ALLAMA IQBAL OPEN UNIVERSITY, ISLAMABAD
(Department of Computer Science)

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 Sever
    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