Objective:

1. Familiarization with Bluetooth (BT).
2. An introduction to decentralized, peer-to-peer networking.
3. An introduction to file consistency.

Due: Wednesday, 26-September, *before* 11:59pm, via Blackboard

Project Specification:

In this lab, you will use Bluetooth to locate and connect to a peer device. Once the devices are connected, you will use that connection to exchange a basic text file. The text file will then be edited via a separate, basic text editing program (e.g., Notepad) on either device. Your program will detect that the file has been modified, propagate the modification to the other system, and apply that modification to that system's local copy of the text file.

Modifications to the file will not be performed concurrently (meaning the file will only be modified on the master or the slave sequentially, and *not at the same time*). The updates will be performed no more often than once per minute. File updates may be applied in whatever manner is most convenient (i.e., the text in the file can be appended, the complete file can be overwritten, et cetera).

You must demonstrate each device performing the full gamut of functionality as both a master (e.g., server) and a slave (e.g., client).

This project may be completed individually, or in pairs. Pairs are recommended, as the team would have two distinct devices to work with, rather than one, but individuals are permitted, provided they have a viable plan to develop their program using devices they personally have access to. No groups larger than two students are acceptable. If you choose to work as a pair, **YOU WILL BE EXPECTED TO REMAIN A PAIR FOR ALL THE PROJECTS ASSIGNED DURING THIS SEMESTER**. If the instructor, or the TA, receives indication that one person in the pair is doing most of the work, the other person will be assessed severe grade penalties.

You may use any language, IDE, or device you choose, however Java on a laptop is strongly encouraged. If you choose to use a language other than Java, you should not expect any technical support from the instructor or the TA.

You may use any code scavenged from the Internet, provided it is correctly cited. Please keep in mind that "Bluetooth" and "Bluetooth Low Energy" are *not* the same thing, despite the name. The standards are not backwards-compatible.

Grading:

10 – Your device successfully broadcasts its availability to nearby devices.
10 – Your devices successfully scans for other available BT devices.
20 – Your devices successfully establish a connection.
15 – Your program detects modifications to the text file.
15 – Your program notifies its peer of updates to the text file.
15 – Your program successfully updates the contents of the text file.
15 – Both devices can perform all the requisite functionality of a master and a slave.

Write-up:

In all likelihood, you will be asked to demo your code for the TA. However, in the event the TA has to test your code without your presence, you must include a write-up.

Your write-up should include instructions on how to compile and run your program. Your write-up should include any known bugs and limitations in your programs. If you made any assumptions you should document what you decided and why. This write-up should be in text format and should be submitted along with your code

Submission Guidelines:

FAILURE TO FOLLOW ANY OF THESE DIRECTIONS WILL RESULT IN DEDUCTION OF SCORES.

Submit your assignment via the submission link on Blackboard. You should zip your source files and other necessary items like project definitions, classes, special controls, DLLs, etc. and your writeup into a single zip file. No other format other than zip will be accepted. The name of this file should be your lastname_loginID.zip. Example: If your name is John Doe and your login ID is jxd1234, your submission file name must be "Doe_jxd1234.zip".

Be sure that you include everything necessary to unzip this file on another machine and compile and run it. This might include forms, modules, classes, config. files, etc. DO NOT INCLUDE ANY RUNNABLE EXECUTABLE (binary) program. The first two lines of any file you submit must contain your name and student ID. Include it as comments if it is a code file.

You may resubmit the project at any time. Late submissions will be accepted at a penalty of 10 points per day. This penalty will apply regardless of whether you have other excuses. In other words, it may pay you to submit this project early. If the TA cannot run your program based on the information in your writeup then he will email you to schedule a demo. The TA may optionally decide to require all students to demonstrate their labs. In that case we will announce it to the class. It is your responsibility to keep checking blackboard for announcements, if any.

If your program is not working by the deadline, send it anyway and review it with the TA for partial credit. Do not take a zero or excessive late penalties just because it isn't working yet. We will make an effort to grade you on the work you have done.

DO NOT POST YOUR CODE ON PUBLICLY ACCESSIBLE WEBSITES UNTIL AFTER THE DEADLINE. SHOULD YOU DO SO, THIS WILL BE CONSIDERED COLLUSION, AND YOU WILL BE REFERRED TO THE OFFICE OF STUDENT CONDUCT AND RECEIVE A FAILING GRADE IN THE COURSE