Distributed Transactions

Foundations of Distributed Systems
Lab Guide 5

2019/2020

Consider a distributed system where a set of processes commits distributed transactions. Choose one of them, arbitrarily, as the coordinator. For simplicity, assume that the state to persist is just the transaction identifier.

Steps

1. Implement the 2-phase commit protocol.
2. Run one of the processes in an interactive debugger to stop it at different phases.
3. Make the process crash at different phases.
4. Repeat the previous step for the coordinator process.

Questions

1. What interfaces are exposed by the coordinator and the participants?
2. When does a process failure lead to transaction abort?
3. When does a process failure lead to blocking?
4. What is the instant when the transaction is considered commited?

Learning Outcomes Apply 2-phase commit to achieve atomicity in a distributed sttem. Understand failure and recovery modes in a distributed transaction system.