

# ECE 3740 Systems Engineering Principles

## Project 2

### Java TCP/IP Client-Server Framework

#### P2 Due Dates: (See Course Web Page)

#### Introduction

The Systems Engineering Principles Project 2 (SEP Project 2) consists of the series Assignment 3, Laboratory 2, and Assignment 4. The SEP Project 2 has three main objectives: the first objective is to develop Java code for the single-threaded Client portion of a single-threaded Time-Server application. The second objective is to develop Java code for the multi-threaded Client portion of a multi-threaded Time-Server application. The third objective is to refactor the multithreaded client.

#### ***P2.1 (Assignment 3): Java single-threaded TCP/IP Client (done in lab)***

1. Develop Java code to implement a single-threaded Client, which connects to a Time-Server. Use the given single-threaded server code as the Time-Server. Analyze the given single-threaded server code to determine the protocol, which must be followed by your client. Also, consult with the class presentation slides for an explanation of the given single-threaded server. Your client must be able to do the following:
  - a. Connect with the given single-threaded server.
  - b. Obtain the current time from the given single-threaded server.
  - c. Disconnect from the single-threaded server.
  - d. Quit the client program.

Design a test-plan and procedure (TPP) of your Java single-threaded TCP/IP client, which uses the given server. Your test plan must include all points of functionality as listed above. Submit your TPP to the TA for marking, or, if you are able to complete P2.1 in the schedule lab period and successfully demonstrate it to the TA, then the submission of the TPP document is not required.

#### ***P2.2 (LAB 2): Java TCP/IP Client to Match Given Server with Console User Interface (Done as assignment)***

Part 2 of Project 2 (P2.2) requires that students create code for a multi-threaded client. Test your multi-threaded client with the given multi-threaded server.

1. Submit a test plan and procedure for P2.2 to the TA for marking.

#### ***P2.3 (Assignment 4): Refactored Client (Not marked)***

1. Refactor your client. Follow the same procedure as given in the lecture notes: [Refactoring the Multithreaded Client/Server](#):
  - a. Overloading
  - b. Java interface
  - c. Callback
  - d. Protocol