Lab 8

Question 1.

What is the major difference between TCP client and TCP server implementations?

The server sets up the TCP listening socket and accepts a client socket while the client connects to the server.

Server setting up listener:

```
   iResult = bind( ListenSocket, result->ai_addr,
(int)result->ai_addrlen);
    if (iResult == SOCKET_ERROR) {
        printf("bind failed with error: %d\n", WSAGetLastError());
        freeaddrinfo(result);
        closesocket(ListenSocket);
        WSACleanup();
        return 1;
```

Server receives client socket:

```
 ClientSocket = accept(ListenSocket, NULL, NULL);
    if (ClientSocket == INVALID_SOCKET) {
        printf("accept failed with error: %d\n", WSAGetLastError());
        closesocket(ListenSocket);
        WSACleanup();
        return 1;
```

Client connecting to server:

```
 iResult = connect( ConnectSocket, ptr->ai_addr, (int)ptr->ai_addrlen);
        if (iResult == SOCKET_ERROR) {
            closesocket(ConnectSocket);
            ConnectSocket = INVALID_SOCKET;
            continue;
```

The client sends buffers, the server receives them and echoes them back.

Client sends buffer:

```
iResult = send( ConnectSocket, sendbuf, (int)strlen(sendbuf), 0 );
    if (iResult == SOCKET_ERROR) {
        printf("send failed with error: %d\n", WSAGetLastError());
        closesocket(ConnectSocket);
        WSACleanup();
        return 1;
```

Server echoes the buffer back to the client;

```
        // Echo the buffer back to the sender
            iSendResult = send( ClientSocket, recvbuf, iResult, 0 );
            if (iSendResult == SOCKET_ERROR) {
                printf("send failed with error: %d\n", WSAGetLastError());
                closesocket(ClientSocket);
                WSACleanup();
```

Question 2

2. What is the major difference between UDP server and TCP server implementations?

The TCP server establishes a connection before data is sent. UDP is connectionless, so it does not establish a connection. In TCP, if a packet is not received an error message is sent to the sender so that they can retry. UDP is not concerned with whether or not a packet fails to send.