

# CSE 591 - Spring 2009

## Lab III: Network Protocols

### *Lab Assignment #3: Simon Game*

Design and implement a protocol and program for the Simon Game.

Details about the Simon Game from [http://en.wikipedia.org/wiki/Simon\\_\(game\)](http://en.wikipedia.org/wiki/Simon_(game))

The original game unit has four large buttons, one each of the colors red, blue, green, and yellow. The unit lights these buttons in a sequence, playing a tone for each button; the player must press the buttons in the same sequence. The sequence begins with a single button chosen randomly, and adds another randomly-chosen button to the end of the sequence each time the player follows it successfully. Gameplay ends when the player makes a mistake or when the player wins (by matching the pattern for a predetermined number of times).

Flash Version of the Simon Game: <http://www.thepcmanwebsite.com/media/simon/>

For this lab, implement the Simon Says game, where the player follows along as described above with a match sequence of 20. The notes only have 3 different color lights and therefore you will implement the game with 3 buttons, one for each of the colors red, blue, and green. To trigger the pressing of the color, either the misc button or the light sensor can be used.

We will assume all nodes will be turned on approximately the same time. Upon power-up all nodes start a randomized timer. The first mote (say red) whose timer goes off starts the memory game. The remaining communication and operation protocol is left to be designed. Latency is not the main issue, but your scheme should not be unreasonably slow, nor should it be power hungry.

Hint: Is there a MAC protocol that would be useful to you? Can it be modified to meet your needs? (Don't dwell on this if you have your own good ideas)

#### **Deliverables at the end of Lab:**

- Demo of the working Simon game. Please send the link to a tarball/zip of the files. Your tarfile should be named "Group<#>\_Lab3"
- Your \*.nc files and Makefile
- Your code should be documented. Doesn't have to be extensive, but give clear information about what each component does and what is happening (if it is not obvious).
- A README file with a description of your developed protocol (txt or PDF).
- Include any files which you used for testing your application (TOSSIM instructions, etc)

#### **Grading (120 points):**

Each group will be graded on their demo (up to 50 pts) and the documentation of your protocol (up to 50 pts). The remaining points (up to 20) will be given based on the energy efficiency of your approach compared to the other groups in the class.

NO EXTENSIONS!!! NO EXCEPTIONS!!!

**Groups of 3:** Additionally implement the Choose your Color game (see wiki article)