EECS 498 - 003 Lab 8

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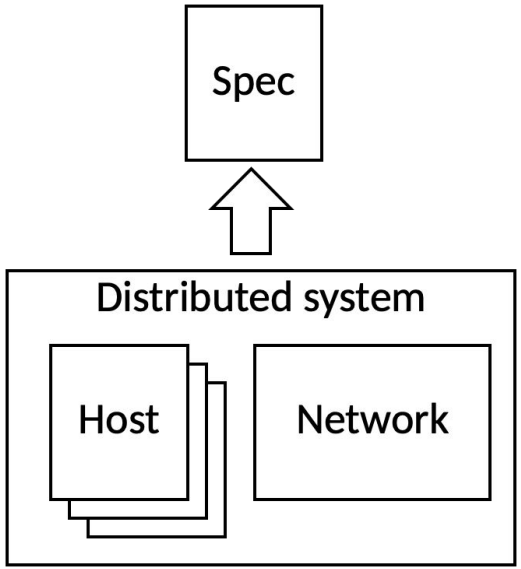
Agenda

- Finish Parallel Sum Proof
- Practice refinement/writing protocols with slightly less relaxed counter protocol

Refinement

- Goal : Showing that a complex/distributed system behaves exactly like a simpler state machine
- We typically show that a distributed system behaves like a sequential program (this is not *always* the goal)
- Refinement can be also multilevel



Event Based Refinement

- We can reason about the correctness of our system only through the world-visible events
- Our spec can be defined in a way that doesn’t require implementation details of the protocol

Parallel Reduction

- Protocol:
  1. N servers each receive the a portion of a large array
  2. Each computes their own portion of the sum independently
  3. After Computing sum, send to a designated leader (server 0 in our case)
  4. Server 0 sums the value and replies with it

Counter with Bag of Messages Network Model

- Recall in lecture, we had used a relaxed version of a network model when doing refinement for counter
- We will implement counter with our general network model, modify our protocol and add new abstraction and proof
- Model from class example: remove messages from network when they are delivered
- Bag of messages model: messages never removed network