**Distributed Consensus Initial Design**

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**Information/control flow between the processes (IPC)**

UDP Socket

**Failure cases**

Case 1- in phase one, coordinator fails before sending/ receiving messages from all participants:

Each participant sets a timer after replying to the coordinator. If timeout (participant does not receive second phase message from the coordinate), then this whole request is dumped by the participant.

Case 2 - in phase one, one or more participants fails to send reply messages back to the coordinator:

The coordinator sets a timer. If timeout (the coordinator fails to receive messages from one or more participates), the the request will be discarded.

Case 3 - in phase two, one participant fails:

The coordinator continues to send commit/ abort message to the next participant. (When the failed participant recovers, it sends a query to ask its neighbor current balance.)

Case 4 - in phase two, the coordinator fails:

The case cannot be handled by two phase commit protocol.

**Programming Languages**

C++

**Project Testing**

Run five instances of processes to simulate five ledgers connected with UDP socket. Testing error cases 1-3 mentioned above. Try all the three supported operations: credit, debit and query.

**Possible Applications**

Distributed information system, bitcoin, etc

**Work breakdown structure of your design**

UDP socket - Anjie Wang

Logic of Two Phase Protocol and error handling - Jiachen Wang