

Transport Layer, TCP and Floods

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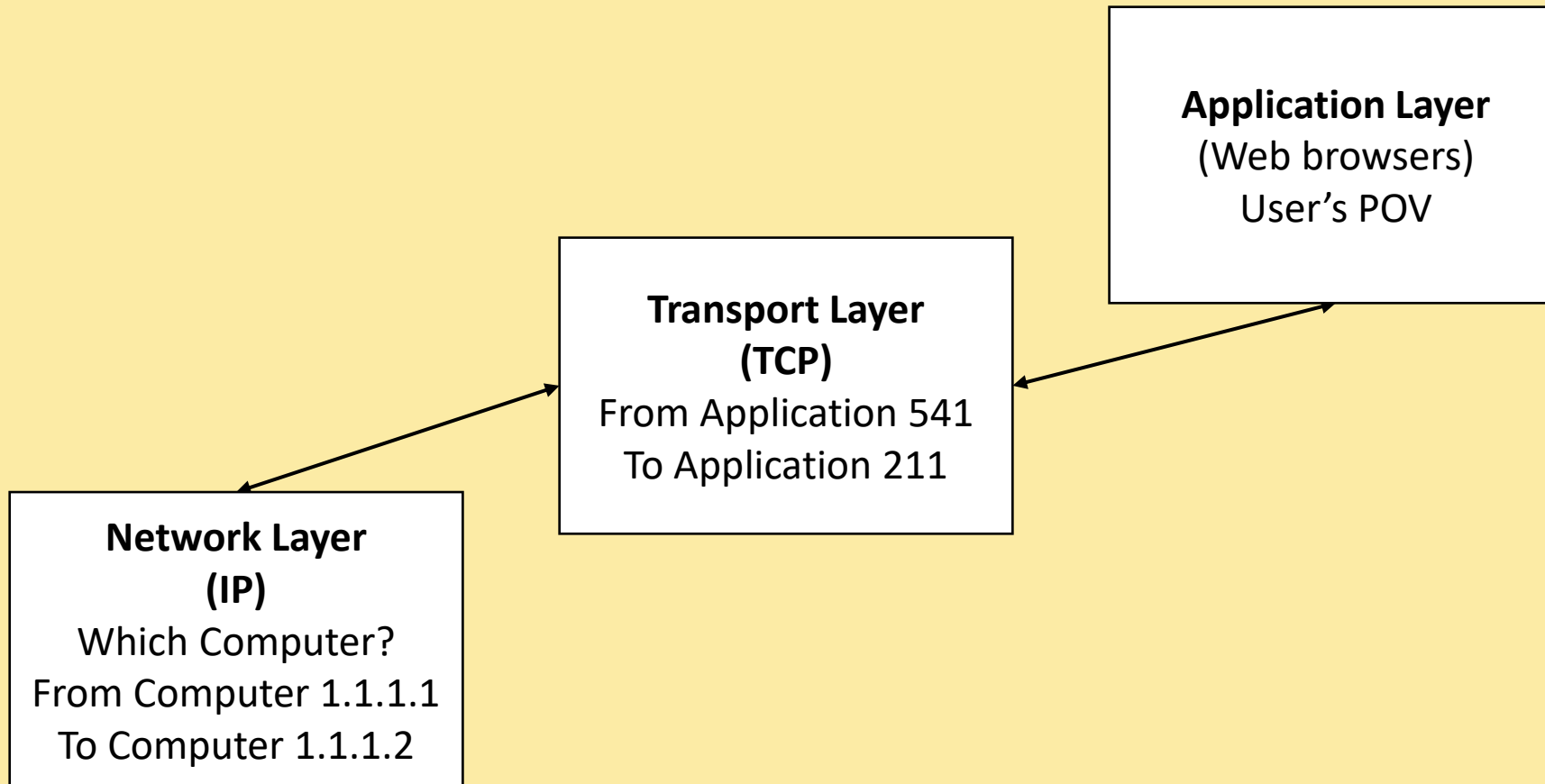
About Me

