CTS: Children Tracking System
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Introduction

Up to this point, we first worked on Bluetooth structure, collected information about hardware aspect of Bluetooth and learnt how to implement piconets and scatternets. In second report, we mentioned java classes and methods that we will use. Then, between progress report 2 and this report, we made an extensive research about Bluetooth examples. In those examples, we saw that it is very hard to write a Java code for this application for new Java and Bluetooth Programmers, and so, we will construct our application by adding and/or subtracting some pieces of codes onto Bluetooth examples. Some fundamental parts will be done the codes that we found, such as establishing new connection, authentication etc.

The 2 Bluetooth applications are called blueEcho and forming Scatternet.

In order to implement above applications, we set up JDK 3.0 to our computers, JAVA™ ME Platform 3.0 and Sun Java Wireless Toolkit 2.5.2. We will construct our applications by using JAVA™ ME and we will embed the projects using Wireless Toolkit.

In following sections, we will give brief information about those applications.
BlueEcho

This program is a basic program for Bluetooth applications. The program is basically like this: The client ("slave" in Bluetooth terminology) sends a string message to the server ("master" in Bluetooth terminology), and the client resends the received string to the server. MIDlet pictures of the program is like that:

Because the code is so complex, we will not give the details of this code. However, in PDF explanation of this code, UML diagram of the code is like that:
EchoServerMIDlet opens the GUI of Server side of the application. EchoServer registers the server to the service and makes the device as server. It assigns UUID (universally unique identifier) and a service name. In this connection, RFCOMM connection is used, however, in our application we will use L2CAP connection, because of its usefulness for single data transmission.
UML Diagram for Client Side is like that:

EchoClientMIDlet is the class for constructing GUI of Client side and other parts are for sending and receiving messages.

In this code, the most important part is finding and making connections to new devices. According to following diagram, new devices are found in this algorithm.
When device searching is completed, stage 2, which is service search should begin. The algorithm is like that:

Because our service is located in EchoServer class, the code will find the only service in Server side.

As I mentioned previously, we will modify this code in J2ME platform and prepare the project on Wireless Toolkit.
Scatternet Application

This program is an open source published in (https://scatternet.dev.java.net).

As we mentioned earlier, a Scatternet is the network that consists of more than one Piconets. The common devices for neighbor piconets may act as master for one Piconet and act as slave for other Piconet.

The code that we found is written for the following situation. A client enters a street and wants to find the least cost product. Then it starts to establish piconets and scatternets. In this program MySQL database tool was used to register costs of the products.
Initial window of the program is like that:

The program then can send and receive data.

Class diagram of the program is like that:

Flow chart of the program is like that:
In order to find the routes, Distance Vector algorithm is used in this application.

Because the source codes did not published, we cannot give the details of the code.
Conclusion

In this progress report, we mentioned about 2 Bluetooth applications, which are blueEcho and Scatternet.

BlueEcho program will help us to understand the codes that will be used and sending and receiving messages.

Scatternet program will also be very helpful in aspect of forming Scatternet. (It is an open source).

From now on we will start to write codes for our application by utilizing above programs and also if we find new sources we can also use them.
References

- Open Source for forming Scatternet - (https://scatternet.dev.java.net)