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CSC 325

Homework 8

1. What is Telnet?
   1. It is a internet or local area network protocol, it provides a two-way interactive text-oriented communication capability that uses a virtual terminal connection (aka, a client-server protocol). The user’s data is intermingled with telnet control information that is formatted in an 8-bit byte data connection. That data is able to be sent over a transmission control protocol (TCP).
   2. However, Telnet is fairly old and was originally used over Network Control Program Protocols (NCP).
   3. In java, the TelnetClient class implements the simple network virtual terminal (NVT) for the Telnet protocol.
2. Name and describe 5 internet protocols.
   1. Application Layer
      1. HTTPS
         1. Hypertext Transfer Protocol Secure (HTTPS), it is used for secure communication over a network. It is an extension of HTTP, but it uses a secure communication that is encrypted via Transport Layer Security (TLS). “HTTP over TLS” or “HTTP over SSL”.
      2. SSH
         1. Secure Shell (SSH), is a cryptographic network protocol that runs network services securely over an unsecure network. It was created to replace Telnet and other unsecure remote shell protocols. It uses public-key cryptography to be able to authenticate the remote computer and its user.
      3. SMTP
         1. Simple Mail Transfer Protocol (SMTP) is a protocol for electronic mail transmission. It is in widespread use today, where mail servers and other email transfer agents use this protocol to send and receive messages.
   2. Transport Layer
      1. TCP
         1. Transmission Control Protocol (TCP). The main protocol used over the internet. It provides a reliable, ordered and error-checked delivery of a stream of bytes to a host that is communicating via an IP network.
            1. Internet applications such as the Internet, email, remote connections/administration and file transfer depend on upon TCP.
      2. UDP
         1. User Datagram Protocol (UDP), provides a connectionless datagram, emphasizes reduced latency over reliability. Provides checksums for data integrity and port numbers to address different functions at its destination and source of the datagram. There is no guarantee of transfer, organization, or replication protection of packet information.
            1. In simple is sends the most current information and doesn’t worry about dropping packets. It is mostly used in multiplayer games, where it prefers real-time packets, instead of waiting for packets.
3. Describe what Input-Stream and Output-Stream are and how they are used.
   1. Input Stream:
      1. If you are reading data from a file or any other source, you would use the input stream. Where it takes in information depending on the file. It acts as a channel to read data from.
   2. Output Stream
      1. If we wanted to read and process data from a given source or file, we would first need to save the data, in order to save or store the data it requires an output stream.
4. What is a socket and what is its purpose?
   1. It is one endpoint of a two-way communication link between two programs running on the network. It is bound to a port number in order for the TCP layer can identify the application that data is intended to be sent to its location.
   2. We use it to connect our server and client, where we use sockets to communicate between the two.
5. How does buffering work and why is it used?
   1. Buffering
      1. Reading data from disk byte-by-byte is very inefficient, we use a buffer to speed the process up. Instead, a we read a few thousand bytes at once and then put them in a buffer to memory. Then we can look at the bytes in the buffer one by one.
   2. Buffered Inputs
      1. Stream read data from a memory area/point.
   3. Buffered Outputs
      1. Stream write data to a buffer.