Assignment #1 : Write a concurrent server and corresponding client in C (using process) to implement the following dialog.

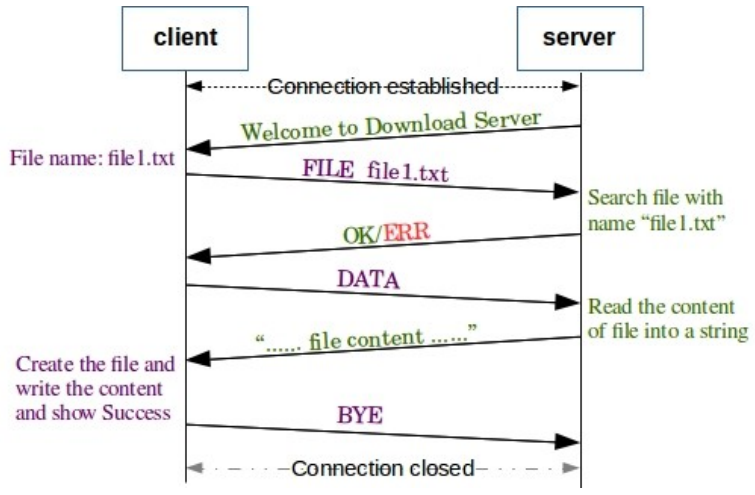
* (Server) send a welcome string to the client when connected reading from a file "welcome.msg".
* (Client) Receive the message, ask for user name from user and send the username
  to the server as "USER <username>".
* (Server) Receive the username and checks in file "user.txt",
  . if found, send a message as "1 please specify password"
  . else send a message as "0 please specify username"
* (Client) Receive the message and check the first digit,
  . if 1 ask user for password and send it as "PASS <password>"
  . if 0 again ask for username and send it as "USER <username>"
* (Server) Receive message if first word is PASS check the password in "user.txt" file.
  . if found, send a message "1 Thank <username> for login"
  . else send a message "0 please specify password"
* (Client) Receive the message and check the first digit,
  . if 1 show the message from server and close the connection.
  . if 0 again ask for password and send it as "PASS <password>"

Content of file "user.txt"

user1	password1
user2	password2
user3	password3
. . .	

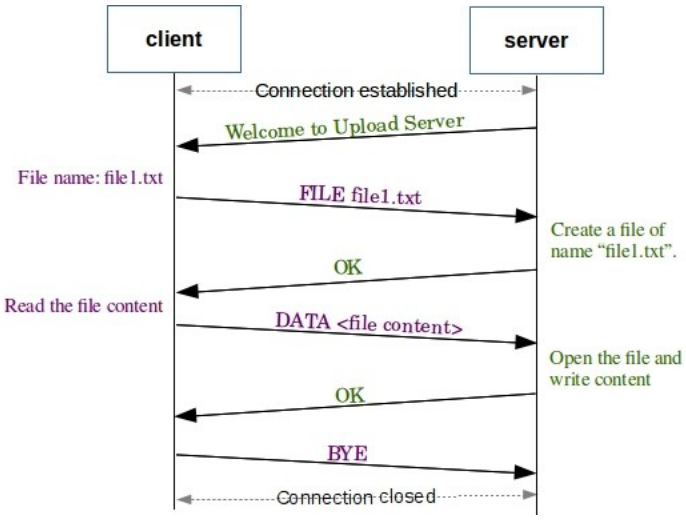
Assignment #2 : Write a C client & concurrent server programs that where the client will download a file from server. The protocol is discussed as below and shown in the figure. Violet text identifies client display or what it is doing and ---> sending to server, Green text identifies what server is doing and ---> sending to the client. Red text identifies ERROR situation i.e. file not found.

