Data Communication and Networks (CSCI 4/5300) Project

Part 2 - total 18 points

Due on Nov. 15 (11:59 pm), 2014

Design of a Daemon Process Acting as a TCP Proxy Server

1. Project description

In this project, you are required to implement a daemon process that acts as a general TCP proxy server. The daemon performs the following activities:

(1) The daemon listens for TCP connections on a specified port number.

(2) When a new client initiates a TCP connection request, the daemon accepts the request and establishes a new TCP connection with the new client.

  (a) The daemon forks a child process that is dedicated to handling the new client.

  (b) The child process establishes a newTCP connection to a pre-assigned port on the actual targeted server.

  (c) The child process falls into a loop in which it acts as an intermediator exchanging data (reading/writing or writing/reading) between the client and the targeted server.

(3) Once a child has been forked, the daemon process resumes listening for additional TCP connections.

2. Requirements

(a) You may treat this project as an individual project or form a project team of no more than 2 members.

(b) You are given the flexibility to choose one of your favorite programming languages for implementation either in Windows or Linux environment.
Note: C language is usually preferred for network programming.

Hint: the following functions may be used if C is chosen for implementation:

socket()	*htons()*
bind()	*listen()*
accept()	*fork()*
close()	*inet_addr()*
gethostbyname()	*signal()*
FD_ZERO()	*FD_SET()*
FD_ISSET()	*select()*
read()	*write()*

(c) Test your daemon as a proxy server for our department web server http://www.mtsu.edu/csc/ .

3. Submissions

(a) You must submit all your source code of the daemon program, executable files, and a document that describes the use of your program and how to run it.

(b) Printout of the first 6th line of the HTTP header of a "GET" command sent by the client to the daemon acting as the proxy server for the web server http://www.google.com .

(c) You need to demonstrate your project in class at the end of the semester.

Notes:

I found a few socket programming websites that might be helpful for your project. Some of them did a good job explaining those data structures and function calls you might need to implement in the project.

http://www.linuxhowtos.org/C_C++/socket.htm

http://www.umiacs.com/sockaddr_inman.html

http://net.pku.edu.cn/~course/cs501/2011/code/BSD_Socket.t/sockets.pdf

ftp://ftp.sas.com/techsup/download/SASC/share5958-59/S5958v2.pdf