COSC 4301 – MODERN PROGRAMMING
Project 4 – Client/Server Program

Write a client/server program that read three integers from the user on the client side. These integers can be entered as one string and let the server parse it out to retrieve the three integers. The server should then calculate the sum, mean, and standard deviation of all odd or even integers between the first two integers, inclusive. The server should use the third integer, which must be 1 or 2, to determine whether to find the sum, mean, and standard deviation of the odd or even integers between the first two integers. If the third number is 1, the server should perform the task for the odd integers and perform the task for the even numbers if the number is 2.

Use the loopback address (**127.0.0.1**) for your server address and let it listen on port **4301**, the course number.

The server should validate the input from the client as follows and sends an appropriate message back to the client:

1. The first integer must be less than the second.
2. The third integer must be 1 or 2
3. All the integers must be greater than zero.

Allow the user to run the program as many times as possible until he/she enters "Bye" to indicate no more data. The client should terminate, and the server should go back to listen for new client connections.

The server code and the client code must be in separate classes. **No input, processing, or output should happen in the main methods.** All work should be delegated to other non-static methods.

Test your program to make sure it works correctly and then copy and paste the output to a file named **Project4-output.txt**. Create a folder named, **YourFullName_Project4**. Copy your source codes and the output file to the folder. **Zip the folder, as a ".zip" file, and upload it to Blackboard**.

All classes in this project must be public, non-static and not nested in other classes.

Every method in your program should be limited to performing a single, well-defined task, and the name of the method should express that task effectively.

Before you upload your project to Blackboard:

- Ensure that your code conforms to the style expectations set out in class and briefly discussed below.

- Make sure your variable names and methods are descriptive and follow standard capitalization conventions.

- Put comments wherever necessary. Comments at the top of each module should include your name, file name, and a description of the module. Comments at the beginning of methods describe what the method does, what the parameters are, and what the return value is. Use comments elsewhere to help your reader follow the flow of your code. **See the ProjectTemplate.java file for more details**.

- *Program readability and elegance are as important as correctness.* After you have written your method, read and re-read it to eliminate any redundant lines of code, and to make sure variables and methods names are intuitive and relevant.

Read the assignment very carefully to ensure that you have followed all instructions and satisfied all requirements. **You will not get full credit for this project if it is not written as instructed even if it works as expected.**