Assignment Two

Due Date: 11:00 AM, Feb 06, 2014

Written Assignment (50 points)

Please provide your answers with clear explanations of how to get them.

Please write your full name, computer science account ID and last five digits of your ISU student ID on the paper.

1. Consider the browser sent an HTTP GET message to the server, and then the text below shows the reply sent from the server in response to this HTTP GET message. The characters <cr><lf> are carriage return and line-feed characters (that is, the italic 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 message below you find the answer.

HTTP/1.1 200 OK<cr><lf>Date: Tue, 28 Jan 2014 12:39:45 GMT<cr><lf>Server: Apache/2.0.52 (Fedora) <cr><lf>Last-Modified: Sun, 12 Jan 2014 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>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>COM S 486 / Spring 2014 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 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? Did the server agree to a persistent connection?  (Page 182, P5)

2. Consider Figure 2.7 on the textbook, suppose within your web browser you click on a link to obtain a web page. The IP address for the associated URL is not cached in your local host, so a DNS lookup is necessary to obtain the IP address. Suppose that n DNS servers are visited before your host receives the IP address from DNS; the successive visits incur anRTT of RTT<sub>1</sub>, ..., RTT<sub>n</sub>. Further suppose that webpage associated with the link contains exactly one object, consisting of a small amount of HTML text. Let RTT<sub>0</sub> denote the RTT between the local host and the server containing the object. Assuming zero transmission time of the object, how much time elapses from when the client clicks on the link until the client receives the object?  (Page 183, P7)

3. Referring to the last Problem 2, suppose the HTML file references eight very small objects on the same server. Neglecting transmission times, how much time elapses with:
a. Non-persistent HTTP with no parallel TCP connections?
b. Non-persistent HTTP with the browser configured for 5 parallel connections?
c. Persistent HTTP? (Page 183, P8)

4. In the circular DHT example in Section 2.6.2, suppose that peer 3 learns that peer 5 has left. How does peer 3 update its successor state information? Which peer is now its first successor? Its second successor? (Page 188, P28)

Programming Assignment (50 Points)
Due Date: 12:00 PM, Feb 06, 2014

Problem Description
For this programming assignment, please use C/C++ instead of Java to write the program in assignment one.

Submitting your program
1. Compile all of your .c/.cpp files,
2. Create the executable files,
3. Include a readme.txt file in your source code specifying how to compile and run your programs,
4. Follow the instructions specified in the Turnin instructions page to submit your programming assignment electronically.
5. Use “hw2” as the argument to submit the first programming assignment.

Grading guideline for programming assignment
Total Score: 50 points
I. Program Correctness (40 points)
Your programs are successfully compiled and created, respectively. Correctly send/receive the cipher text messages.
II. Program Robustness (5 points)
Properly handling errors in socket operations
Properly handling other errors, for example, your program should not continue if the number of arguments specified in the command line is not correct or non-recognized options are specified.
III. Program Components and Comments (5 points)
Your server program is named Server.c/ Server.cpp as instructed.
Your codes are commented and documented properly.