

## Review Questions for Lecture 4 - Solution

**Your Name:**

Please print out this form (two-sided, if you can) and write your answers legibly in the spaces provided. If you can't write legibly, type.

1. How many bytes are there in the UDP packet header? How many in the TCP header?

*Both types of packets share the same IP header (20 bytes).*

*The UDP header consists of 8 bytes (4 bytes for source & destination ports, 2 bytes for length, and 2 bytes for checksum).*

*The TCP header consists of 20 bytes (4 bytes for source & destination ports, 4 bytes for sequence number, 4 bytes for ack number, 2 bytes for header length and flags, 2 bytes for receive window, 2 bytes for checksum, and 2 bytes for urgent pointer).*

2. Give two reasons you might prefer to implement an application using UDP, rather than TCP.

*No connection setup latency;*

*Much simpler, i.e., no retransmissions, or flow and congestion controls.*

*Both of which may be fine if you only need to send one packet, e.g., as would be the case for a DNS query, and handling retransmissions can be easily done at the application layer.*

Give two reasons you might prefer to implement an application using TCP.

*Need to maintain in order byte ordering at the receiver.*

*Need to gracefully handle heterogeneous end-systems, so that pacing the server to accommodate low-speed clients (flow control) is important.*

3. Explain the difference between an *InetAddress* object and an *InetSocketAddress* object in java. Suppose we construct an *InetSocketAddress* object using the constructor *InetSocketAddress(null,0)*. If we then bind a socket to this object, what address and port are associated with the socket?

*InetAddress specifies an IP address and possibly the corresponding hostname*

*InetSocketAddress includes IP address and port number*

*If a socket is constructed using *InetSocketAddress(null,0)* and then bound to a socket, the IP address will be the wildcard address(any local address) and the port number will be the (ephemeral) port number picked by the operating system at the time of the bind operation.*