Homework Questions on Application Layer 1

Q1. In what way instant messaging is a hybrid of client-server and P2P architecture?

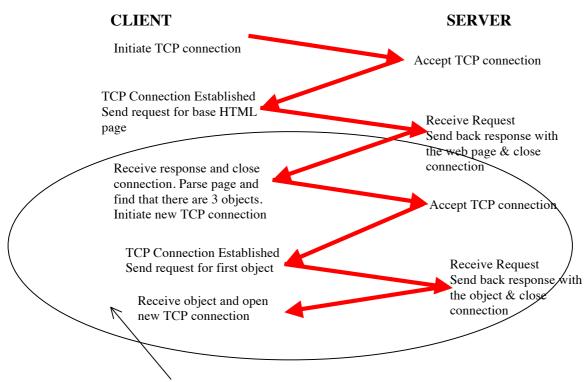
A1.

Instant Messaging involves the initiator to contact a centralized server to locate the address (IP address.) of the receiver: client server model. After this, the instant messaging can be peer to peer – message between the two communicating parties are sent directly between them.

- **Q2.** Multiple Choice Questions Choose one from the possible choices: (correct answers are highlighted)
- A) Suppose a client sends an HTTP request message with the *If-modified-since*: header. Suppose the object in the server has not changed since the last time that client retrieved the object. Then the server will send a response message with the status code:
 - (i) 304 Not Modified
 - (ii) 404 Not Found
 - (iii) 200 OK
 - (iv) 403 Permission Denied
- B) HTTP request and response messages are not human readable
 - (i) True
 - (ii) False
- C) All SMTP e-mail messages must be in 8-bit ASCII
 - (i) True
 - (ii) False (correct answer is 7-bit ASCII)
- **Q3.** Suppose you needed to use HTTP to download a web page with three embedded images. Draw diagrams, similar to those from the lecture slides, depicting the main interactions between the client and server when using non-persistent HTTP, persistent HTTP without pipelining, and persistent HTTP with pipelining.

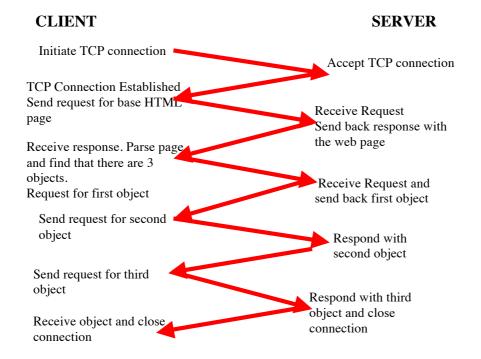
A3.

(a) Non-persistent HTTP



REPEAT ABOVE FOR THE REMAINING TWO OBJECTS

(b) Persistent HTTP without pipelining



(c) Persistent HTTP with pipelining

End of Homework Solutions

CLIENT SERVER Initiate TCP connection Accept TCP connection TCP Connection Established Send request for base HTML Receive Request page Send back response with the web page Receive response. Parse page and find that there are 3 objects. Receive Request and Send back-to-back requests send back the 3 objects for all 3 objects back-to-back and close connection Receive objects and close connection