Executive Summary

Project 4 is to add fault tolerance to the key-value system. It replaced 2PC with Paxos for consensus among replicated servers. It implements Paxos roles: Proposers, Acceptors, and Learners. This project focuses on the algorithmic steps for consensus in event ordering. Client threads can send requests to any replica at any time.

Fault Tolerance:

- Acceptor threads must be configured to "fail" randomly.
- Implement failure simulation for acceptors (e.g., killing threads after random time periods).
- Restart acceptor threads after a delay, resuming functions without previous state.

Implementation Details:

- Roles can be implemented as threads.
- The system should continue operating despite replica failures.

Client Operations:

- Pre-populate the Key-Value store with data and keys.
- Perform at least 5 PUTs, 5 GETs, and 5 DELETEs after populating the store.

Technical impression:

5 servers were connected to each other, but got error “Failed to get quorum for prepare phase. Received 1 promises, needed 2”.

How to run:

1.Cd to the working path

2.Comply all the java files: javac *.java

3.Run the Server class in separate terminals: java Server 8010 8011 8012 8013 8014 0

java Server 8011 8010 8012 8013 8014 1

java Server 8012 8010 8011 8013 8014 2

java Server 8013 8010 8011 8012 8014 3

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java Server 8014 8010 8011 8012 8013 4
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4.Run the Client class: java Client localhost 8010 localhost 8011 localhost 8012 localhost 8013 localhost 8014