Today

PA 4

Network programming
• UDP
PA4

• Builds on PA3, with actual client / server
• Due Dec 11
• PA3 solution released; you can use yours.
• Use TCP connection

• Questions?
UDP

- “User datagram protocol”
- Connectionless: no server-client connection established
- Datagrams (instead of bytes)
Server operations

- Create socket
- Bind local address, port number
- Wait for requests
- Read request, service it, return results
- No *listen* or *accept*
Client operations

- Create socket
- Send request to remote server
- Receive results
- Close socket

- Doesn’t need *connect*, but that associates address/port with a socket
UDP Socket I/O

ssize_t sendto(int sockfd,
               const void *buf,
               size_t len,
               int flags,
               const struct sockaddr *dest_addr,
               socklen_t addrlen);

- Just like reading/writing.
- Flags are message options (like tell link layer of successful reply, don’t use a gateway, enable non-blocking... 0 by default)
- Similar to connect + write
- No connection established
UDP Socket I/O

ssize_t recvfrom(int sockfd,
    void *buf,
    size_t len,
    int flags,
    struct sockaddr *src_addr,
    socklen_t *addrlen);

- Just like reading/writing.
- Flags are message options (like close-on-exec, enable non-blocking… 0 by default)
- Similar to accept+read
- Process blocks until datagram received
- No connection established
Flow diagram

Client

- socket()
- sendto()
- recvfrom()
- close()

Server

- socket()
- bind()
- recvfrom() → Blocked
- sendto()

Request → Reply
See code

client.c

server.c
Questions?