This summary does not cover all materials discussed in this course but gives a guide for study. The midterm test will be based on Chapters 1-11, 22, and 23 of the text book. The materials of the textbook were not uniformly discussed; some parts were discussed in details with extra contents/examples and other parts were not. Please refer to the course notes posted at Course-Central and the notes taken at class for details. I expect your comprehensive understanding of the materials listed in the summary.

- **Internet basics (Chapters 1-4)**
  Network type, TCP/IP Internet, network level services and property.
  Ethernet, connect LANs by bridges.
  Internetworking, goal and approaches of interconnection.
  Protocols and layered structure, TCP/IP model, OSI model.

- **Internet Protocol (Chapters 5,7-9)**
  Internet addressing, IPv4 address, IPv4 subnet addressing, IPv4 classless addressing, design IPv4 subnets address, IPv6 address, IPv6 hexadecimal address compression, IPv6 address types and hierarchy, embedding Ethernet address into IPv6 interface identifier.
  Internet protocol, IPv4 datagram, IPv6 datagram, IPv6 extension headers, IPv4 fragmentation and reassembly, IPv6 fragmentation and reassembly.
  Forwarding IP datagrams, direct forwarding, indirect forwarding, table driving delivery, routing table, IP forwarding algorithm, efficient address lookup.
  ICMP, ICMP messages, format, and delivery.

- **Address resolution, DHCP, NDP, DNS (Chapters 6,22,23)**
  Address resolution, dynamic binding, ARP, ARP message and format, RARP.
  DHCP, dynamic IP address assignment, address acquisition states, DHCP message and format. Managed and unmanaged configuration, Neighbor Discovery Protocol (NDP), ICMPv6 messages.
  Domain Name System (DNS), domain name space, Internet domain names, mapping between domain names and IP addresses, DNS servers.

- **UDP and TCP (Chapters 10,11)**
  UDP, service property, protocol port, UDP message and format.
  TCP, service property, techniques for reliability and stream oriented delivery, segment and format, TCP sliding window, timeout and retransmission, response to congestion, connection issues.