Project Topics

Spring 8980
1. Reliable Group Communication

• Implement causal and atomic broadcast
• Include group membership management
• Include support for fault-tolerance and reliable delivery
• Measure performance and scalability
• Appropriate for a group of 3
2. Impact of Failures on MapReduce Applications

• Study the impact of failures on performance of MapReduce applications
• Failure injection at different stages to evaluate how performance is affected
• Appropriate for a group of 2
3. Performance Evaluation of HBase

• Benchmarking of Hbase for a range of operations.
• Determine how scaling out affects performance
• Impact of failures on performance
• Appropriate for a group of 2
4. Performance Evaluation of HBase

• Dynamic and automatic scaling of HBase applications.
• Continuously measure load and performance, and then scale out when it crosses some bound.
• Appropriate for a group of 2
5. Implementation Paxos Protocol

• Implement Paxos with dynamic group configuration
• Use this protocol for building a resilient service
• Appropriate for a group of 2
6. Fault tolerant data storage in DHT Systems

• Develop and integrate a suitable data replication management and fault-tolerance protocol in either:
  – Chord or Pastry
  – FreePastry is an open-source DHT available but does not have support for fault-tolerance

• Appropriate for a group of 2-3 students