COSC 350 Assignment 2 Spring 2015

Due Friday March 27 11:59 pm. Please submit your solutions (one per group) in a single zip file named GroupNameA2S15 via Blackboard. The zip file should only include 4 files (no others): GroupNameClientA2S15.java, GroupNameServerA2S15.java, GroupNameA2WS.cap, GroupNameA2WSans.pdf

Get the code for SntpClient.java and NtpMessage.java from: http://support.ntp.org/bin/view/Support/JavaSntpClient
Information about NTP servers is given at: http://www.pool.ntp.org/en/

Read the comments in the code as needed in order to modify SntpClient to create your client. Your client should work as specified below.
Write a Java UDP socket program by modifying the SntpClient code to create a client class named GroupNameClientA2S15 and a file server class named GroupNameServerA2S15 as follows:

a) When the client runs, it automatically connects to an NTP server using the server's name (the NTP server's name is coded in the client i.e., no user input is given). It then prints the name and IP address of the NTP server, the IP address of the client, and the port numbers used by the NTP server and the client. Next, it processes the response received from the NTP server to find and print the following information (it does not print any other information).

Time at which the client request left the client: T1=
Time at which the NTP server received the request: T2=
Time at which the client received the response from the NTP server: T3=
Total time between the client sending the request to the NTP server and the client receiving the response: T3-T1=

b) The client then prints "enter filename in the form: c:\path\filename.mp3". The user enters the filename in the form specified. The client then sends the filename to a file server listening on localhost/UDP port 33312 (this is the only port used by the file server). The file server reads the file name sent by the client and prints it. It then prints the file size and sends the file size to the client. The client prints the file size sent by the file server and the local system time T4 when it receives the file size. It then waits to receive the file from the file server. While receiving the file, it keeps a count of the number of bytes of the file sent by the file server. When the count equals the file size, the client prints the local system time T5. After the whole file is received, the client prints "enter filename to save in the form: c:\path \savefilename.mp3". The user enters savefilename in the form specified. The client writes the file contents to this file, prints the message "file received" and closes the UDP socket. Open and play the file saved by the client in savefilename to verify that it plays correctly.

c) Capture the packets sent by your client to the NTP server and the response packets received using Wireshark. Indicate the Wireshark frame numbers for these packets. Find the total time between the first and last packets in the exchange as reported by Wireshark. Find the total

number of packets sent by the client and the total number of packets sent by the NTP server. Find the total number of bytes in the packets sent by client and the total number of bytes in the packets sent by the NTP server (only count the data i.e., exclude the bytes in the packet headers). Save the .pcap file named as with these packets as GroupNameA2WS.cap, and your answers to the questions in GroupNameA2WSans.pdf.