Design and Implementation of Distributed Applications

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Implementation

To address the problem of consensus, we implemented the **Paxos algorithm**, specifically the version with three roles: proposer, acceptor, and learner. Additionally, to enable configuration changes, we opted for the **Stopping Paxos** strategy.

Data structures

Consensus Loop (Leader Perspective):

- Every server has a consensus loop that starts a new consensus (from the leader's perspective).
- The consensus is only initiated if the server is the leader and there are pending transactions.
- Every command that the leader runs is in this file (except for method calls made within the same file).

Server State (Replica Perspective):

- The ServerState class contains only the code relevant to the replica servers (non-leader perspective).
- This code implements the replica's perspective only.
- In most cases, the replica server code simply responds to requests from the leader server or from the client/console.

Notes

Mode: Premium

The base port may be set to `localhost:8081` instead of `localhost:8080` due to a previous error on port `8080`. We reviewed the configuration and believe it is now corrected, though we cannot test it due to the error mentioned above.