Distributed Systems

COMP90015 2018 Semester 2
Tutorial 02

Questions for Today

Q1. Briefly discuss three aspects of the Socket interface.

Q2. Briefly explain three possible failures that can happen when using UDP for communication.

Q3. Briefly explain three aspects of TCP that address issues not addressed by UDP.

Q4. List the steps involved at the client and at the server to establish a TCP stream socket connection.

Sockets

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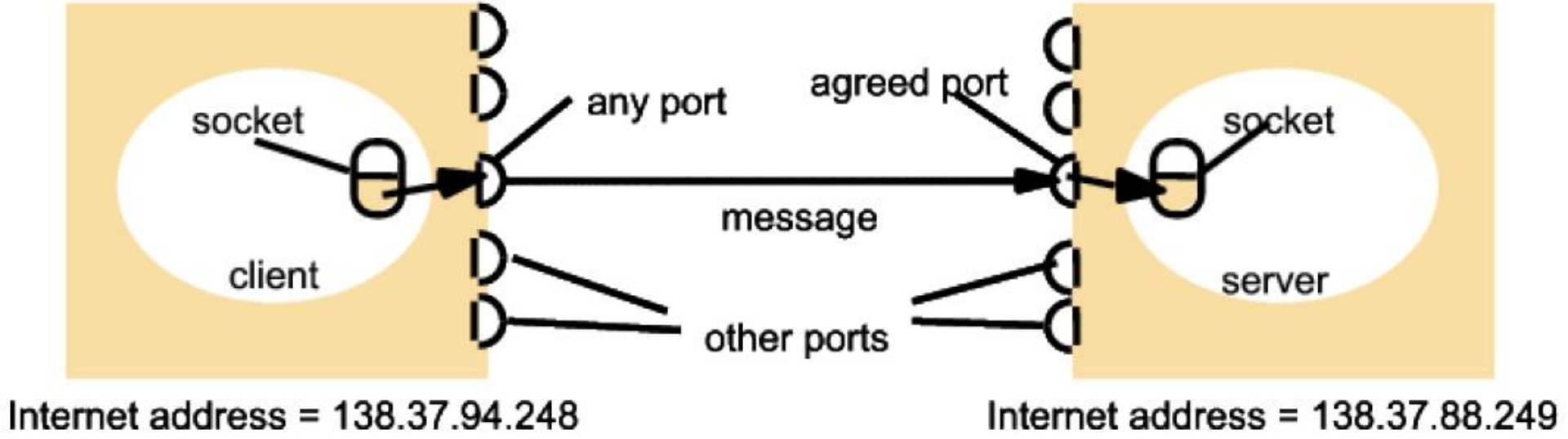

Sockets

Q1. Briefly discuss three aspects of the Socket interface.

- Receiver process is bound to a local port.
- Socket can be used for sending and receiving.
- Each socket is associated with a protocol (UDP or TCP).

UDP vs TCP

UDP: User Datagram Protocol

- Provides a message passing abstraction.
- Is the simplest form of Interprocess Communication (IPC).
- Transmits a single message (called a datagram) to the receiving process.

TCP: Transmission Control Protocol

- Provides an abstraction for a two-way stream.
- Streams do not have message boundaries.
- Stream provide the basis for producer/consumer communication.
- Data sent by the producer are queued until the consumer is ready to receive them.
- The consumer must wait when no data is available.

UDP vs TCP

Q2. Briefly explain three possible failures that can happen when using UDP for communication.

UDP vs TCP

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- Data Corruption.
- Omission failures.
- Order.

UDP vs TCP

Q3. Briefly explain three aspects of TCP that address issues not addressed by UDP.

UDP vs TCP

Q3. Briefly explain three aspects of TCP that address issues not addressed by UDP.

- **Message sizes:** There is no limit on data size applications can use.
- **Lost messages:** TCP uses an acknowledgment scheme unlike UDP. If acknowledgments are not received the messages are retransmitted.
- **Flow control:** TCP protocol attempts to match the speed of the process that reads the message and writes to the stream.
- **Message duplication or ordering:** Message identifiers are associated with IP packets to enable the recipient to detect and reject duplicates and reorder messages in case messages arrive out of order.
- **Message destinations:** The communicating processes establish a connection before communicating. The connection involves a connect request from the client to the server followed by an accept request from the server to the client.

UDP vs TCP

Q4. List the steps involved at the client and at the server to establish a TCP stream socket connection.

UDP vs TCP

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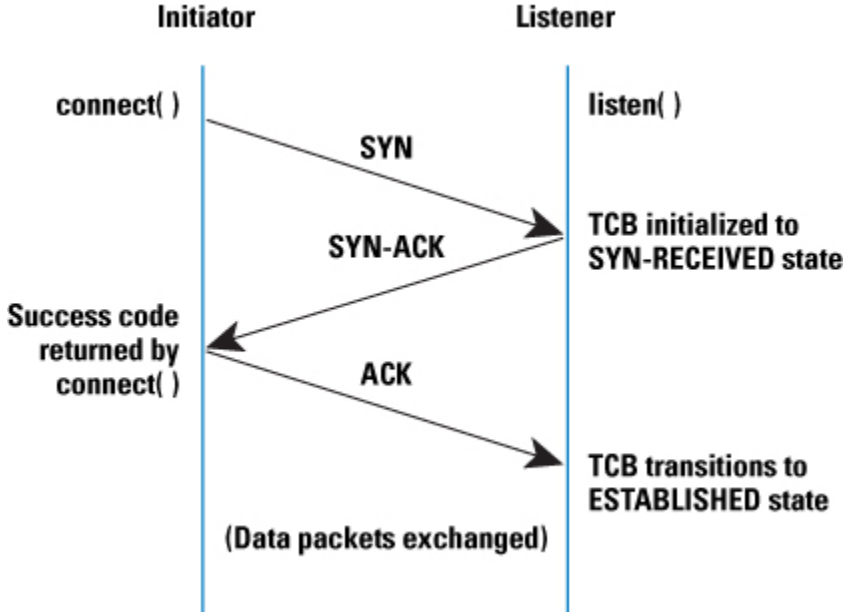

Exploring an Interactive Client/Server

End of Tutorial