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CS 380
Exercise 3

My repository for this class is under CS 380 – Computer Networks
https://github.com/jarodNakamoto/College-CS-Courses.git

Source Code Below:


```java
import java.io.InputStream;
import java.io.OutputStream;
import java.net.Socket;

public final class Ex3Client {

    public static void main(String[] args) throws Exception {

            try (Socket socket = new Socket("18.221.102.182", 38103)) {

                    //display that server connection was successful
                    String address = socket.getInetAddress().getHostAddress();
                    System.out.printf("Connected to: %s%n", address);

                    //recieves bytes
            InputStream is = socket.getInputStream();

                    //3) get how many bytes we are receiving
                    int numBytes = is.read();
                    System.out.println("Reading " + numBytes + " bytes.");

                    System.out.print("Received bytes:");
                    //4) receive the rest of bytes and store in array
                    byte[] bytesReceived = new byte[numBytes];

                    for(int i = 0; i < numBytes; i++){
                            if(i%10 == 0)
                            {
                                    System.out.println();
                                    System.out.print("   ");
                            }
                            int byte1 = is.read();
                            bytesReceived[i] = (byte)(byte1);
                            System.out.print(String.format("%02X", bytesReceived[i]));
```

```
			}
			System.out.println();

			//6) take array and pass it into checksum
			short checkSum = checksum(bytesReceived);


			//7) send checksum as sequence of bytes to server
			Short val = new Short(checkSum);
			byte[] byteArr = new byte[2];
			Integer copy = new Integer(val.intValue());

			//take the value and make it into two bytes
			for(int i = byteArr.length-1; i >= 0; i--){
				byteArr[i] = copy.byteValue();
				copy = copy >> 8;
			}


			System.out.println("\nChecksum calculated: " + String.format("0x%04X",
val.shortValue()) +".");

			//sends bytes to server
			OutputStream os = socket.getOutputStream();

			for(int i = 0; i < byteArr.length; i++)
				os.write(byteArr[i]);

			//8) receive if program worked
			int rec = is.read();
			if(rec == 1)
				System.out.println("Response good");
			else
				System.out.println("Response bad");
			System.out.println("Disconnected from server.");
			is.close();
	}
	}


	//5) write checksum
	public static short checksum(byte[] b){
		long sum = 0;
```

```
//while(count--)
for(int i = 0; i < b.length; i++){
        //sum += *buf++; add the value at refrence and then increment
        int b1 = b[i];
        if(b1 < 0)
                b1 = b1 ^ 0xFFFFFF00;
        i++;
        int b2 = 0x00;
        if(i < b.length)
        {
                b2 = b[i];
                if(b2 < 0)
                        b2 = b2 ^ 0xFFFFFF00;
        }
        b1 = b1 << 8;

        sum += (b1 ^ b2);

        //if (sum & 0xFFFF0000)
        if((sum & 0xFFFF0000) != 0x00000000){
                /*carry occurred. so wrap around */
                sum = sum & 0xFFFF;
                sum++;
        }
}

//return the bit wise inverse of (sum & 0xFFFF)
//ones complement and return right most 16 bits
return (short)(~(sum & 0XFFFF));
    }
}
```