- Linux and Computer Network Deep Diver
- Github: github.com/AliGhaffarian

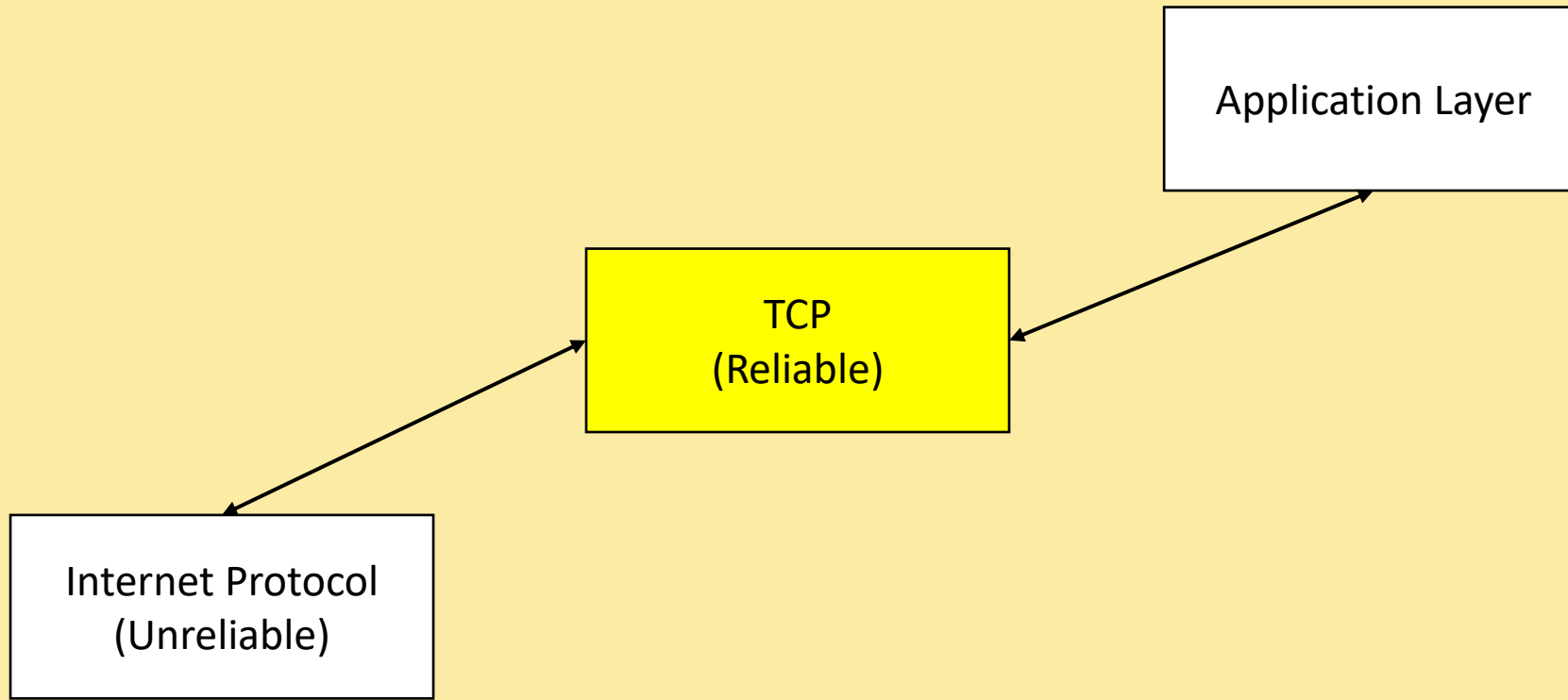
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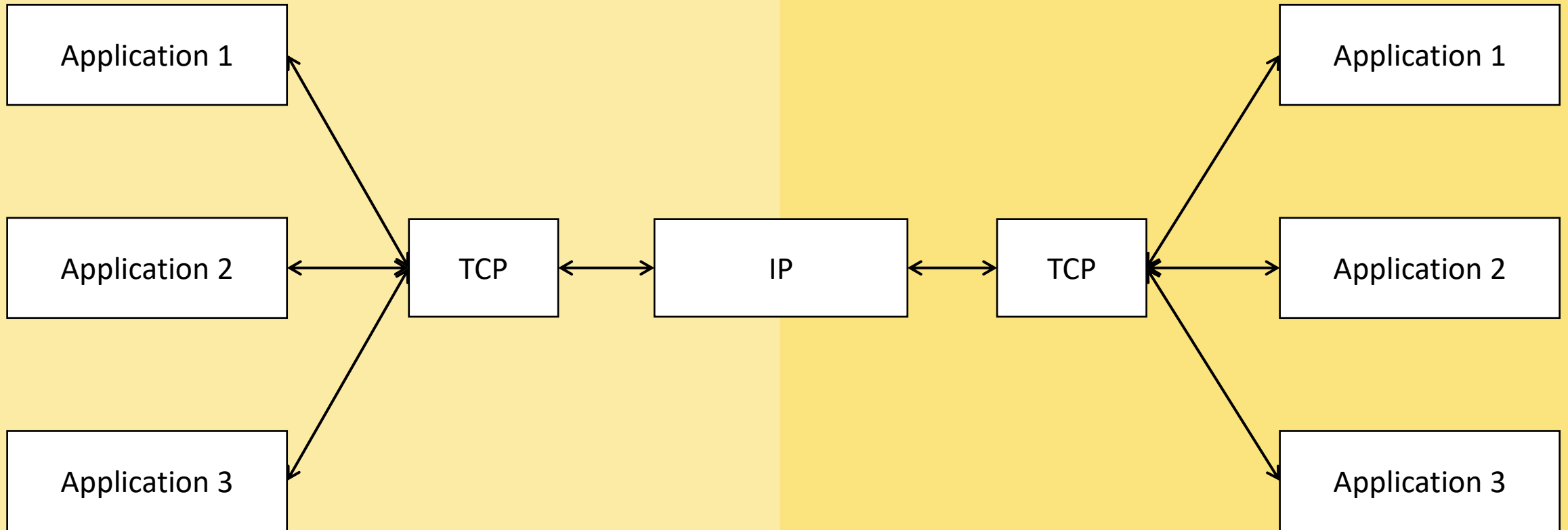
Transport Layer in TCP/IP Stack



