# CSCI 367 - Computer Networks I

# Assignment 02 – TCP Transport Layer Version

# Client-Server – Multiplication Guessing Game Server (MGG)

# Program Specification

Create a TCP client-server application that uses TCP/IP and the Sockets API.

The client-server application helps elementary students learn their multiplication.

* The server listens for client connections.
* The client connects to the server.
* The server sends the client the following message:
  + “Would you like to play (y/n)?”
* The client responds, y or n.
* If the client responds with y, the server generates two random values and sends a question that prompts the client (student) for the product. For example:
  + What is 3 times 4?
* The client sends back a status message.
  + If the client’s answer is correct, the server sends the message "Correct!"
  + If the client’s answer is wrong, the server sends the message "Wrong!”
* The client should then acknowledge the server’s status message.
* The server should prompt the user to see if he/she wants to continue playing:
  + "Would you like to play again (y/n)?"
* The server should keep statistics on the number of correct and wrong responses and send the result back to the client after the client decides to stop playing.
* Record and save the TCP/IP packet exchanges (File…Export Specified Packets)

# Program Execution

Compile your source code files.

* If your source code has no syntax errors, an executable file is produced.
* Execute the program and check the accuracy of the program outputs.
* Below is a sample run showing the server and client output.

Graphical user interface, text, application

Description automatically generated

Graphical user interface, text, application, email

Description automatically generated

# Submission

1. Upload your source code and header ﬁles to Canvas.
2. Upload your packet captures to Canvas as a text file named Packet\_Captures.txt.
3. For this lab, Canvas has been conﬁgured to permit only files that end with the .c, .h and .txt file extensions.

# Comments

At the top of the source code files, add the following commenting:

/\*

# Name:

# Description:

# Date:

# Specification:

\*/

# Windows versus Linux

The computers in the CS building are dual boot machines. That means that at start up you have the option to launch and log into a Windows account, or a Linux account. For all future labs, you are welcome to log into whichever one you are most comfortable with. If you have never used Linux, you can stick to Windows for this lab. To switch operating systems, you must reboot the computer. At start-up, you are given the option to start Linux or Windows. Use the keyboard arrow keys to select whichever you want.