COMP 4300
Assignment 1

TCP chat client-server application

Hard deadline: Oct 20th, 11 PM
Objectives:
      Client-server interactions
      TCP connection

Overview:
In this assignment, you will learn about client-server applications. Your task is to develop a small chat application that includes client and server components.

The server allows clients to:
- View list of existing chat rooms
- View the number and list of connected users for each room
- Join existing chat rooms if the room capacity is not full. (Each room has a maximum capacity of 5, and the server does not allow a new user to join a chat room if the capacity of a room is full.)
- Create chat-rooms
- Send messages to chat-rooms
- Leave a chat-room

The client provides an interface that enables a user to:
- View list of existing chat rooms
- View the number and list of connected users for each room
- Join one or more existing chat rooms if the room has a capacity.
- Create chat-rooms
- Send messages to chat-rooms
- Leave a chat-room

You should use sockets and TCP connections to create the application.

Programming language:
You can use any programming language for this assignment but recommended languages are Java, Python, Nodejs and Go lang.

10% Bonus: Develop the same application using web services and rest API instead of sockets.

What to hand in (Submit through UM learn) a zip file include:

- Assignment source code
- Clear instructions for markers on how to run your assignment (PDF file named "instruction")
- Screenshots of every step assignment requested functionality (you can add a single line explanation on top of the screenshot image for clarity)
- A PDF file of the testing report

Grading:
Functionality = 80 %
- TCP connection between client and server 10%
- View list of existing chat rooms 10%
- View the number and list of connected users for each room 10%
- Join existing chat rooms 10%
- Check room capacity and restrict access to full capacity rooms 10%
- Create chat rooms 10%
- Send messages to chat rooms 10%
- Leave a chat room 10 %

Documented source code 10 %
A summary testing report on how the application was tested 10 %