EE579 Assignment 2

Communication via Bluetooth: A social networking application

University of Southern California
Department of Electrical Engineering
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Assignment #2 Due: Feb 4th 2008, 4PM

APPLICATION REQUIREMENTS:

1. Develop a Bluetooth based **instant messaging application** using client-server approach discussed in Lecture. The application has two components. The server component enables a Bluetooth chat service and announces it to the world. The server then waits for connections to this service. The client component of the application first initiates a device discovery, and then uses the discovered devices to do a service discovery. Once it finds the chat service then it initiates a connection request. The server then accepts the connection to create a conduit for text transfer. Note that each student is supposed to develop their own server and client modules. It is best if these modules are implemented as two separate classes.
2. Similar requirements as above, but instead of instant message transfer, you should also be able to share **image files** among phones as shown in class. The server application shows a list of images that are available in the server device. The user then chooses which images he/she wants to make public. Once an image is made public that image can then be fetched by any client. Note that there may be many more images in the server than those that are published. Hence, when a client application connects to the server the server first sends a list of images available for public to the client application. The client application then shows that list of published images on the client device. The client application can then select which images amongst the public images he/she wants to download. Once downloaded they are then displayed on the client application screen.
3. Upon starting the application, you should be able to set your phone to either ‘client’ mode or ‘server’ mode.
4. All communications should be based on BlueTooth connection.
5. You are allowed to write two separate programs: one for text message transfer, one for image transfer.

TESTING:

To test the application each student has to install the application on two different N95 devices. Then launch the server component on one device and launch the client component on the second device.

DEVICE CONSTRAINTS:

Since each student has access to only at most one device it is best if you can partner with another student group to test your application. You are encouraged to share the devices but not the code.

MINIMUM REQUIRED FEATURES:

You should use forms, alerts, tickers on the graphical user interface to let users know the progress of your application. For instance, when a client is searching for the devices your screen should indicate the same using any of the available user interface functions.

Remember that when a client is searching for a bluetooth device the process of device discovery is very slow and expensive. To combat these issues your code should cache devices that were discovered most recently so that the client does not need to keep discovering the same device. Second, you should allow the discovery process in the client to run in a separate thread. Similarly, the server process waiting for connections should also run on a separate thread. If these operations are not threaded then your application will be unresponsive during these waits, which is extremely impractical in real life. Finally, when you use threads remember that you need to synchronize the main thread and waiting thread if they are accessing the same resouce to provide mutual exclusion.

SUBMISSION / DEMONSTRATION:

Demonstrate your application to TA/grader.

EXTRA INFORMATION:

You MUST finish up the coding independently. However, you are encouraged to discuss the general issues of this assignment with other students in the class, and you need to share the N95 devices among each other for test purpose.

GRADING:

Text message transfer:	50%
Image transfer:	50%