CS 356 Exam 2

Bring a calculator and one page of notes (printed or handwritten). You can use the calculator in your cell phone but you must abide by the UT-Austin Student Honor Code. More specifically, you must not use the phone for any other purpose, such as accessing information stored in the phone or on the Internet.

Review homework solutions

Note: Following lists of major topics for your reference only. It is possible to have exam questions on materials covered in my lectures that are not in the following lists.

Chap 4 notes (network data plane)

Intra-AS versus inter-AS routing
Datagram vs. virtual circuit; IP forwarding versus VC forwarding (routers maintain state info)
  • VC identifier unique for each link versus IP address
  • layer 2 1/2
Data plane (forwarding) versus control plane (routing)
CIDR addressing; address prefix aggregation; longest prefix match
Protocols in IP layer, IP fragmentation and reassembly
What is a subnet?
DHCP, NAT (NAT traversal problem)
IPv6, changes from v4 (e.g., flow label), transition from v4 to v6, tunneling (different kinds)
Generalized forwarding unifies four different kinds of devices (router, switch, firewall, NAT)

Chap 5 notes (network control plane)

Link state routing, LS broadcast
Distance vector routing, good news and bad news
Hierarchical routing: intra-AS and inter-AS
EIGRP, RIP, OSPF – routing within an autonomous system
BGP (internal and external), reachability, routing policies (import and export rules),
BGP attributes of advertised prefix: AS path for loop-freedom, next-hop
ICMP and Traceroute
SDN uses logically centralized server vs routing protocols; network control apps
Chap 6 notes (link layer)
Why a trailer is needed?
CRC algorithm for error detection
Reliable delivery in link layer?
Taxonomy of multiple access protocol
Slotted ALOHA protocol and its throughput, CSMA/CD protocol and its throughput
Token passing, star-shaped ring
MAC address flat and location-independent, ARP protocol (soft state)
How to use both IP and MAC addresses to deliver a packet to its IP destination
Ethernet frame, switches, switch table (soft state), self-learning, plug and play (DHCP, ARP)
VLAN, MPLS, data center networks

Chap 7 notes (wireless LAN)
CDMA
Wireless network elements, wireless networks taxonomy
Wireless link characteristics, adaptive modulation
Hidden terminal and fading problems (affect carrier sensing and collision detection),
Collision detection hard to do in wireless
CSMA/CA (requires an ACK, can use RTS and CTS packets)
Mobility in IP subnet