Transport Layer

TCP
UDP

UDP
best effort

TCP
- reliable
- connections
- congestion control
- flow control
  - security
  - bandwidth
  - timing
Multiplexing/Demultiplexing

packaging \sim \text{header}

\text{split}
UDP

uses IP addr and port #

all go to same socket
ICP
dest dest src src
IP Port 1P port
A

---

B

\text{reliable chan.}

A

---

B

\text{reliable}

\text{unreliable}
A

\text{send} : \text{rdt\_send}() \\
\text{reliable\_interface}

\text{udt\_send}

B

\text{rcv}

\text{reliable}
rdt 1.0 reliable transfer over reliable channel

sender

\[
\text{wait} \quad \xrightarrow{\text{rdt-send(data)}} \quad \text{packet} = \text{mk-pkt(data)}
\]
\[
\text{udt-send(packet)}
\]

receiver

\[
\text{wait} \quad \xrightarrow{\text{rdt-recv(packet)}}
\]
\[
\text{extract(packet, data)} \quad \xrightarrow{\text{deliver-data(data)}}
\]
rdtt 2.0: bit errors

ACK: acknowledgement

NAK: neg. "