

System Software Assignment 2

a. Create a Server Socket program to run on the same server and the Intranet site.

A web socket program was created. The web sockets waits for client programs to connect to the server. A socket is created and is blinded to an address and port number. The socket is then set to listening, the socket listen for clients to connects. If any errors occur when creating a socket, an error is displayed. When a connection is accepted, a thread is created and a handler is assigned.

b. Create a Client program to connect to the server socket program.

A client program creates a socket and connects to the ip address and the port number for the server. Once the socket it created, a user must authenticate themselves in order for file transfer.

c. Clients must authenticate with the server program before any transfers are permitted.

When a client connects to the server, the client must pass their username and password to the server. The server will authenticate the user by comparing the credentials passed by the client program to credentials stored in a text file on the server side. If the user credentials are correct, the client program is allowed to pass a file from the client machine to be stored to the server machine. The usernames and password from a text file is read from the server. These are the credentials that must be used in order to transfer a file. If the username and password are found in the text file, a integer variable is set to one, this represent True if it was a boolean.

```
FILE *auth_file = fopen(TEXT_FILE, "r");  
  
while(fgets(file_line, 80, auth_file)) {  
    sscanf(file_line, "%s %s", userInfo, passInfo);  
  
    if((strcmp(username, userInfo) == 0) && (strcmp(password, passInfo) == 0)) {  
        user_found = 1;  
    }  
}
```

d. The client must take a file name and path via console and transfer this to the server to be stored.

Once the user credentials have been authenticates, the user is prompted with a menu. The user can choose to select a directory to store the file from the client to the server machine. The directors consist of root, promotions, marketing, offers and sales. Once the directory is chosen, the user can choose the file on the their system to transfer to the server. The user enters in file name to be transferred. The file is opened using fopen. Each character in the file is stored into an array. The file is iterated until the EOF character is found. Once the EOF character us found, this means the end of the file has been reached. The array containing the characters from the file is sent to the server. The name of file entered in by the user is sent to the server as well.

The server receives the information from the client and creates a new file. The file name is the one entered in by the user and the file is filled with the content from the array that was ent from the client. The file is saved in the directory specified by the user.

The below code illustrates the file been opened specified by the user. The content is stored to the file_contents array. The array is then sent to the server to be stored.

```
// read in file contents
int i = 0;
puts("Contents to add to file: ");
while ((c = getc(file)) != EOF) {
    file_contents[i] = c;
    i++;
}
printf("%s", file_contents);
|
// send the dfile contents to the server.
send(sock, file_contents, strlen(file_contents), 0);
```

e. The server must inform the client if the transfer was successful or not.

When the file has finished transferring the content to the server. The server responds a success or failure message to the user depending if the file transferred was received or not. When a file transfer was completed, the username of the client, the text file, the directory chosen and the time was stored into a log file.

```
-----
User: Jonathan
Time : Fri Apr 28 14:46:00 2017
Transfer of file text.txt completed to directory /Users/macbookpro/Documents/College/Fourth_Year/System_software/Assignment2/server/Offers/text.txt:
-----
User: Jonathan
Time : Fri Apr 28 14:52:46 2017
Transfer of file  completed to directory :
-----
User: Jonathan
Time : Fri Apr 28 14:53:40 2017
Transfer of file home.html completed to directory /Users/macbookpro/Documents/College/Fourth_Year/System_software/Assignment2/server/Marketing/home.html:
-----
User: Jonathan
Time : Fri Apr 28 14:55:52 2017
Transfer of file home.html completed to directory /Users/macbookpro/Documents/College/Fourth_Year/System_software/Assignment2/server/Offers/home.html:
-----
User: Jonathan
Time : Fri Apr 28 14:59:18 2017
Transfer of file home.html completed to directory /Users/macbookpro/Documents/College/Fourth_Year/System_software/Assignment2/server/Offers/home.html:
-----
```

A makefile was created to compile the server and client c files.

```
CC=gcc

client/client.o : client/client.c $(headers)
$(CC) -c client/client.c

server/server.o : server/server.c $(headers)
$(CC) -c server/server.c
```