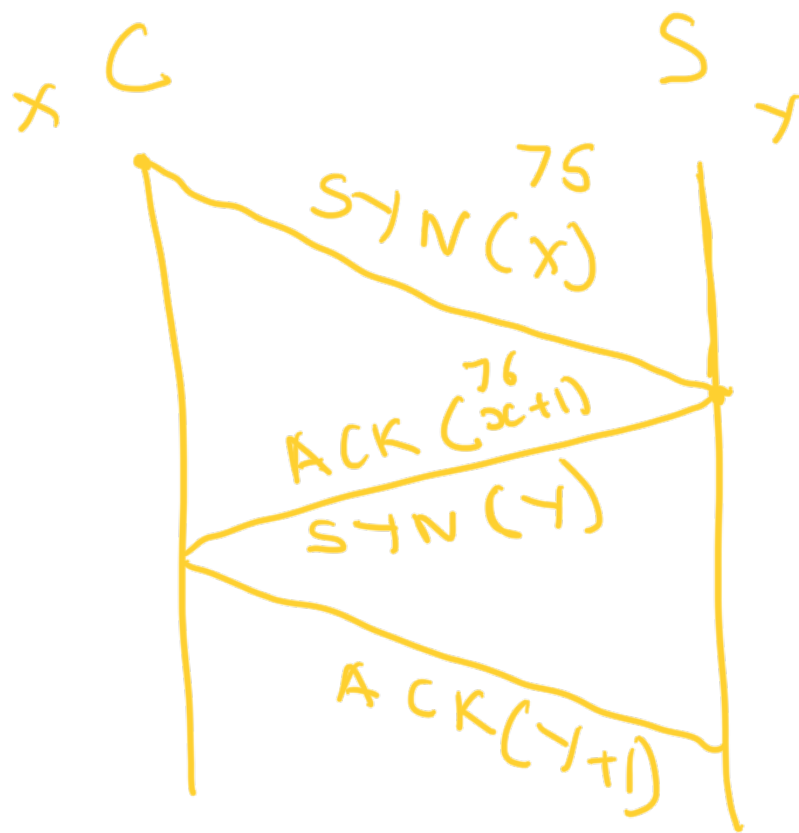


# Socket Programming



## Agenda

### ① Sockets

- what
- Types of Sockets
- Ephemeral ports

### ② Socket programming

- echo server (C-S)
- multiple connections
- multithread
- Port scanner



IP  
(IP, PORT)

IP  
(IP, PORT)

How) → Sockets

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phone call - country code } IP & Port  
- phone number }

mobile / telephone - Socket

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$y = 10$   
 $x = y + 1$

→ `console.log(x)`

→ `sysout(x)`

→ `print(x)`

→ `cout`

---

$x =$  "On the stroke of mid"

File  $f = \text{open}()$   
→ interface

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Socket → way to transfer  
info over the network

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Port vs Socket →  multiplexing

→ identifier

→ Socket → interface that allows us to transfer information

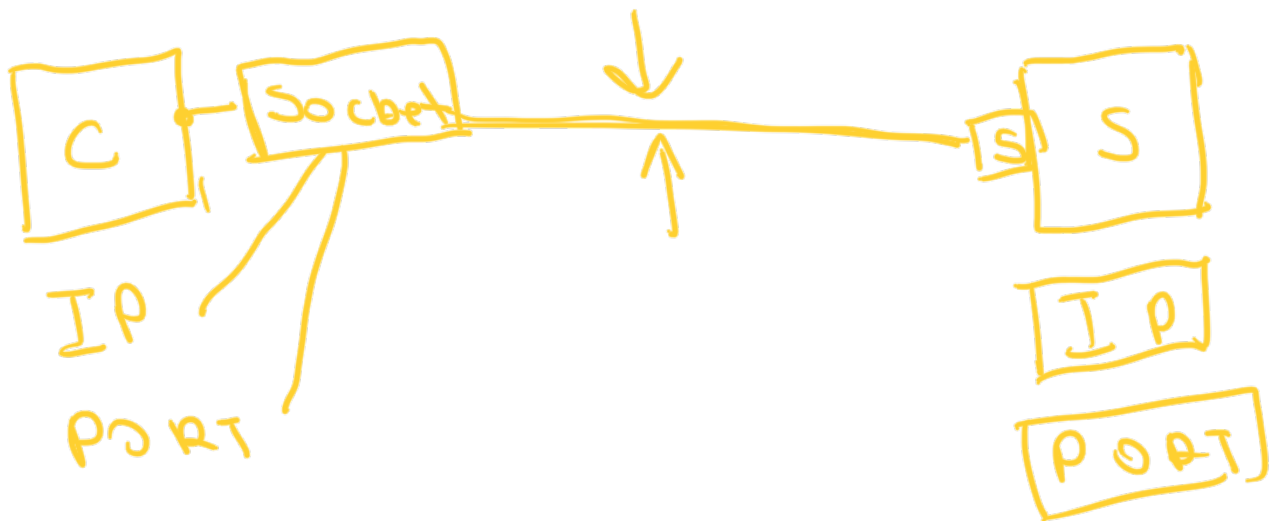
(IP + PORT)

