Distributed Systems

Course Objectives

 To expose the fundamentals of distributed computer systems, assuming the availability of facilities for data transmission.

 To discuss multiple levels of distributed algorithms, distributed file systems, distributed databases, security and protection.

Course Outcomes

Create models for distributed systems.
Apply different techniques learned in the distributed system.

UNIT I

Introduction to Distributed Computing Systems, System Models, and Issues in Designing a Distributed Operating System, Examples of distributed systems.

UNIT II

Features of Message Passing System, Synchronization and Buffering, Introduction to RPC and its models, Transparency of RPC, Implementation Mechanism, Stub Generation and RPC Messages, Server Management, Call Semantics, Communication Protocols and Client Server Binding.

UNIT III

Introduction, Design and implementation of DSM system, Granularity and Consistency Model, Advantages of DSM, Clock Synchronization, Event Ordering, Mutual exclusion, Deadlock, Election Algorithms.

UNIT IV

Task Assignment Approach, Load Balancing Approach, Load Sharing Approach, Process Migration and Threads.

UNIT V

File Models, File Accessing Models, File Sharing Semantics, File Caching Schemes, File Replication, Atomic Transactions, Cryptography, Authentication, Access control and Digital Signatures.

Reference Books

1.Pradeep. K. Sinha: " Distributed Operating Systems: Concepts and Design " , PHI, 2007.

2 .George Coulouris, Jean Dollimore, Tim Kindberg: " Distributed Systems" , Concept and Design, 3rd Edition, Pearson Education, 2005.

Student Activity

1. Implementation of Distributed Mutual Exclusion Algorithm.

2. Create a Distributed Simulation Environment.

Distributed Systems Lab

Objective:
It covers all the aspects of distributed system. It introduce its readers to basic concepts of middleware, states of art middleware technology

Outcomes:
1. Students will get the concepts of Inter-process communication
2. Students will get the concepts of Distributed Mutual Exclusion and Distributed Deadlock Detection algorithm.

1. To study client server based program using RPC.

2. To study Client server based program using RMI.

3. To study Implementation of Clock Synchronization (Logical/Physical)

4. To study Implementation of Election algorithm.

5. To study Implementation of Mutual Exclusion algorithms.

6. To write program multi-threaded client/server processes.

7. To write program to demonstrate process/code migration.

PR GOVT COLLEGE (A):: KAKINADA
B.Sc(Computer Science)
III B.Sc Computer Science VI-Semester
MODEL QUESTION PAPER
Paper - VIII : Elective – II : (Cluster B) DISTRIBUTED SYSTEMS

Time : 2:30 Hours   Max.Marks:60

SECTION-A

Answer the following questions: **5x 1=5M**
1. Define Distributed System?
2. Define RPC?
3. Define DSM?
4. What is Thread?
5. What is File?

SECTION – B

Answer any **Three** of the following questions   **3x5=15M**
6. Write the Advantages of DS over Centralized systems.
7.   Write about Dis advantages of DS.
8. Explain Group Communication.
9. What is Distributed Shared Memory(DSM)? Write the advantages of DSM.
10. Explain about Deadlock.
11. Write about Process Migra

SECTION - C

Answer **ALL** the following questions.   **4 x10 = 40 M**

12. a) Write about Challengesof Distributed System
    .   (or)
       b) Describe the issues in Distributed Operating System.
13. a) Explain RPC Protocols
                         (or)
       b) Explain about the working of RPC .
14. a) Explain about Implementation of Distributed File

   Systems. (or)

          b)Write about Election Algorithm.
15. a) Explain about Thread in Distributed System.
                   (or)
      b) Write about Load Balancing Approach.

SUBJECT: (Cluster B) DISTRIBUTED SYSTEMS   Time: 2:30 Hrs
PAPER- VIII   Marks: 60

Model Blue print for the question paper setter

Chapter Name	Essay Questions 10 Marks	Short Questions 5 Marks	Very Short Questions 1 Marks	Marks allotted to the chapter
Module-1	2	2	1	31
Module-2	2	1	1	26
Module-3	1	2	1	21
Module-4	1	0	1	11
Module-5	2	1	1	26
Total No. of questions	8	6	5	
Total Marks Including choice				115

Model blue print for the model paper and choice

S.NO	Type of Question	To be given in the Question Paper			To be answered		
		No. of Questions	Marks allotted to each question	Total Marks	No. of Questions	Marks allotted to each question	Total Marks
1	Section-A Very Short Questions	5	1	5	5	1	5
2	Section-B Short Questions	6	5	30	3	5	15
3	Section-C Essay Questions	8	10	80	4	10	40
TOTAL MARKS				**115**	**TOTAL MARKS**		**60**

Percentage of choice given = $\dfrac{115 - 60}{115}$ x 100= $\dfrac{55}{115}$ x 100 = 48.72%