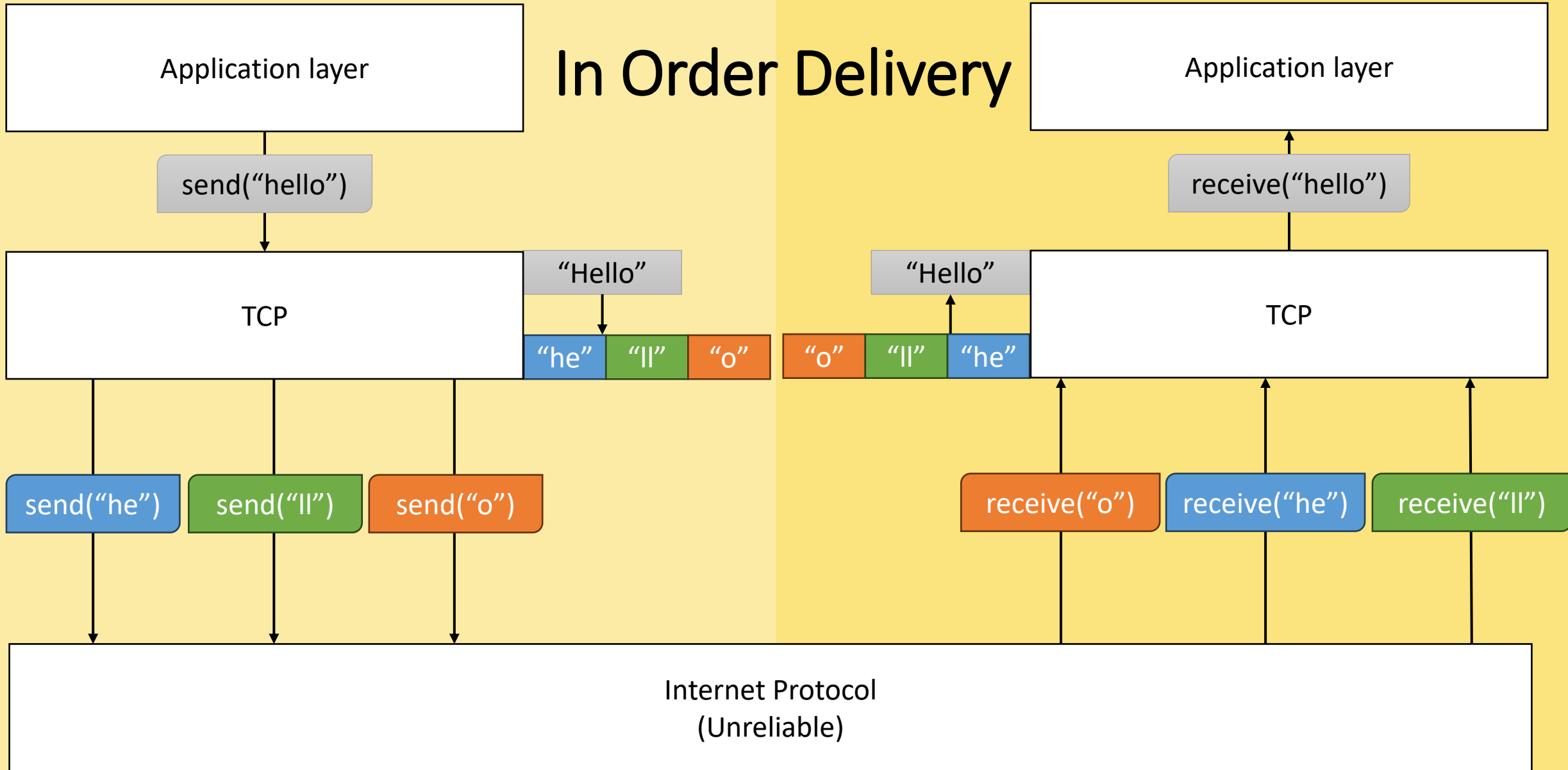
TCP



Multiplexing / Demultiplexing



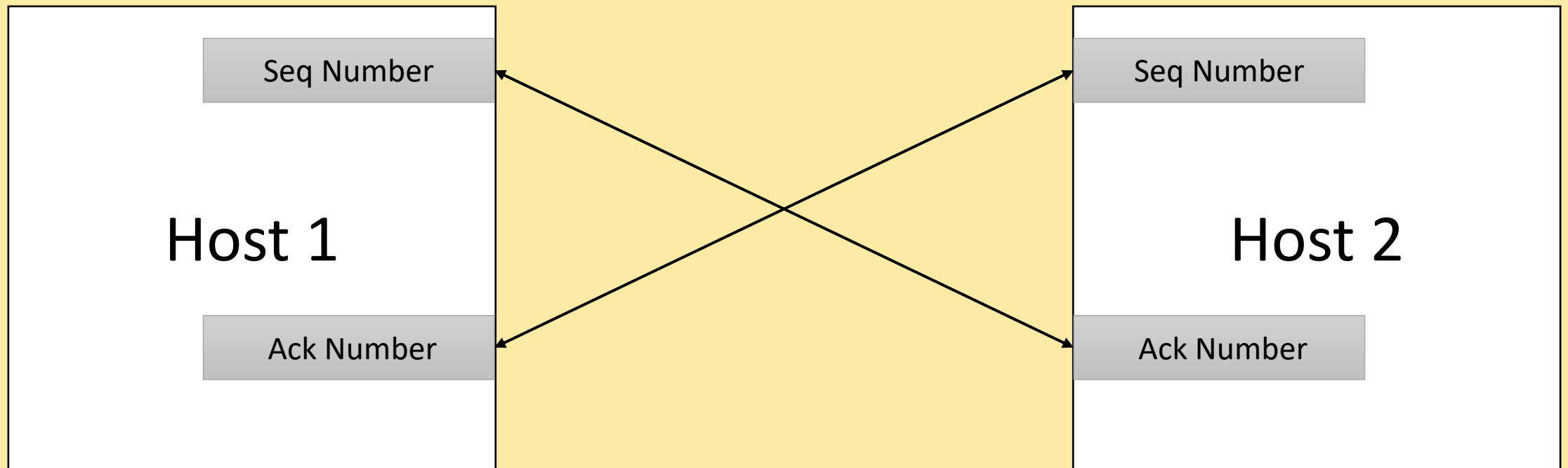
In Order Delivery



TCP's Fields

- Source Port (From Which Application)
- Destination Port (To Which Application)
- Sequence Number
- Acknowledgement Number
- Flags
- ...

