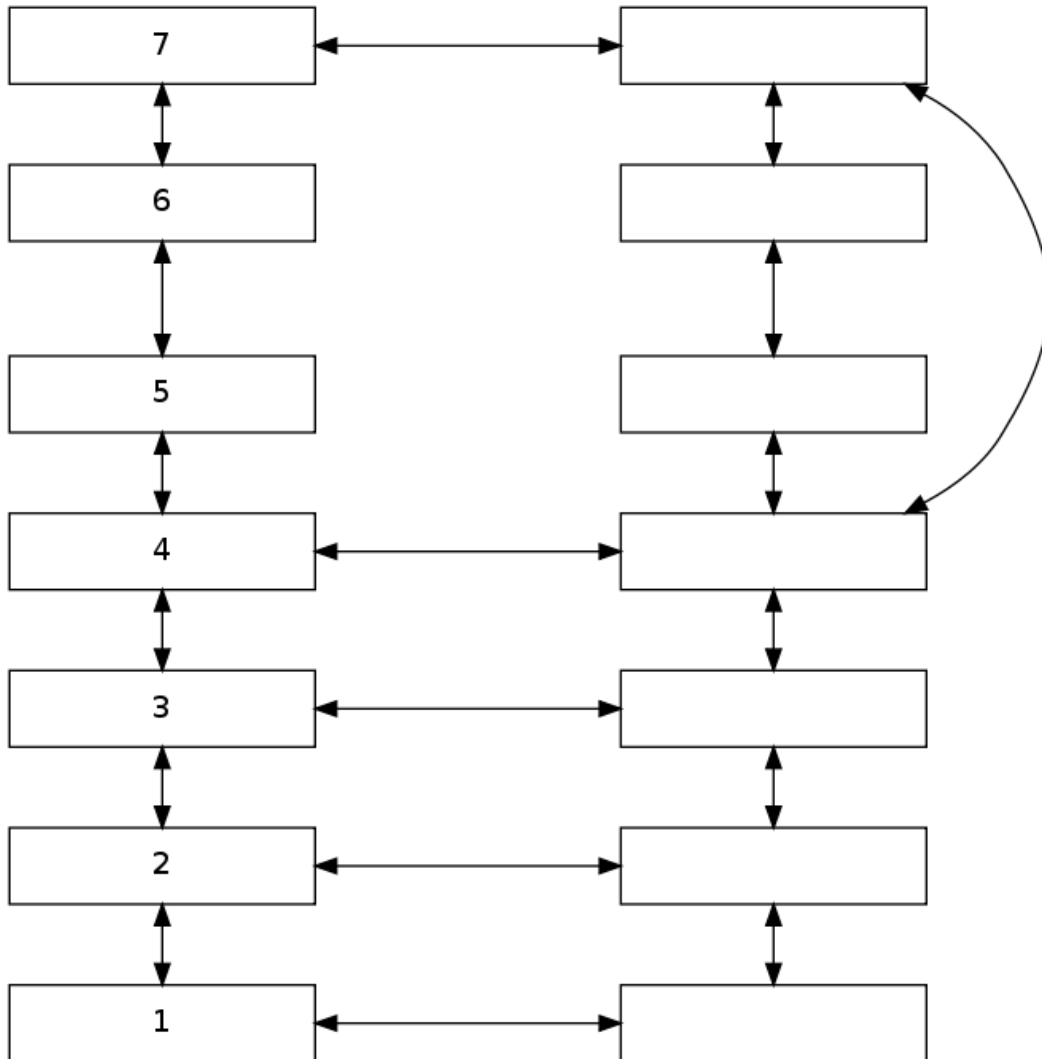




CSE 461: Final Review

The diagram below shows the network layers for two different machines.



Place the terms below on the diagram above, discussing their place in the network layer model.

Application	ARP	ARQ	BGP	Bridge	CAT5	CIDR
CSMA/CD	Data Link	DHCP	DNS	Encapsulation	HTML	HTTP
IP	LAN	MAC	Nagell'ing	NAT	Network	NIC
Physical	Port	Port Binding	Presentation	Router	Session	Sliding Window
Socket	SSH	Stun	TCP	Telnet	Transport	UDP

In terms of the 7 layers: Compare 802.3 and 802.11. Compare p2p flickr to Bayou.

In your projects, which layers did you deal with?

Correctness

- Redundancy
- Bit encoding
- Framing
- Error Detection/Correction
- Addresses (UIDs)
- Header + Data
- IP: semantics
- Addressing
 - DHCP
 - ARP
 - DNS
 - NAT, Stun
- Layering
- Routing
- UDP: semantics
- Port
- Socket abstraction
- TCP: semantics
- ARQ
- Reorder buffer
- Stream vs Packet orientation

How does RFID fit in?

Distributed State

- P2P
 - TOMCAST: orderin
 - Lamport clocks
 - Bayou
 - p2p-flickr
- Client-Server
 - Don't distribute state
 - e.g. Lobby
 - Push state to client
 - e.g. web
 - e.g. IP routing
 - Stateless server
 - HTTP
 - NFS
- Connections
 - TCP: 2 node P2p or duplex client-server?

Scalability

- Size => heterogenous
 - Hardware / Performance
 - Speed; Error Rate
 - Administration / Policy
 - Standards committees
 - Distance / Latency
- Size => dynamic
 - Independent Failures
 - Always in transient state
 - Dampening
 - Lan bridge algorithm
 - IP routing
- Size => long lived
 - Version # in header
- End-to-End argument
- Protocol Layering
- Routing basics
 - LAN Broadcast
 - Collision Resolution
 - Carrier Sense
 - Collision Detect
 - Ethernet
 - 802.11 wireless
 - Forwarding
 - DV/LS Routing
- Layered Routing
 - LAN bridging
 - DHCP / Gateways
 - NAT
 - Subnets; Supernet (CIDR)
 - BGP
- Congestion Control (TCP)
 - RTT estimation
 - AIMD (+↑, *↓)

Performance

- Buffering
 - Avoid layer crossing
- Timeouts
 - RTT estimation
 - Lost data detection
- TCP
 - Nagell'ing
 - Flow Control
 - Sliding window
 - Bandwidth x delay
 - Congestion Control
 - AIMD
 - Slow start
 - Fast retransmit