Review Minggu ke-3A

1. Consider the following string of ASCII characters that were captured by Wireshark when the browser sent an HTTP GET message (i.e., this is the actual content of an HTTP GET message). The characters <cr><lf> are carriage return and line-feed characters (that is, the italized character string <cr> in the text below represents the single carriage-return character that was contained at that point in the HTTP header). Answer the following questions, indicating where in the HTTP GET message below you find the answer.

```
GET /cs453/index.html HTTP/1.1<cr><lf>Host: gai
a.cs.umass.edu<cr><lf>User-Agent: Mozilla/5.0 (Windows;U; Windows NT
5.1; en-US; rv:1.7.2) Gecko/20040804 Netscape/7.2 (ax)
<cr><lf>Accept:ex t/xml, application/xml, application/xhtml+xml, text
/html;q=0.9, text/plain;q=0.8,image/png,*/*;q=0.5 <cr><lf>Accept-
Language: en-us,en;q=0.5<cr><lf>Accept- Encoding:
zip,deflate<cr><lf>Accept-Charset: ISO -8859-1,utf-
8;q=0.7,*;q=0.7<cr><lf>Keep-Alive: 300<cr> <lf>Connection:keep-
alive<cr><lf><cr><lf>
```

   a) What is the URL of the document requested by the browser?
   b) What version of HTTP is the browser running?
   c) Does the browser request a non-persistent or a persistent connection?
   d) What is the IP address of the host on which the browser is running?
   e) What type of browser initiates this message? Why is the browser type needed in an HTTP request message?

2. The text below shows the reply sent from the server in response to the HTTP GET message in the question above. Answer the following questions, indicat- ing where in the message below you find the answer.

```
HTTP/1.1 200 OK<cr><lf>Date: Tue, 07 Mar 2008
12:39:45GMT<cr><lf>Server: Apache/2.0.52 (Fedora) <cr><lf>Last-
Modified: Sat, 10 Dec 2005 18:27:46 GMT<cr><lf>ETag: "526c3-f22-
a88a4c80"<cr><lf>Accept- Ranges: bytes<cr><lf>Content-Length:
3874<cr><lf> Keep-Alive: timeout=max=100<cr><lf>Connection: Keep-
Alive<cr><lf>Content-Type: text/html; charset= ISO-8859-
1<cr><lf><cr><lf><!doctype html public "- //w3c//dtd html 4.0
transitional//en"><lf><html><lf> <head><lf> <meta http-
equiv="Content-Type" content="text/html; charset=iso-8859-1"><lf>
<meta name="GENERATOR" content="Mozilla/4.79 [en] (Windows NT 5.0; U)
Netscape]"><lf> <title>CMPSCI 453 / 591 / NTU-ST550A Spring 2005
homepage</title><lf></head><lf> <much more document text following
here (not shown)>
```

   a) Was the server able to successfully find the document or not? What time was the document reply provided?
   b) When was the document last modified?
   c) How many bytes are there in the document being returned?
   d) What are the first 5 bytes of the document being returned?
   e) Did the server agree to a persistent connection?

3. A client want to access an index.html file which contains 10 images stored on the same web server. How many RTTs needed to complete transactions? (Ignore the transmission time dan TCP Closing RTTs)
   a) Non-persistent HTTP with no parallel TCP connections?
   b) Non-persistent HTTP with the browser configured for 4 parallel connections?
   c) Persistent HTTP without Pipelining
   d) Persistent HTTP with Pipelining

4. List five non-proprietary Internet applications and the application-layer protocols that they use.
5. What is the difference between network architecture and application architecture?
6. For a communication session between a pair of processes, which process is the client and which is the server?
7. What information is used by a process running on one host to identify a process running on another host?
8. Suppose you wanted to do a transaction from a remote client to a server as fast as possible. Would you use UDP or TCP? Why?
9. List the four broad classes of services that a transport protocol can provide. For each of the service classes, indicate if either UDP or TCP (or both) provides such a service.
10. What is meant by a handshaking protocol?