Sequence And Acknowledgement Number



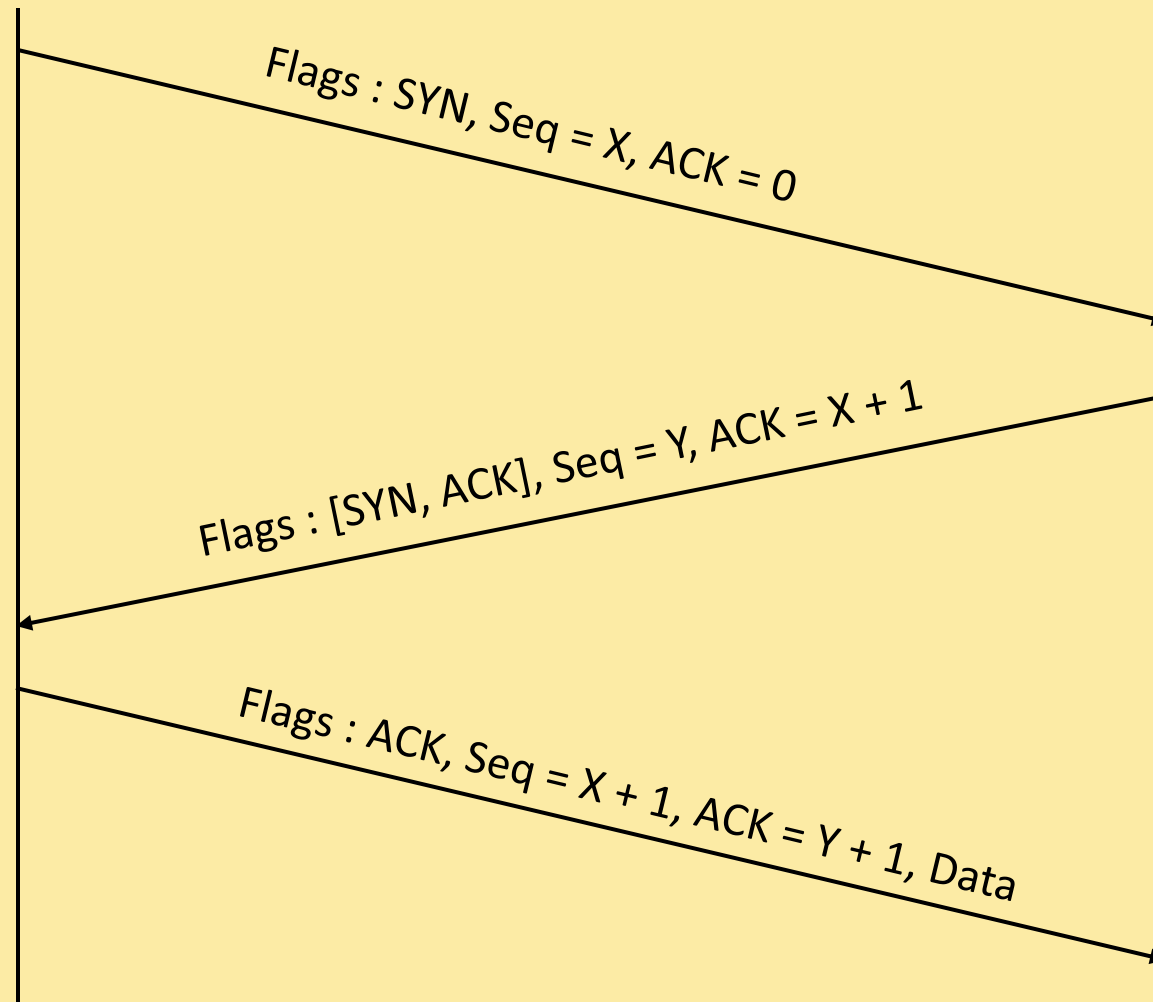
TCP Flags

000.	....	....	= Reserved
...0	....	....	= Accurate ECN
....	0...	....	= Congestion Window Reduced
....	.0..	....	= ECN-Echo
....	..0.	....	= Urgent
....	...0	....	= Ack
....	....	0...	= Push
....	....	.0..	= Reset
....	....	..0.	= SYN
....	....	...0	= Fin

