Network Programming

Network Protocols

Note: **This class lecture will be recorded!**
If you do not consent to this recording, please do not ask questions via your video, audio or public chat; send your question to the instructor using the private chat.

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Protocol

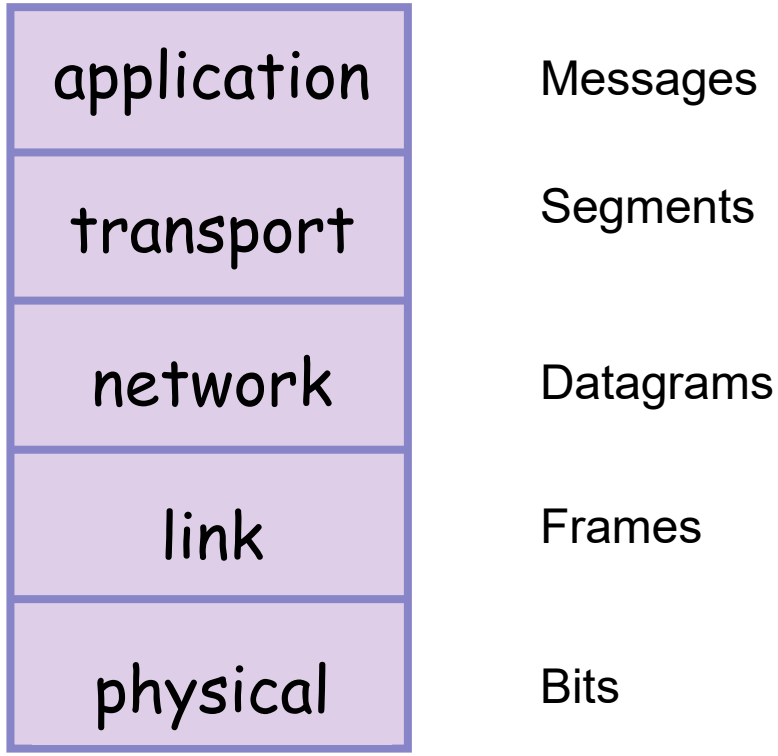
- Syntax
  - Data formats
  - Signal levels
- Semantics
  - Control information
  - Error handling
- Timing
  - Speed matching
  - Sequencing

Layered Protocol Architecture

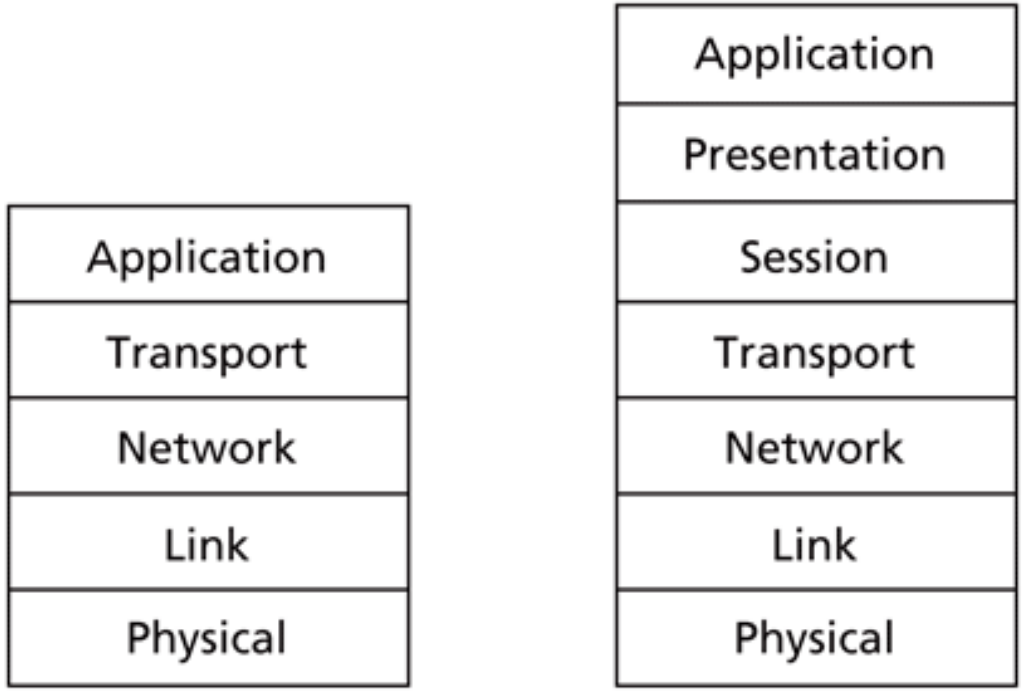
- Each layer is layer-n
- Layer-n Protocol Data Units or PDUs

