Data Communications Option

Assignment #3

This is a team assignment.

Objective:

Re-use the code from your terminal emulator to send and receive data between an RFID transceiver and transponders.

Background:

RFID (Radio Frequency IDentification) is a wireless system that is used to identify a variety of tags (transponders). These tags may be carried by people or animals or mounted on object or vehicles. They may even be embedded under the skin.

RFID tags are non-contact and non-line-of-sight. This means that there is no need to have contact between the tags and the RFID system to have identification.

Passive RFID tags operate using power from the RFID transceiver. Passive tags are small and inexpensive, but lack longer operating ranges. Active RFID tags are powered, usually by a battery. Active tags are larger and more expensive, but offer a much better identification range.

RFID tags store identification information, which is typically used for authentication. Passive tags typically store between 32 and 128 bits of data; Active tags can store up to 1MB of data.
Passive tags are Read-Only; Active tags are typically rewritable.

RFID systems operate across a wide range of frequencies. Lower frequency systems are less expensive; higher frequency systems offer increased range. For RFID purposes, 300-500Khz are considered low frequencies, 850-900MHz and 2.4GHz-2.5Ghz are considered frequencies.

You will be provided with an RFID evaluation kit that consists of an RFID reader and a variety of transponders. The interface to the reader is RS-232. There are several accompanying manuals that contain the code sequences that can be used to send commands to the reader.

Your Mission:

You will modify your terminal emulator application to send command sequences to the RFID reader and display the responses coming back from the reader. For example, you can set the reader into a continuous read mode and a tag is brought into close proximity to it, it will interrogate the tag and the tag will respond with a code. Your application will read the code sent back by the tag via the reader, and display it on the screen.

Constraints

- Model your application the sample application provided with the evaluation kit.

- Provide menu items to start the reader and stop it. .

- Every time the reader gets a code from tag, display the tag code in a list in the screen.

- Provide a brief explanation of what you observed when working with different types of tags and the effective range of each one.

TO BE HANDED IN: (Due Date: November 12, 2008 - 0930 hrs.)

1. State transition diagrams and pseudocode for the application.

2. Printed program listing of the program.

3. A CD containing the C/C++ source code and executable version of your program.

4. You are required to demonstrate your application in the lab on the day the assignment is due.