ITS332 – Quiz 2 Answers

Name: _____

ID: _____   Mark: _____ (out of 5)

Some questions ask you to give a C function name as an answer. You can select from the following functions: accept, bind, bzero, close, connect, exit, fgets, fork, listen, read, socket, sprintf, sscanf, strcpy, write.

Question 1 [2 marks]

Which function

creates an endpoint for communication with another computer?	socket
causes a TCP SYN segment to be sent from client to server?	connect
blocks until the server receives a connection setup request?	accept
associates addresses to a socket?	bind
closes a socket?	close
creates a new process?	fork
stops an existing process?	exit
blocks until a TCP segment is received?	accept or read

Question 2 [2 marks]

Assuming a TCP connection has been established between host A and host B, consider the following code that executes on the hosts, assuming the program on Host B is running and then the program on Host A starts:

Host A
```
strcpy(var1,"string1");
strcpy(var2,"string2");
printf("%s",var1);
fgets(var3,255,stdin);
write(socketid,var2,strlen(var2));
n = read(socketid,var4,255);
printf("%s",var4);
```

Host B
```
strcpy(var1,"string1");
strcpy(var2,"string2");
n = read(sid,var3,255);
strcat(var3,var2);
n = write(sid,var3,strlen(var3));
printf("%s",var3);
```

   a) How many bytes are in the TCP Data segment (excluding header) sent from Host A to Host B? [1 mark]

Answer

7 bytes (as indicated in the third parameter of the write() function call).

b) How many bytes are in the TCP Data segment (excluding header) sent from Host B to Host A? [1 mark]

Answer

14 bytes.

c) What is printed on the screen at Host A? [1 mark]

Answer

string1string2string2

d) What is printed on the screen at Host B? [1 mark]

Answer

string2string2

Host A

```
strcpy(var1,"string01");
strcpy(var2,"string02");
printf("%s",var1);
fgets(var3,255,stdin);
write(socketid,var2,strlen(var2));
n = read(socketid,var4,255);
printf("%s",var4);
```

Host B

```
strcpy(var1,"string01");
strcpy(var2,"string02");
n = read(sid,var3,255);
strcat(var1,var3);
n = write(sid,var1,strlen(var1));
printf("%s",var3);
```

a) How many bytes are in the TCP Data segment (excluding header) sent from Host A to Host B? [1 mark]

Answer

8 bytes (as indicated in the third parameter of the write() function call).

b) How many bytes are in the TCP Data segment (excluding header) sent from Host B to Host A? [1 mark]

Answer

16 bytes.

c) What is printed on the screen at Host A? [1 mark]

Answer

string01string01string01

d) What is printed on the screen at Host B? [1 mark]

Answer

string01string01

Host A
```
strcpy(var1,"message1");
strcpy(var2,"message2");
strcpy(var3,"message3");
sprintf(var1,"%s message4 %s",var2,var3);
write(sockid,var1,strlen(var1));
n= read(sockid,var4,100);
printf("%s",var4);
```

Host B
```
strcpy(var1,"message1");
n = read(sid,var2,100);
strcat(var2,var1);
write(sid,var2,strlen(var2);
```

a) How many bytes are in the TCP Data segment (excluding header) sent from Host A to Host B? [1 mark]

Answer

26 bytes

b) How many bytes are in the TCP Data segment (excluding header) sent from Host B to Host A? [1 mark]

Answer

34 bytes.

c) What is printed on the screen at Host A? [1 mark]

Answer

message2 message4 message3message1

Question 3 [1 mark]

HTTP is used for web browsers to request files from web servers. The format of a request message is:

> GET *url* HTTP/1.1

and the format of a response message is:

> HTTP/1.1 *statuscode*

where common status codes are:

> 200 Ok
>
> 304 Not Modified
>
> 401 Unauthorized
>
> 404 Not Found

Consider two web servers, www.example1.com and www.example2.com, with the following files in their root web directory:

www.example1.com	www.example2.com
file1.html	file1.html
file1.jpg	file2.html
file2.html	file3.html

Draw a diagram indicating the messages sent between browser and server if

the browser user types in the URL www.example1.com/file1.html into the address bar.

the browser user types in the URL www.example1.com/file3.html into the address bar.

the browser user types in the URL www.example1.com/file1.html into the address bar, and the requested file is password protected.

the browser user types in the URL www.example1.com/file2.jpg into the address bar.

Answers

```
    Browser                                                        Server
         --------- GET www.example1.com/file1.html HTTP/1.1 --------->
         <----------------------- HTTP/1.1 200 Ok ----------------------------


         --------- GET www.example1.com/file3.html HTTP/1.1 --------->
         <--------------------- HTTP/1.1 404 Not Found----------------------
```

--------- GET www.example1.com/file1.html HTTP/1.1 --------->

<-------------------- HTTP/1.1 401 Unauthorized---------------------

--------- GET www.example1.com/file2.jpg HTTP/1.1 --------->

<--------------------- HTTP/1.1 404 Not Found----------------------