# Chapter 2 Problems

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**Review Questions**

**R1 -**

Facebook - HTTP/SSL

Thunderbird - SMTP

Sock Proxy - SSH

Filezilla - FTP

Cell phone - DHCP

**R5 -**

1. The address of the host
2. An Identifier that specifies the receiving process in the destination host.

**R11 -**

Because these protocols need to be guaranteed that their packets arrive safely at the destination. UDP is unreliable and with HTTP, FTP , SMTP, and POP3 the data cannot afford to not show up.

**Problems**

**P1 -**

1. **A user requests a Web page that consists of some text and three images.  
   For this page, the client will send one request message and receive four response messages.** False
2. **Two distinct Web pages (for example,** [**www.mit.edu/research.html**](http://www.mit.edu/research.html) **and www.mit.edu/students.html) can be sent over the same persistent connection.** True
3. **With nonpersistent connections between browser and origin server, it is possible for a single TCP segment to carry two distinct HTTP request messages.** False
4. **The Date: header in the HTTP response message indicates when the  
   object in the response was last modified.** False
5. **HTTP response messages never have an empty message body.** False

**P4 -**

1. <http://www.gaia.cs.umass.edu/cs453/index.html>
2. HTTP 1.1
3. Persistent
4. It does not show the browser's IP address.
5. Either Firefox or Netscape. It is important to know what the browser is because if you have know problems with certain browsers you can deny the requests.

**P6 -**

1. When either the server or the client send the close connection token within the header the persistent connection will be closed with no more communication. Both the client and the server can terminate a connection.
2. None.
3. Yes
4. Yes, this is incase if any of the packets transmitted were lost so that neither the client or server ends up waiting indefinitely.

**P9 -**

Total average response time =

b) Average access delay for a cache miss 40% is

Total average response time with cache =

**P17 -**

a)

C: dele 1

C: retr 2

S: blah blah …

S: ……….blah

S: .

C: dele 2

C: quit

S: +OK POP3 server signing off

b)

C: retr 2

S: blah blah …

S: ………...blah

S: .

C: quit

S: +OK POP3 server signing off

c)

C: retr1

S: -ERR: no message

C: quit

S: +OK POP3 server signing off

**P19 -**

1. d.root-servers.net -> l.edu-servers.net -> dns.merit.net
2. d.root-servers.net -> g.gtld-servers.net -> ns1.p31.dynect.net

**P22 -**

Server-Client

|  |  |  |  |
| --- | --- | --- | --- |
|  | N = 10 | N = 100 | N = 1000 |
| u = 300 Kbps | 7680 sec | 51200 sec | 512000 sec |
| u = 700 Kbps | 7680 sec | 51200 sec | 512000 sec |
| u = 2 Mbps | 7680 sec | 51200 sec | 512000 sec |

Peer-to-Peer

|  |  |  |  |
| --- | --- | --- | --- |
|  | N = 10 | N = 100 | N = 1000 |
| u = 300 Kbps | 7680 sec | 25904 sec | 47559 sec |
| u = 700 Kbps | 7680 sec | 15616 sec | 21525 sec |
| u = 2 Mbps | 7680 sec | 7680 sec | 7680 sec |

**P26 -**

1. Yes, while it is frowned upon Bob could get the whole file if there are enough peers with the same torrent. He would be less prioritized though since he is not giving back to the community.
2. This could work but each host in a p2p network is supposed to return the chunks of files that they have downloaded. If all the computers did not have each chunk necessary to rebuild the file then it would not work.

**P33 -**

Yes you could open multiple simultaneous connections to a single website. Having multiple connections will provide redundancy as well as more channels to download website content. The disadvantages would be that your computer would have to manage all of the TCP connections. This could also take up bandwidth on your network.