- Protocol Stack

The Internet Protocol Stack



Internet vs. OSI Stacks



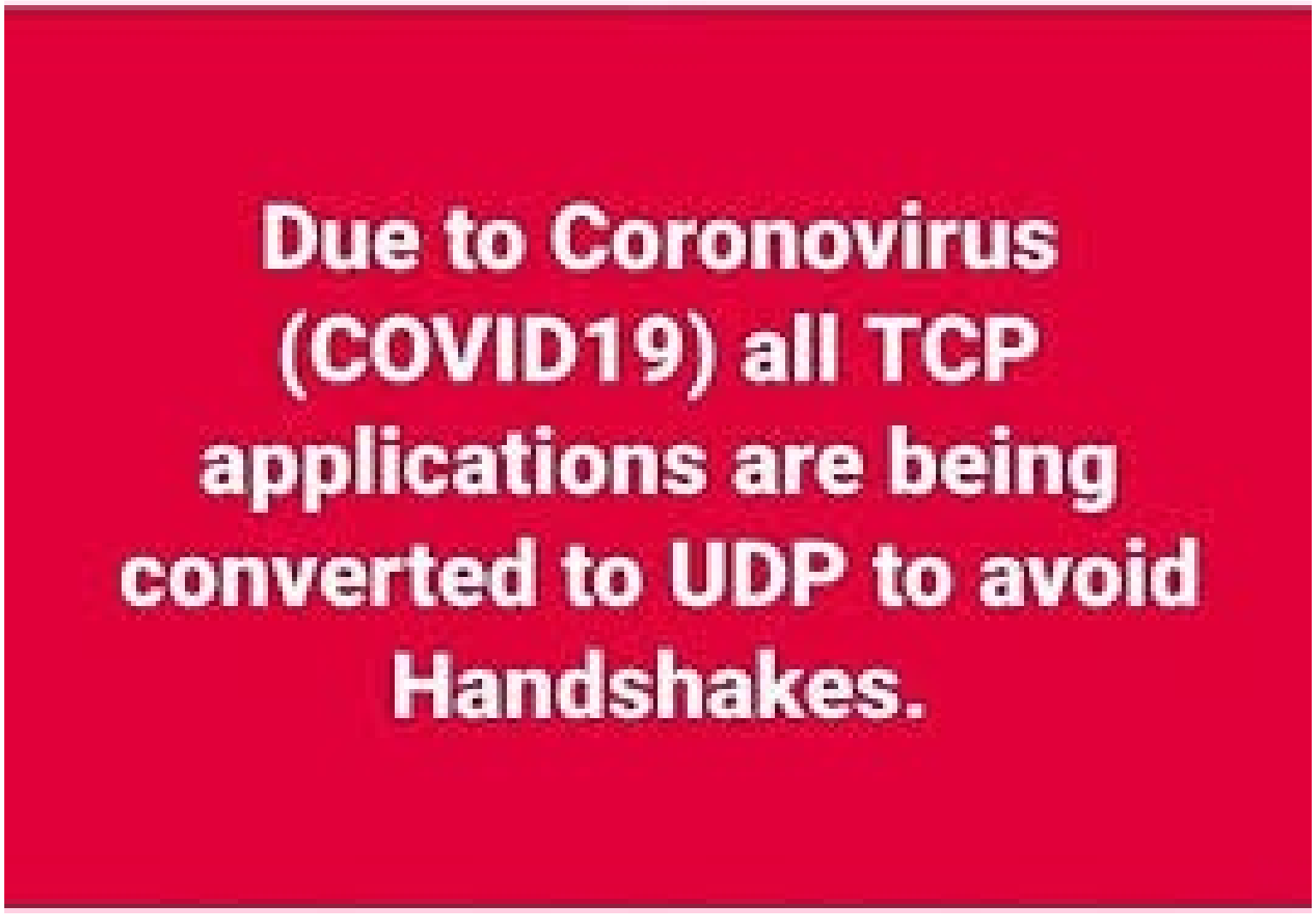
a. **Five-layer Internet protocol stack**

b. **Seven-layer ISO OSI reference model**

Figure 1.19 ♦ The Internet protocol stack (a) and OSI reference model (b)

Transport Layer Protocols
TCP and UDP

- Which protocol is better for the application?
- TCP – *stream sockets*
- UDP – *datagram sockets*

