YORK UNIVERSITÉ UNIVERSITY redefine THE POSSIBLE.

CSE 3213
Computer Networks I
Summer 2008
Quiz 1

1. True/False (9 marks)
   a. One of the reasons of using layered protocols is to divide the design problem into smaller and manageable pieces

      True False

   b. One of the reasons of using layered protocols is the ease and simplicity in designing new applications which independent of the underlying technology

      True False

   c. In the Internet, new networks (regardless of their underlying physical and data link layers technologies) can be added/connected to the global inter-network through routers

      True False

   d. The range of services provided by a telephone network is limited compare to the Internet

      True False

   e. In a telephone network, new services can be easily added compare to the Internet.

      True False

   f. In the Internet, it is not possible to access a server without its domain name

      True False

   g. The Internet (packet-switching network) suits for multimedia applications

      True False

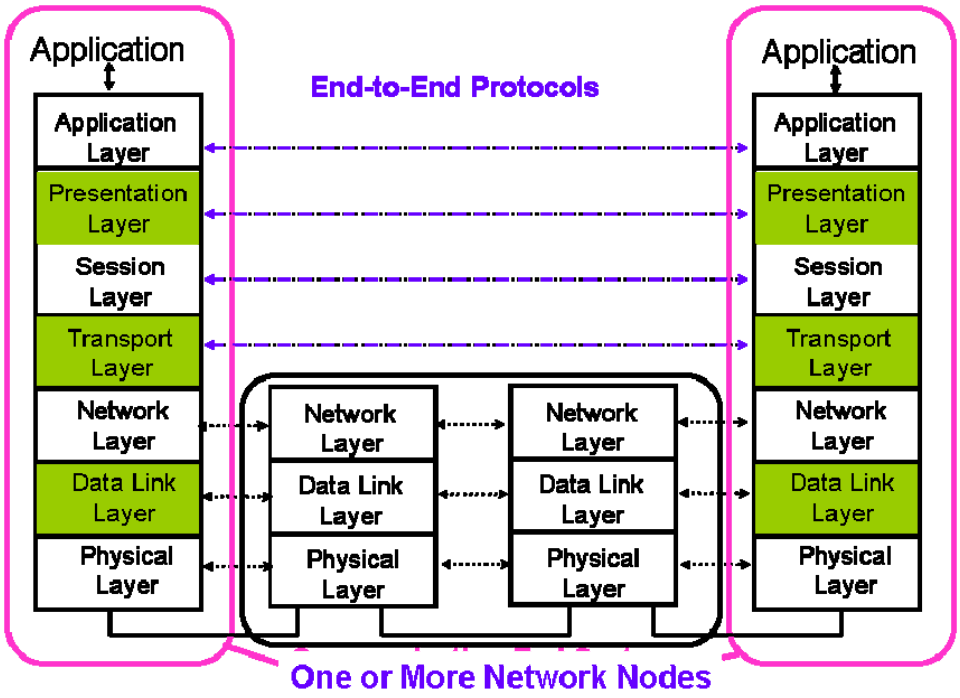
   h. The Internet has five layers relative to the OSI reference model

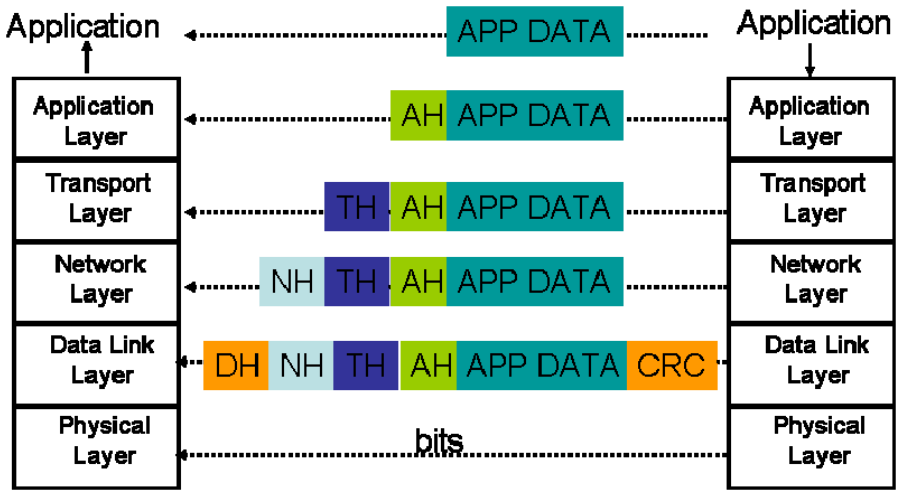
      True False

   i. Voice can be transmitted in the Internet as analog signal

      True False

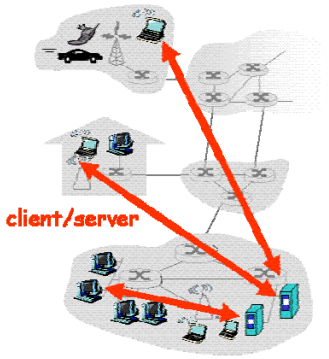
2. State the 7 layers of the OSI stack. Describe how data travels up and down the stack from source to destination. (10 marks)





3. Explain the difference between peer-to-peer networking and client/server networking (6 marks)

Client-server architecture



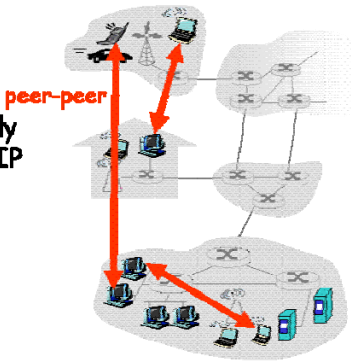
server:
- always-on host
- permanent IP address
- server farms for scaling

clients:
- communicate with server
- may be intermittently connected
- may have dynamic IP addresses
- do not communicate directly with each other

Pure P2P architecture

- *no* always-on server
- arbitrary end systems directly communicate
- peers are intermittently connected and change IP addresses

Highly scalable but difficult to manage



4. Suppose a user has two browser applications active at the same time and suppose that the two applications are accessing the same Web server to retrieve Web documents. How does the server tell the difference between the two applications? (5 marks)

A client application generates an ephemeral port number for every TCP connection. A HTTP request uses TCP and is uniquely identified by client IP address, client (ephemeral) port#, server IP address, and server port# (80).

5. What is error detection in the Transport layer? (3 marks)

Is a mechanism that allows a receiver to detect when bit errors have occurred. TCP and UDP provide integrity checking by including error detection (checksum) fields in their headers.

6. Internet radio is a live internet application. Is this application is an unreliable service? Is this application connection-oriented? (6 marks)

Internet radio is live, so we would like to prevent delays as much as possible. Also, we do not have time for error-detection. Hence Internet radio is unreliable and connectionless.

7. Suppose the size of an uncompressed text file is 1 MByte. How long does it take to download the file over 56 Kbit/sec modem? If the file is compressed with a compression ratio of 1:4, how long would it take to download the file compressed file? (6 marks)

T = 8 (1024) (1024) / 56000 = 149.797 seconds

Compressed file

$T_{compressed}$ = 8 (1024) (1024) / (56000 x 4) = 37.45 seconds