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Assignment 3 (Chapter 2) [1, 3, 6,

P1] True or false?

a) A User requests a Web page that consists of some text & 3 images. for this page, the client will send one request message & recieve 4 response message.

b) 2 distinct web pages (for example, www.mit.edu/research.html & www.mit.edu/students.html) can be sent over the same persistant connection.

c) with nonpersistent connectn between browsers & origin servers, is the possible for a single TCP segment to carry 2 distinct HTTP request messages.

d) The date: header in the HTTP response message indicates when the object in the response was last modified.

e) HTTP response messages never have an empty message body.

⇒ a) false
b) true
c) false
d) false
e) false.

p3] Consider the following string HTTP client that wants to retrive a web document at a given URL. The IP address of HTTP server is initially unknown. what transport & applicatn layer protocols besides HTTP are needed in this scenario.

⇒ Transport layer protocol.
TCP for HTTP
UDP for DNS

Applicatn layer protocol.
- DNS
- HTTP

P6] obtain the HTTP/1.1 specialieution (RFC2016): Answer the following

a) Explain the mechanism used for signaling between client & server to indicate that a persistent connection is being closed. Can the client, the server, or both signal signal the close of a connection?

b) what encryption services are provided by HTTP?

c) can a client open 3 or more simultaneous connections with a given server?

d) Either a server or a client may close a transport connect betn them if either one detects the connection has been idle for sometime. it is possible that one side starts closing a connection with the other side is transmitting data via the connection. Explain.

=) a) Persistant connections are discussed in sectn 8 of RFC 2016. sections 8.1.2 & 8.1.2.1 of RFC indicate that either the client or the server can indicate to others that it is going to close the persistant connection. It does so by including the connectn-token "close" in the connection-header field of http request/reply.

b) HTTP does not provide any encryption services.

c) (From RFC 2616) "clients that use persistant connectn should limit the no. of simultaneous connections that they maintain to a given server. A single user client shouldnot maintain more than 2 connections with any server or proxy. No//

d) Yes. (From RFC 2616) "A client might have started to send a new request at the some time that the server has decided to close the "idle" connection. From the server's point of view, the connection was closed when it was idle, but from the client point of view, a request is in progress."

P10) consider a short, 10 m link, over which a sender can transmit at a rate of 150 bits/sec. in both directions. Suppose that packets containing data are 100,000 bits long, & packets containing only control (eg: ACK or hand shaking) are 200 bit long. Assume that N parallel connections each get 1/N of the link bandwidth. Now consider the HTTP protocol, & suppose that each downloaded object is 100 K bits long, & that the initial downloaded object contains 10 referred objects from the same sender. would parallel downloads via parallel instances of non persistant HTTP make sense in this case. Now consider persistent HTTP. Do you expect significant gains over the non-persistent case? Justify & explain your answers.

⇒ Given

transmission Rate = 150 bits/sec packet length (L) = 100,000 bit long

Control data = 200 bits object data = 100 kbits Distance (d) = 10 m

N = 10.

$d = d_p$ (propogat delay) + d_t (transmission delay)

$d_t = L/R$ sec. $d_p = d/s = T_p$. Bandwidth = 150 bit/sec.

No. of connections (N) = 10.

Bandwidth = $\frac{150}{10}$ bit/sec

$= \underline{15 \text{ bit/sec}}$

Total time for all recieved objects:

$$= \left(\frac{200}{150} + T_p + \frac{200}{150} + T_p + \frac{200}{150} + T_p + \frac{100000}{150} + T_p\right) + \left(\frac{200}{15} + T_p + \frac{200}{15} + T_p + \frac{200}{15} + T_p + \frac{100000}{15} + T_p\right)$$

$$\Rightarrow \left(\frac{100{,}600}{150} + 4T_p\right) + \left(\frac{100{,}600}{15} + 4T_p\right)$$

$\Rightarrow 7377.38 * T_p$ sec

Total time for persistent HTTP connection:

$$= \left(\frac{200+200+200+100{,}000}{150} + 4T_p\right) + 10 \times \left(\frac{200+100{,}000}{150} + 2T_p\right)$$

$\Rightarrow (670 + 4T_p) + (6680 + 20T_p) \Rightarrow 7350.6 + 24T_p \Rightarrow \underline{\underline{7350.66 + 24T_p}}$ sec

Let us consider propogation speed of the medium is 300×10^6 m/sec.

Then $T_p = \frac{10}{(300 \times 10^6)} = \underline{\underline{0.03 \text{ micro sec}}}$ ∴ T_p is negligible compared to transmission delay.

No expect significant gains over the non-persistant case.
(Persistant HTTP is not significantly faster than non persistant case)