CS485 / ECE440
Homework 3 - Network Application

Description:

In the previous homework assignment, you implemented TCP server and client functions and UDP server and client functions. If you were able to monitor the communications with Wireshark, you observed that the text messages that you transmitted could be observed in the data sections of the packets. Our objective in this lab is to introduce security measures that will prevent the messages from being read by someone monitoring the communication channel. To introduce a measure of security, you will implement a simple substitution cipher to "encrypt" the message before it is transmitted. On the receiving end, the inverse process will be used to retrieve the original message. Specifically, modify your TCP server and client software to encrypt and decrypt messages.

For a substitution cipher, one letter is substituted for another. For example if the message contains an A, then the cipher text would represent that as another letter, such as W. To make the problem manageable, you can limit the input character set to only use upper case letters, which are represented as 65 to 90 in the ASCII format. Your messages will not have any special characters or numbers. You will need check whether an input character is a space character, which is represented as decimal 32. (You can choose whether or not you want to transpose the space character.) You will also have to check for line feed, carriage return and null characters. These will be transmitted with no changes.

Your screenshots should show the original message and the cipher code that is transmitted. On the receiving end, show the received cipher code and the deciphered message. If possible, include an abbreviated Wireshark capture that shows the encrypted message being transmitted.