## Overview

The purpose of this Lab 3 assignment is to create a TCP server that will receive request messages from **another** student's Lab 2 TCP client, create a response and return the response back to the client. The Lab 2 client is to run in "scenario 2" mode (asynchronous transaction processing mode) with the response delay field set to zero milliseconds.

The student will need to create a method to control the pacing of request messages from the client. This method of pacing control may be at the student's choosing, such as a menu selectable setting, invocation argument, or perhaps data dependent. The Lab 2 client will need to submit request messages to the Lab 3 server up to a maximum pace of 5000 requests per minute (1 request every 12 milliseconds). For purposes of testing and debugging, the student will want to be able to ratchet this pacing from a low of a single transaction, up to 5000 per minute.

Request and response message formats are as detailed in the description for Lab 2. The student may populate the request and response data fields with data of their choosing. Suggest though you may want to include a sequence number somewhere that the server may echo back in the response so that you may easily confirm there is a mutually exclusive response associated with each request.

To complete Lab 3, the student is to submit their log file organized as detailed in the Lab 2 assignment, with a log trailer record formatted as detailed later in this assignment. The log file is to include 10,000 completed transactions.

## Grading

Successful completion of 10,000 transactions at a pace of 5000 per minute will earn 100 points. For any volume less than a pace of 5000 per minute, points will be pro-rated. For example, a successful completion of 4000 per minute will earn 4000/5000 X 100 points, or 80 points. Successful completion must include 10,000 matched response messages to request messages.

## Lab 3 Log Trailer Record

The log trailer record is to include the following lines of information, separated with a <CR><LF> character sequence:

```
Requests transmitted   = [xxxxx]
Responses received     = [xxxxx]
Req. run duration (ms) = [xxxxxxxxx]
Rsp. Run duration (ms) = [xxxxxxxxx]
Trans. Duration   (ms) = [xxxxxxxxx]
Actual req. pace  (ms) = [xxxx]
Actual rsp. Pace  (ms) = [xxxx]
Configured pace   (ms) = [xxxx]
Transaction avg.  (ms) = [xxxx]
Your name:
Name of student whose client was used:
```

**Req. run duration:** The total number of milliseconds from when the first request was transmitted until when the last request was transmitted

**Rsp. Run duration:** The total number of milliseconds from when the first response was received until the last response was received.

**Trans. Duration:** The total number of milliseconds from when the first request was transmitted until the last response was received.

**Actual req. pace:** Req. run duration divided by total number of requests messages transmitted.

**Actual rsp. pace:** Rsp run duration divided by total number of responses messages received.

**Configured pace:** Configured pace of request messages in terms of milliseconds per request.

**Transaction avg.:** Trans. Duration divided by total number of matched responses to a request.