Conflict-Free Replicated Data Types

Lattice Theory for Parallel Programming

Goals

✴ Understanding the basics of CRDTs.

✴ Implementing the G-Counter CRDT.

Exercise 1 – Simulating Network Failure

The following exercices are written in a language-agnostic fashion, so that you can use the programming language of your choice.

1. Implement an overlay of a socket such that messages are not reliably sent (50% rate of failure).

2. To test your implementation, implement a small network application such that two clients communicate with each other through this fake socket interface.

Exercise 2 – G-Counter CRDT

1. Make a small UI such that both clients can click on a button to increment a counter.

2. Implement the G-Counter CRDT as seen in class. You can use a simple gossip protocol between the clients triggered every 10 seconds through the fake socket interface.

3. Is the counter of the clients eventually consistent? Test your implementation with different scenario.