Final Exam

- Time:
    - Monday, Dec 13
    - 3:30—6:30pm

- Place:
    - Hochstetter

Coverage

- You should re-read everything

- Focus a little more on materials after the midterm

Exam Format

- Similar to the sample exam
  - Already posted

Review of 2ⁿᵈ Half Topics

- *Network Layer*
  - Forwarding
  - Routing
  - Router design issues
- *Link Layer*
  - Error correction/detection
  - MAC principles & protocols
  - Ethernet, ARP
  - Hubs, switches, bridges
  - Wireless LANs
  - Mobile networking

Network Layer

- *Forwarding*: pros and cons of
  - Datagram
  - Virtual Circuit
  - Source routing
- *Shortest path algorithms*
  - Shortest path tree
  - Dijkstra
  - Bellman-Ford
- *Basic routing protocols*: some pros & cons of
  - Link state
  - Distance vector
  - Count-to-infinity, oscillation

Network Layer

- *CIDR addressing*: why do we need it?
  - Subneting
  - Address aggregation
  - Longest prefix match
- *Inter-domain routing*
  - Path vector
  - Policy-based
  - AS relationships
  - BGP: import, export, ranking policies
  - BGP: security problems, SPP

Router Design

- **Basic architectures**
  - Memory is a bottleneck
  - OQ: ideal
  - IQ: head of line (HoL) blocking, VoQ
  - CIOQ
- **Switching fabrics**
  - Crossbars
  - Clos design: SNB, RNB, Konig coloring theorem
- **Address lookup**
  - TCAM, hashing
  - Tries, prefix intervals

Link Layer

- Error correcting/detecting codes
  - Code definition, min Hamming distance d,
  - Correction/detection capability
  - CRC
- MAC
  - Principles: random, round-robin, channel partitioning
  - Ethernet: CSMA/CD, ARP
  - Wireless: CSMA/CA
- Hubs, Switches, Bridges
  - Self-learning algorithm
  - Spanning tree protocol
- WLAN, WLAN security + Mobile Networking