Socket →

Local IP + PORT

→ Remote IP + PORT

→ Protocol → multicast



Application layer to talk to the Transport layer

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axios, request, HTTP client

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Socket C → Socket S

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Types of sockets

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TCP, UDP, ... socket

- TCP - Stream socket
- UDP - Datagram socket
- RAW -

## Life cycle of a socket

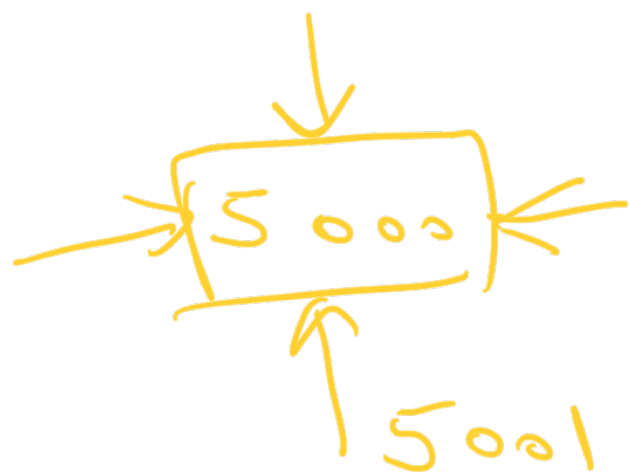


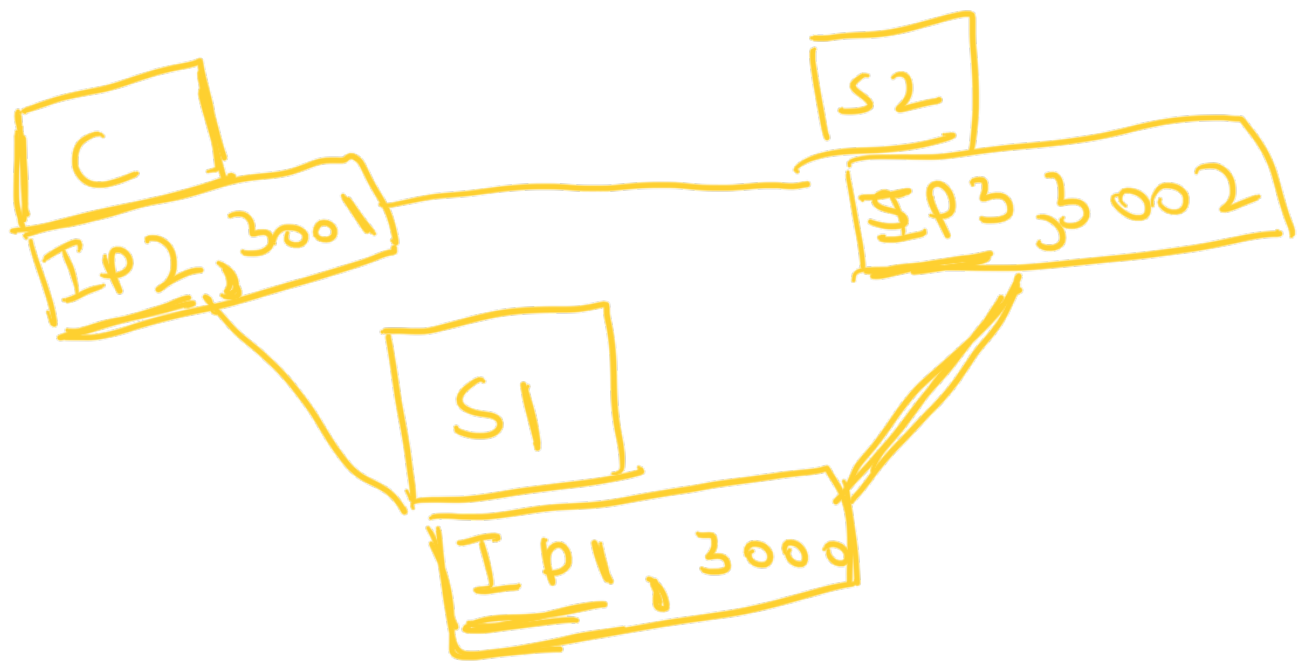
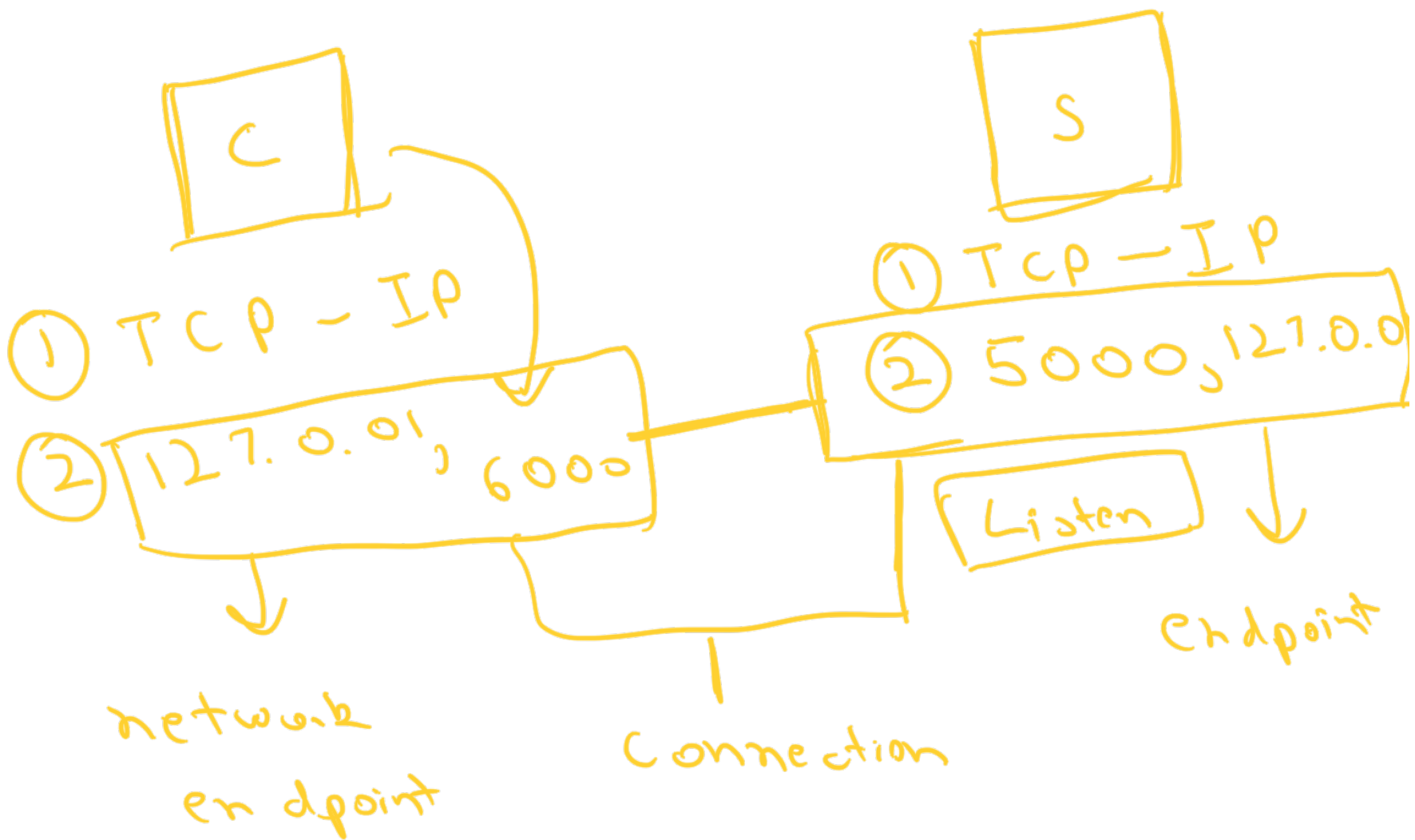
- 1 Create a socket
- 1.5 OS assigns us a port (short lived) temporary

### EPHEMERAL

- 2 Connect to IP + PORT (H)
- 3 Sending
- 4 Recev.
- 5 Close

- 1 Create a socket  
IP / TCP / UDP
- 2 Bind to a port & IP
- 3 Listening
- 4 Accept (H) connection
- 5 Recieve
- 6 Send
- 7 Close socket





## Sockets - blocking

