CIS656 – Distributed Systems – Fall 2025
Programming Assignment 1 – Socket Programming
Maximum Points: 100 (3% of the final grade)
Due: 8:30PM on Wednesday, September 10, 2025
(You may work on that individually, or as a group of two or three people)

Objective

The objective of this programming assignment is for students to become familiar with socket programming. Upon completion, students will be able to implement simple distributed systems that communicate over the network using sockets.

Description

In this programming assignment, a simple client-server communication model is implemented. You need to create two programs, server and client. They should work as follows.

- Run your server program first. The server prints a statement "The Server is running". Then it waits for the client's connection.

- After the server is up, run the client program. The client asks your input for the server's IP address.

- After the client is connected to the server, the server should send the current date and time (such as "Sat Aug 30 22:47:26 EDT 2025") to the client. The client should display the date and time received from the server and return "Received" to the server. The server should display the message "Received" from the client on the screen. Finally, the client closes the connection.

- After the client is closed, the server should keep running and be able to receive the client's connection again, unless you manually shut down the server program.

Important Points

- You can open a terminal in the machine running the server program and use the command "hostname -I" to get the IP address of the server. (Here, it is "-I" instead of "-i".) You will find the IP address in the format as "35.39.29.xx 172.17.0.1". Please just use the first part "35.39.29.xx" as the IP address for our programming assignments.
- **You should make sure your server and client can work well in two machines. Please use CIS virtual lab machines to program and test.**
- You can choose whatever the programming language you feel comfortable, as long as you use sockets to communicate and have the expected result.
- For this programming assignment, you do NOT need to consider multi-threads for concurrency. You can assume there is only one client at a time connected to the server.
- Please keep your source files for future programming assignments.

Grading Criteria:

- **Program correctness: 75%**
- **Demo or video: 25% (please see the requirements below. If you only submit the source codes but do not demo your program or make a video, 25% of your grade will be deducted.)**

Depending on the format, please follow the following requirements.

(1) If you can demonstrate your program in person with the instructor, please do that during the office hours, or at the end of Wednesday, September 10's class. Then you do NOT need to submit anything to BlackBoard.

(2) If you want to demonstrate your program online synchronously with the instructor, you can do that during the office hours, or at the end of Wednesday, September 10's class online via Zoom. Then you do NOT need to submit anything to BlackBoard.

(3) If you cannot demonstrate your program in person or online synchronously with the instructor, please make a video to show the program correctness and go through your source codes to explain how they work. Then please submit the source codes and video link to BlackBoard. If you work in a group, only ONE group member needs to submit the source file and the video link, but please include your group members' names in "Submission" field of the submission page.