ITS332 – Quiz 2 Answers

Name: _____

ID: _____ Mark: _____ (out of 10)

Question 1 [3 marks]

Match the C Internet socket function to the appropriate description of the function. The socket functions are: accept, bind, connect, listen, socket, write, read.

a) _____ triggers a TCP SYN segment to be sent

b) _____ associates an IP address and a port number to a socket

c) _____ creates an endpoint for communication with another computer

d) _____ blocks until a TCP SYN segment is received

e) _____ blocks until a TCP data segment is received

Answers

a. connect

b.bind

c. socket

d. accept

e. read

Question 2 [2 marks]

Consider the following files on a computer using Ubuntu Linux and acting as a router and web server:

1. /etc/apache2/sites-available/default
2. /etc/apache2/passwd/passwords
3. /var/log/apache2/access.log
4. /var/www/index.html
5. /proc/sys/net/ipv4/ip_forward
6. /home/network/Desktop/index.html

a) In which file could you find the IP addresses of computers that have accessed the web server?

b) Which file would you modify to change the computer from a router to a host?
c) Which file would you modify to ensure users (of web browser) would required to enter a username/password if accessing any file in the web server?

Answer

a. /var/log/apache2/access.log

b. /proc/sys/net/ipv4/ip_forward

c. /etc/apache2/sites-available/default

Question 3 [3 marks]

Consider the following entry from a web server log (this is a single entry;):

124.121.140.212 - - [12/Feb/2009:19:19:49 +0700] "GET /~steven/its413/index.html HTTP/1.1" 200 2886 "http://ict.siit.tu.ac.th/~steven/index.html" "Mozilla/4.0 (compatible; MSIE 7.0; Windows NT 5.1)"

a) Do you know the port number that the web browser used? If yes, what is it?
b) Do you know the IP address that the computer of the web browser used? If yes, what is it?
c) Do you know the domain name of the web server? If yes, what is it?
d) Do you know the URL that was requested by the web browser? If yes, what is it?
e) Do you know the previous page that the web browser visited? If yes, what is it?
f) Do you know the size of the request sent by the web browser? If yes, what is it?
g) Do you know the size of the response sent by the web server? If yes, what is it?
h) Did the requested file exist on the server? Explain how you know the answer.

Answer

a. No.

b. Yes. 124.121.140.212

c. No. (Why not? The request in this case does not include the domain, only the path, e.g. /~steven/its413/index.html. From the information given, there is no way to know the domain of the server)

d. Yes. /~steven/its413/index.html

e. Yes. http://ict.siit.tu.ac.th/~steven/index.html

f. No

g. Yes. 2886 bytes.

h. Yes. Response code is 200.

Question 4 [2 marks]

Answer the questions about the following example code segment for a server program:

```
while (1) {
      newsockfd = accept(sockfd, (struct sockaddr *) &cli_addr, &clilen);
      if (newsockfd < 0) error("ERROR on accept");
      pid = fork();
      if (pid < 0) error("ERROR on fork");
      if (pid == 0)  {
            close(sockfd);
            handlerequest(newsockfd, client_address);
            exit(0);
      }
      else {
            close(newsockfd);
      }
}
```

Assume the process that is initially created when the program is executed is the parent server process. Also assume no errors occur.

a) The parent server process that executes the program will:

   i. Execute the handlerequest() function if a connection from a client is accepted

   ii. Create a new child process when accept() function is called.

   iii. Loop continuously, exiting only when the handlerequest() function has completed.

   iv. Create a new child process for each connection request it accepts.

   v. None of the above.

b) The accept() function:

   i. Initiates a TCP connection to the client.

   ii. Is a non-blocking function.

   iii. Will block until a TCP connection request is received by the client.

   iv. Will be executed by the child server process, not the parent service process.

   v. None of the above.

c) If the handlerequest() function takes 10 seconds to execute, then:

   i. A second client cannot connect to the server within those 10 seconds

   ii. Clients can only connect to the server at a rate of 1 connection per 10 seconds

   iii. The rate at which clients can connect to the server is independent of the duration of handlerequest()

   iv. An error will occur if a second client connects to the server within those 10 seconds

v. None of the above.

Answer

a. Create a new child process for each connection request it accepts.

b. Will block until a TCP connection request is received by the client.

c. The rate at which clients can connect to the server is independent of the duration of handlerequest()