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                      P538 - Computer Networks
                    Assignment: 1- netcat_part

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Project Description:
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netcat_part.c:

It is networking program implemented using socket programming. It functions
as both Client and Server.
Client can connect to the Server to send Messages as well as to send Files.
Files can be sent as a whole or partially.
Server reads the file from the client and writes the data to an output
file.
The main function has the list of functions which are called in the course
of the program.

Program execution flow is as follows:

Server:

   1) In parse_args function processes various cases to check for -l
      option which enables the server mode and also -p option which
      reads the port number.

   2) initialize_server function is invoked which creates a socket and
      binds server to the host IP address and on the given port number.

   3) The socket is in the listen mode after the bind is successful. It
      accepts the connection from the client.

   4) This server serves one client and exits.

Client:

   1) initialize_client is invoked that creates the client's socket.

   2) With the client we can use various options. When –m option is
      used, the client is in message mode which allows us to send a
      message to the server.

   3) When –o option is used, it enables us to set the offset and allows
      us to read the data from the position after the offset.

   4) When –n option is used, it enables us to read the number of bytes
      specified.

5) –o , -n option can be used together which lets us to read the data from the position where the offset is set to the number of bytes specified.

Project Compilation:

In order to compile without the make me file,

gcc netcat_part.c

In order to compile using makefile :
1) make clean : This removes the previously generated object files and output_file.txt if exists.
2) Make : This command compiles the netcat_part.c file and givesthe necessary object file.

Project Execution:

To execute netcat_part in client mode, Use the following in the command line

./netcat_part.c localhost –p <port number>

To execute netcat_part in client mode in order to send message to the server

./netcat_part.c localhost –p <port number> -m "message intended"

To send the whole file,

./netcat_part.c localhost –p <port number> <filename to read the data from>

To specify the number of bytes to be sent,

./netcat_part.c localhost –p <port number> -n <number of bytes> <filename to read the data from>

To specify the offset,

./netcat_part.c localhost –p <port number> -o <offset> <filename to read the data from>

To specify the number of bytes and offset,

./netcat_part.c localhost –p <port number> -o <offset> -n <number of bytes> <filename to read the data from>

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Output Analyzation :
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The output of the program is as follows:
Useful information can be obtained by user using -h or any wrong
command gives the user the options how to execute
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