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CSC 335 Data Communications and Network I
Homework 1

1. What are the components of a communications network?

   Electronic communication devices, Network Devices, Communication links, Services.

2. Why is packet switching preferred over circuit switching in today's communications networks?

   Packet switching allows for efficient utilization of the communication links. Communication cost vs computation cost. Eliminates single point of failure. Increase in interactive data traffic, causing bursts of data.

3. Provide a high-level overview of the structure of a typical data packet. What kinds of information are you likely to find in the header of a typical packet?

   A packet contains a header and a payload. The header usually includes source address, destination address and other info.

4. Name the five layers of the TCP/IP model and explain the main functions of each of the layers.

   1. Application layer: provides services to an application software running on a computer.
   2. Transport layer: Provides services to the application layer protocols, uses TCP and UDP.
   3. Network layer: Provides addressing and routing, uses IP.
   4. Data link layer: Delivers data across some physical network.
   5. Physical layer: Is the medium be it the air or a wire, uses signal.

5. Find the web pages of any two standards bodies for telecommunication networks. Provide their URLs. Find one standard of your choice from one of these sites and write a few sentences describing its characteristics.

   Comcast - https://www.xfinity.com/

   Verizon - https://www.verizon.com/home/verizonglobalhome/ghp_landing.aspx

   Comcast uses a connection internally of many gigabits. And offers up to 2 gigabit lines for home users. Most commonly however on their wireless routers they tend to use the 802.11n standard. This allows for maximum data transmission of 150 megabits per second by combining channels from the 20 MHz and 40 MHz ranges.