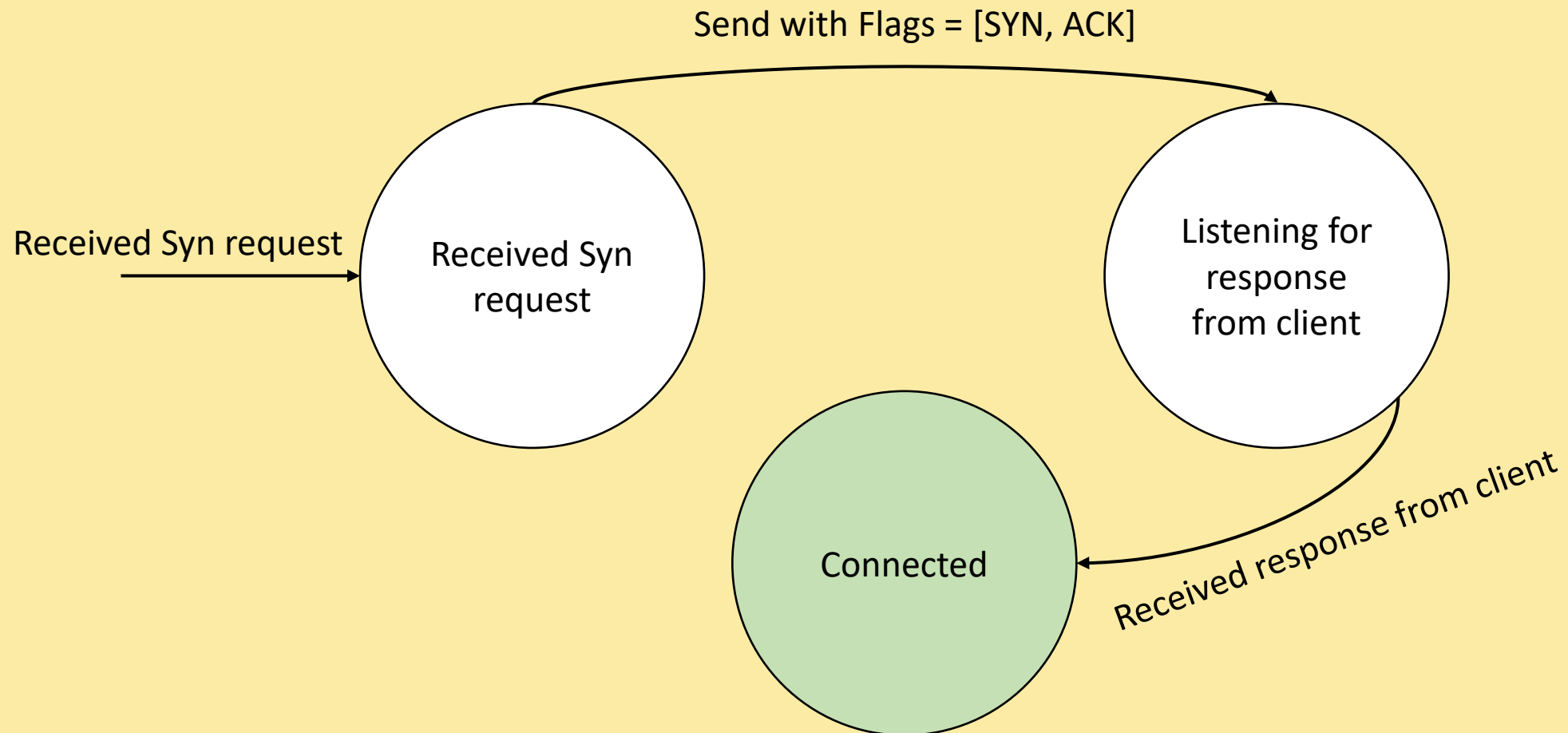
The Three Way Handshake

Host 1

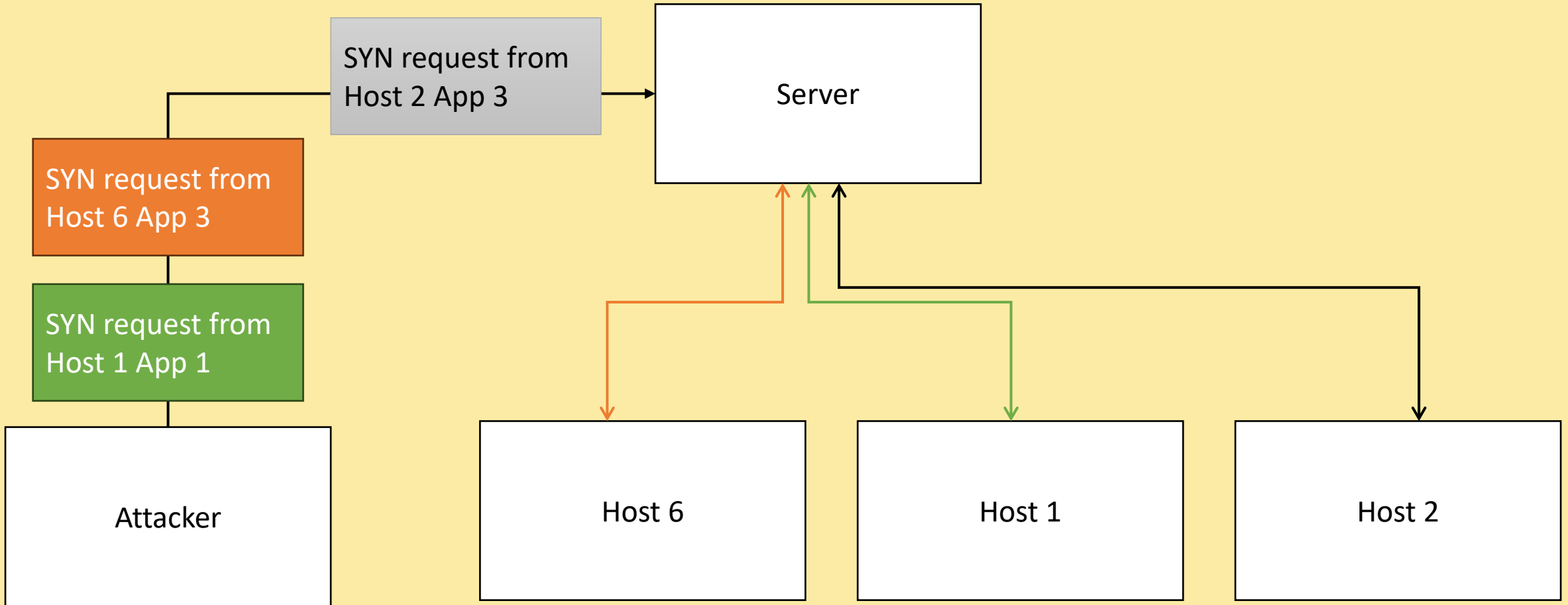
Host 2



State Machine of a TCP Server

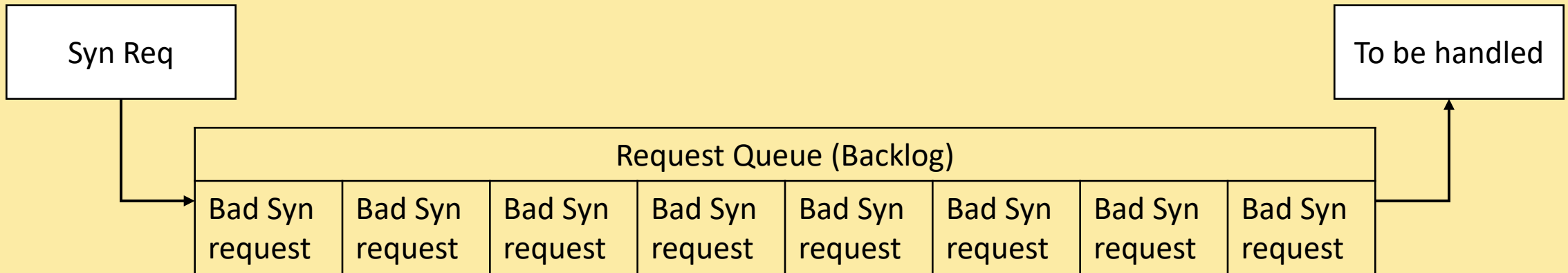


SYN Floods



SYN Flooding is Cheap

Always Waiting on Non-Existing Clients



Syn Cookies

- Handle the Handshake Statelessly
- No More Request Queue (Backlog)
- Reconstructing the Connection

Learn More

- `linux/net/ipv4/syncookies.c`
- `lwn.net/Articles/277146`

Questions

Presentation Files:

github.com/AliGhaffarian/university_thingies