S> send welcome message
C> ask for file name to download
C> send command FILE <filename>
S> search <filename> in current directory
S> ---> send OK if file exist
S> ---> send ERR if file does not exist
If OK received
C> ---> send command DATA
If ERR received
C> ---> send command BYE
C> terminate connection
S> read the file content
S> ---> send the <file content>
C> receive <file content>
C> save to <filename>
C> show Success
C> ---> send command BYE
C> terminate connection
S> receive BYE and terminate connection



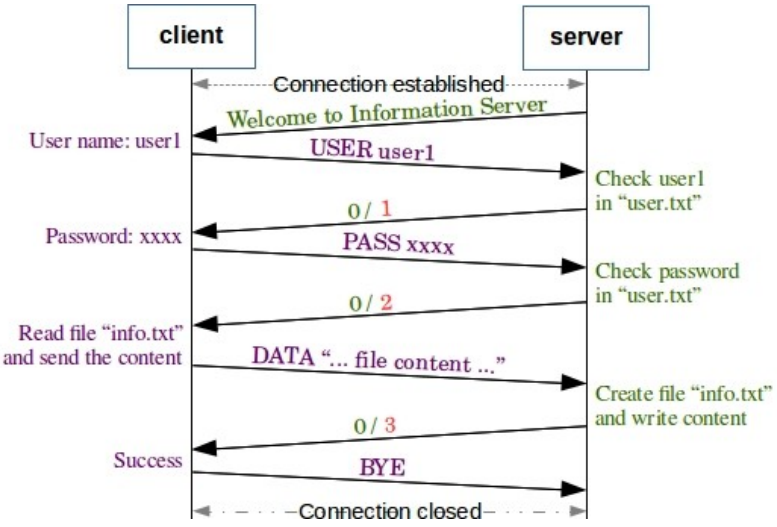
Assignment #3 : Write a C client & concurrent server program where the client will upload a file to the server. The protocol is discussed as below and shown in the figure. Violet text identifies client display or what it is doing and ---> sending to server, Green text identifies what server is doing and ---> sending to the client.

S> send welcome message
C> ask for file name to upload
C> send command FILE <filename>
S> Create the file in current directory
S> ---> send OK
C> read the content of the file
C> ---> send command DATA <file content>
S> receive the file content
S> open the file in write mode
S> save file content to <filename>
S> ---> send OK
C> show Success
C> ---> send command BYE
C> terminate connection
S> receive BYE and terminate connection



Assignment #4 : Write a C client & concurrent server program where client will upload user information to the server after authentication. The protocol is discussed as below and shown in the figure. Violet text identifies client display or what it is doing and ---> sending to server, Green text identifies what server is doing and ---> sending to the client. Red text identifies ERROR situation: 1 – username not found, 2 – password does not match, 3 – not able to write content into "info.txt" file.

S> send welcome message
C> ask for user name
C> send command USER <username>
S> search <username> in user.txt file
S> ---> send 0 if user exist
S> ---> send 1 if user search fails
If 0 received
C> as for password
C> ---> send command PASS <password>
If 1 received
C> ---> send command BYE
C> terminate connection
S> check password in "user.txt" file
S> ---> send 0 if password matches
S> ---> send 2 if password does not match
If 0 received
C> read the content of "info.txt" file
C> ---> send command DATA <content>
If 2 received
C> ---> send command BYE
C> terminate connection
S> create a file "info.txt"
S> write the content into the file
S> ---> send 0 if it can write successfully
S> ---> send 3 if it fails to write
If 0 received
C> show Success
C> ---> send command BYE



Content of file "user.txt"

user1	password1
user2	password2
user3	password3

C> terminate connection
If 3 received
C> show Fail
C> ---> send command BYE
C> terminate connection
S> receive BYE and terminate connection

Assignment #5 : Write a C client & concurrent server programs that where the client will take MATHEMATICS service from server. The protocol is discussed as below and shown in the figure. Violet text identifies client display or what it is doing and ---> sending to server, Green text identifies what server is doing and ---> sending to the client. Red text identifies ERROR situation.

S> send welcome message
C> gives the command prompt
Client~:
User type different Math commands
Client~:sin 30
C>---> SINE 30
S>extract command and arguments if able to find value send it else send ERR
S>---> OK 0.5 if found
S>---> ERR if not found
C> receive the response, display the message and returns the prompt.
Repeat this until user type BYE.
Client~: BYE
C>--->BYE
S>--->Goodby
Close the connection