1	George Coulouris, Jean Dollimore and Tim Kindberg, "Distributed Systems Concepts and Design", Fifth Edition, Pearson Education, 2012.

Reference Books

1	Pradeep K Sinha, "Distributed Operating Systems: Concepts and Design", Prentice Hall of India, 2007.
2	Tanenbaum A.S., Van Steen M., "Distributed Systems: Principles and Paradigms", Pearson Education, 2007
3	Liu M.L., "Distributed Computing, Principles and Applications", Pearson Education, 2004.
4	Nancy A Lynch, "Distributed Algorithms", Morgan Kaufman Publishers, USA, 2003.

Website / URL References

1	https://www.brainkart.com/subject/Distributed-Systems_138/

Blooms Level

Level 1 (L1) : Remembering **Level 2 (L2) : Understanding** **Level 3 (L3) : Applying**	Lower Order Thinking	Fixed Hour Exams	**Level 4 (L4) : Analysing** **Level 5 (L5) : Evaluating** **Level 6 (L6) : Creating**		Higher Order Thinking	Projects / Mini Projects

Mapping syllabus with Bloom's Taxonomy LOT and HOT

Unit No	Unit Name	L1	L2	L3	L4	L5	L6	LOT	HOT	Total
Unit 1	**INTRODUCTION**	6	1	0	0	0	0	7	0	7
Unit 2	**MESSAGE ORDERING & SNAPSHOTS**	0	5	**4**	**1**	**0**	**0**	9	1	10
Unit 3	**DISTRIBUTED MUTEX & DEADLOCK**	0	8	**2**	**0**	**0**	**0**	10	0	10
Unit 4	**RECOVERY & CONSENSUS**	1	3	**4**	**1**	**0**	**0**	8	1	9
Unit 5	**P2P & DISTRIBUTED SHARED MEMORY**	0	4	**5**	**0**	**0**	**0**	9	0	9
Total		7	21	15	2	0	0	43	2	45
Total Percentage		15.5556	46.6667	33.3333	4.44444	0	0	95.5556	4.44444	100

CO PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	**3**	**2**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	3	2
CO2	**3**	**2**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	3	2
CO3	**3**	**2**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	3	2
CO4	**3**	**2**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	3	2
CO5	**3**	**2**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	3	2
Avg	**3**	**2**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	3	2

3	**High level**	**2**	**Moderate level**	**1**	Low level		

Name & Sign of Faculty Incharge :

Name & Sign of Subject Expert	:
Head of the Department	:

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