Assignment 1: Distributed Object Storage Implementation

Weight: 20% | Maximum Score: 100 Points | Due: End of Week 3

Objective: Build a fault-tolerant chunk-based file storage system utilizing consistent hashing.

Task 1: Implement Consistent Hashing Ring with virtual nodes 30 pts.

Task 2: Implement Replication Factor R=3 with quorum consensus 30 pts.

Task 3: Failure detection and node re-balancing heartbeat protocol 30 pts.

Task 4: Unit tests and benchmark performance report 10 pts.

Submit your code repository zip file along with your written analysis report.