Final Exam

The final exam will be in class on Monday **8:00 am – 10:00 am, December 8, 2025**. The exam is closed-book and closed-neighbor. It will be cumulative but will primarily focus on topics covered after the midterm (the network layer data plane, control plane, and link layer). You will be tested primarily on concepts, not protocol details (e.g., format of a link-layer protocol). You are allowed to bring one hand-written cheat sheet (two sides of a letter-sized paper). Printed materials are not permitted. Feel free to bring a calculator.

Although you should be familiar with all the content covered in the lecture notes, the topics below are worth highlighting. Make sure you understand prior to taking the exam.

Chapter 1 Packet switching vs. circuit switching Store-and-forward networks Internet structure (edge and core) Types of delay in data networks and packet loss Layered network architecture

Chapter 2 Application requirements for loss, bandwidth, and delay Application-layer protocol concepts: client-server model vs. peer-to-peer model

HTTP protocol, cookies, web DNS service

Email system and protocols

Chapter 3

Transport-layer services

Multiplexing and demultiplexing

UDP: protocol, checksum

RDT protocols, GBN and selective repeat

TCP: reliable data transfer, connection management, flow control, and congestion control

Chapter 4 Network layer data plane

Network layer services

IP: datagram format, addressing, NAT, IPv6

Generalized Forwarding, OpenFlow

Chapter 5 Network layer control plane

Routing protocols (Link state, distance vector)

Intra-ISP routing

Inter-ISP routing: BGP

ICMP, Traceroute

Chapter 6 Link layer and LANs

Link layer services

Error detection, correction: CRC

Multiple access protocols: TDMA, FDMA, ALOHA, Slotted ALOHA, CSMA, CSMA/CD, CSMA/CA, taking turns MAC protocols

LANs: addressing, ARP, Ethernet frame structure, Ethernet switch