Channels

Exercise 1 The perfect point-to-point links abstraction allows messages from one sender to arrive at a receiver in a different order than they were sent. Some applications rely on *first-in first-out* (FIFO) order communication, however. Specify a FIFO-order perfect point-to-point links abstraction which ensures, in addition to the guarantees of perfect point-to-point links, that messages are not reordered.

Exercise 2 Provide an implementation of FIFO-order perfect point-to-point links (*Exercise 1*) on top of perfect point-to-point links using sequence numbers.

Exercise 3 Does the following statement satisfy the synchronous-computation assumption? "On my server, no request ever takes more than one week to be processed."

Exercise 4 In a fail-stop model, which of the following properties are safety properties?

1. every process that crashes is eventually detected;
2. no process is detected before it crashes;
3. no two processes decide differently;
4. no two correct processes decide differently;
5. every correct process decides before t time units;
6. if some correct process decides, then every correct process decides.