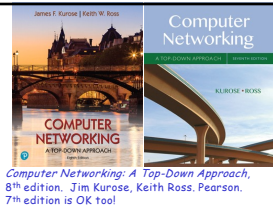


CS 655 Computer Networks

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Chapter 3 Transport Services



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1

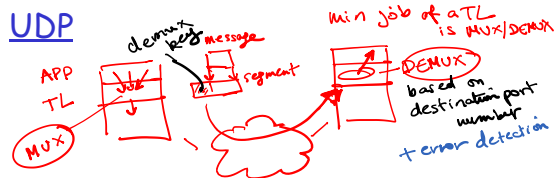
Transport Protocols in TCP/IP

- UDP (User Datagram Protocol)
 - provides applications with **unreliable connectionless** service
- TCP (Transmission Control Protocol)
 - provides applications with **reliable connection-oriented** service

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2

UDP



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3

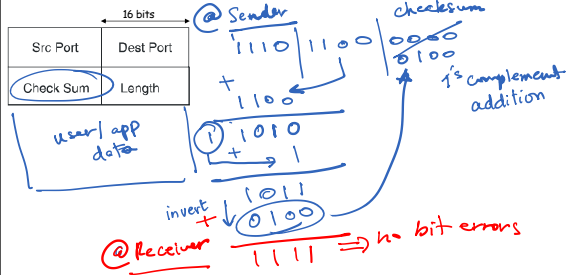
UDP

- ❑ Unreliable and unordered datagram service
- ❑ Adds multiplexing and checksum (covers user data)
- ❑ Endpoints identified by ports
 - ▢ servers have **well-known** ports
 - ▢ see /etc/services on Unix/Linux

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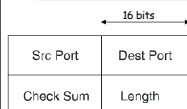
UDP: header format



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UDP: header format



- ❑ UDP demultiplexes based on **destination port** in the UDP header
- ❑ **Checksum idea**: view message as a sequence of 16-bit integers. Add these integers together using 16-bit ones complement arithmetic, and then invert the result. That 16-bit number is the checksum
 - Receiver adds in ones complement and should get all 1's if no bit errors

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