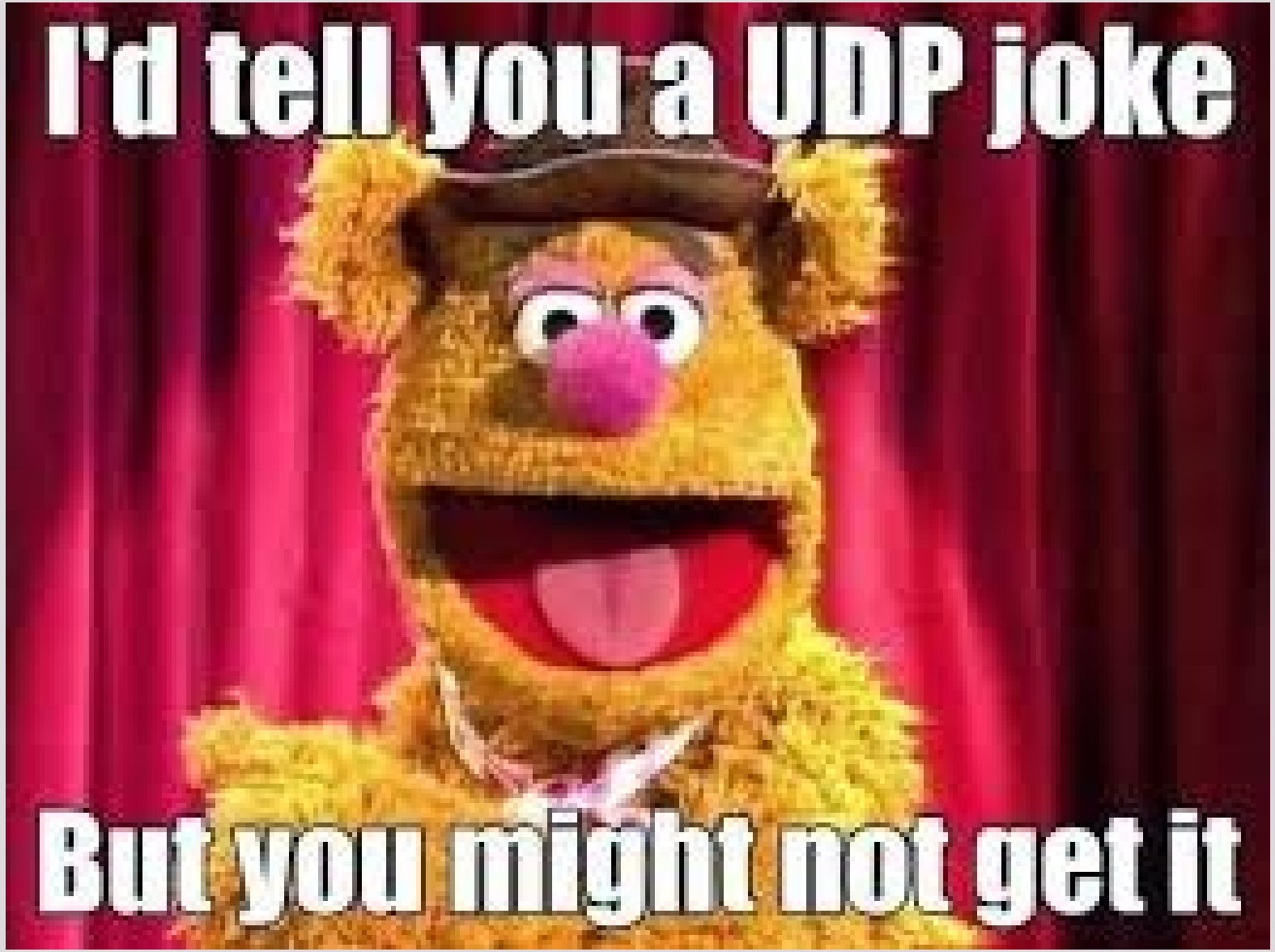

Due to Coronovirus (COVID19) all TCP applications are being converted to UDP to avoid Handshakes.

Connectionless vs. Connection-Oriented

- Protocol for each
- Benefits of each
- Drawbacks of each
- Difference from developer's view?
- Why would a developer select UDP?
- What if application requires both primary characteristics?

Discussion Question

- Connectionless or Connection-Oriented?
  - Telnet
  - FTP
  - DNS
  - HTTP
  - Streaming
  - SMTP (email)
  - NFS (Network File System)


I'd tell you a UDP joke
But you might not get it