WARNING
1. PLAGIARISM OR HIRING OF GHOST WRITER(S) FOR SOLVING THE ASSIGNMENT(S) WILL DEBAR THE STUDENT FROM AWARD OF DEGREE/CERTIFICATE, IF FOUND AT ANY STAGE.
2. SUBMITTING ASSIGNMENTS BORROWED OR STOLEN FROM OTHER(S) AS ONE’S OWN WILL BE PENALIZED AS DEFINED IN “AIOU PLAGIARISM POLICY”.

Course: Distributed Computing (3485)
Level: Bachelor
Semester: Spring, 2013
Total Marks: 100

ASSIGNMENT No. 1
Note: All questions carry equal marks.

Q.1 What are the procedures and techniques that are used for high assurance communication? Elaborate.
Q.2 Explain the process of even occurring and allocating resources in a distributed environment.
Q.3 Discuss the major things that are considered to be necessary for reliability in distributed computing.
Q.4 What are the techniques adopted in distributed environment for failure controlling and resources availability?
Q.5 Describe the advantages of dynamic group membership and scalability.

ASSIGNMENT No. 2
Total Marks: 100
Note: All questions carry equal marks.

Q.1 Define virtuosity. Explain the virtually synchronous algorithms and tools use for execution model.
Q.2 Explain the process wrapping? How simple RPC wrapping occurred?
Q.3 Describe the advantages of flexible group communication.
Q.4 Explain the masking of the overhead of protocol layering.
Q.5 Give detail explanation of security options for distributed setting.
3485 Distributed Computing  
Credit Hours: 4 (3 + 1)

Recommended Book:
Reliable Distributed Systems: Technologies, Web Services and Applications by Kenneth P. Birman

Course Outline:

Unit# 1 Basic Distributed Computing Technologies
- Basic Communication Services
- High Assurance Communication
- Remote Procedure Calls and Client Server Model
- Styles of Client/Server Computing, CORBA

Unit# 2 Distributed Computing Theory
- The Computational Model, Leaders Election
- Spares Network Covers and their applications,
- Ordering Events & Resource Allocation
- Tolerating Processor Failure in Synchronous and Asynchronous Systems

Unit# 3 Reliable Distributed Computing
- Hardware/ Software Reliability and Trends
- Other Sources of Downtime
- Complexity, Detecting Failures
- Hostile Environments

Unit# 4 Overcoming Failures in a Distributed System
- Consistent Distributed Behavior, Static/ Dynamic Membership
- Formalizing Distributed Problem Specifications
- Time in Distributed Systems
- Failure Models and Reliability Goals
- The Distributed Commit Problem

Unit# 5 Dynamic Membership
- Dynamic Group Membership
- Replicated Data with Malicious Failure
- The Impossibility of Asynchronous Consensus (FLP)
- Extending Our Protocol into the Full GMS, Scalability

Unit# 6 The Virtual Synchrony Execution Model
- Virtual Synchrony
- Extended Virtual Synchrony
- Virtually Synchronous Algorithms and Tools
- Consistency in Distributed Systems

Unit# 7 Applications of Reliability Techniques
- Wrappers and Toolkits
- Wrapping a Simple RPC Server
- Reliability Distributed Shared Memory

Unit# 8 Software Architecture for Group Communication
- Architecture Considerations in Reliable Systems
- The Flexibility Group Communication, Protocol Stacks
- Use & performance of Horus
- Masking the Overhead of Protocol Layering

Unit# 9 Related Technologies
- Security Options for Distributed Settings
- Clock Synchronization and synchronous Systems
- Transactional Systems
- Peer-to-Peer Systems and Probabilistic Protocol