Networks Lab – Server Overview (Week 3)

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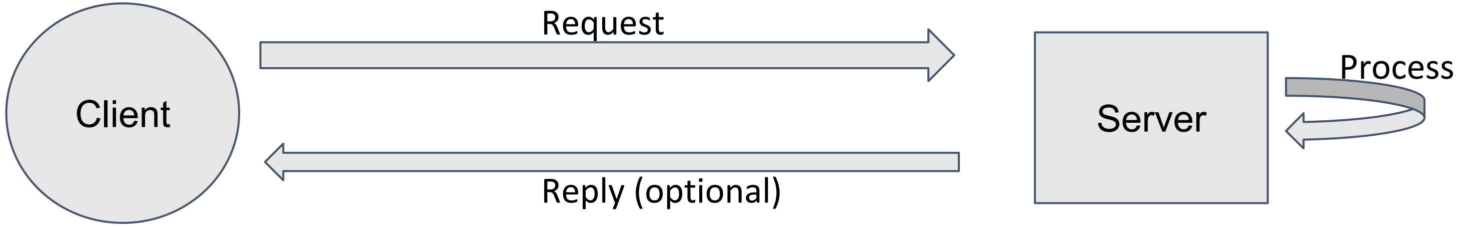
Client - Server model

Server - machine or application that receives a request, processes it and optionally replies to client

Client - machine or application that initiates the request



In Linux, we will use the select() and accept() system calls to create our applications

How it’s done (high-level):

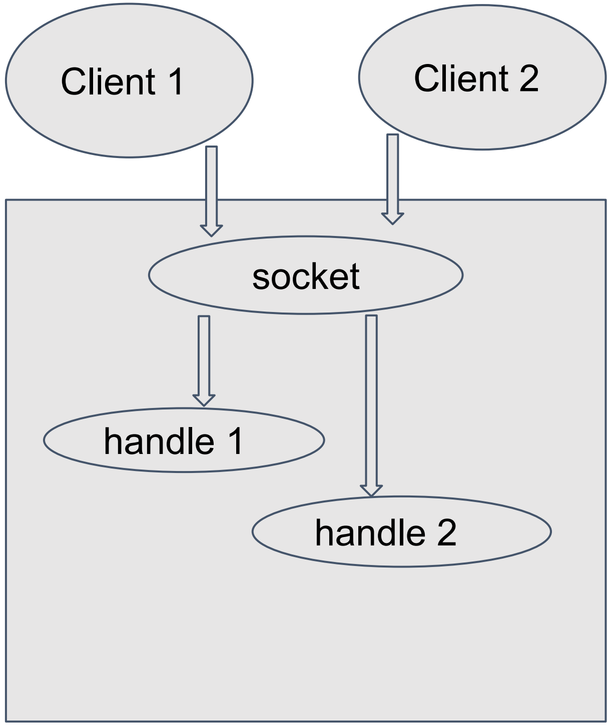
- **Client** can send two types of msgs (requests) to the **server**: **connection initiation request** and **service request**
- **Connection initiation request** is used to request the server to establish a dedicated connection, only after this connection a client can **send service request** msgs
- Through **service request** msgs a client can ask server to provide service

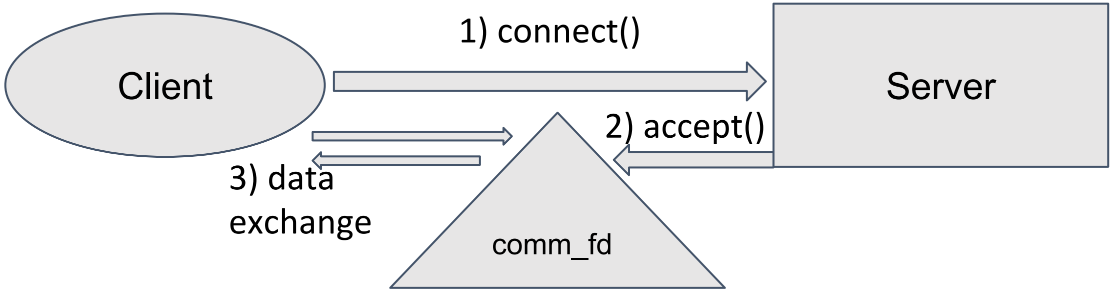
We will use **connect()** on the client side and **accept()** on the server side to establish initial connections

First thing that a server does - creates a “**master**” socket using the **socket()** system call. It’s called a master socket because it will create all necessary objects to represent client connections (**handles**).

Server has to maintain the database of connected client handles.

accept() system call is used on the server side to create handles





accept() returns a communication file descriptor which represents a connection

int comm_sock_fd = accept(master_sock_tcp_fd, (struct sockaddr*) &client_addr, &addr_len);

- master_sock_tcp_addr - master socket file descriptor
- client_addr - ip address and tcp port of a client
- addr_len - size of client_addr structure

General logic of our server:

1) Initialize variables
2) Create master socket
3) Bind
4) Listen
5) Initialize and fill file descriptor database (using fd_set)
6) Select
7) Accept connection
8) Service client request
9) close the connection
10) goto 5)

Using additional materials (on moodle) and official documentation (*man* and docs) provide a report, describing following:

- socket(), accept(), select(), bind()
- For each function at least provide: what it does? does it return anything? Is it a blocking call? How do we handle errors?

Feel free to play with the example server implementation.