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 2\textsuperscript{nd} Half Topics

- \textit{Network Layer}
  - Forwarding
  - Routing
  - Router design issues
- \textit{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?
  - Subnetting
  - 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