Ubiquitous and Secure Networks and Services Laboratory
Introduction to SunSpot Environment (P0)
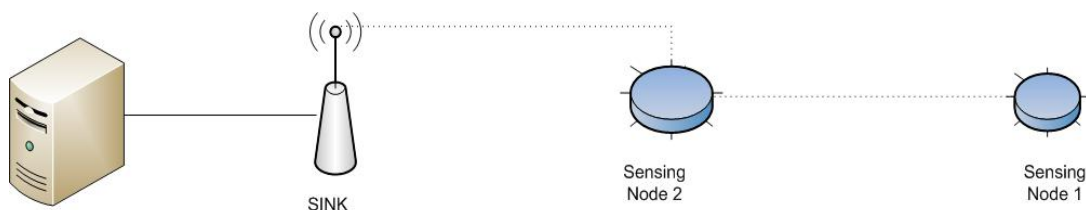**Estimated working time: 6 hours**

1) Please, follow these steps in order to get a general overview of the simulation and development environment for the SunSpot platform:
   1. Open the simulator ("SunSpot" desktop icon)
   2. Open the SDK IDE ("NetBeans" desktop icon)
   3. Find demo projects and code inside the folder */home/userrsus/SunSPOT/sdk/Demos*
   4. You can read a basic tutorial on how to use the environment at http://sunspotworld.com/Tutorial/tutorial1.html

2) Open the demo project named "EmulatorDemo", in the IDE and learn how every implemented midlet works.

3) Create a new project with a midlet that lets a SunSpot node to:
   1. Read temperature every 5 seconds
   2. Show the instant temperature and the average temperature (in one minute), by printing a message on screen
   3. Light on a red led every time the node is moved
   4. Light on a green led only if all the analog inputs are set to zero
   5. Reset the temperature average by pressing one of the switches

4) Deploy your midlet in a virtual node created inside the emulator (Solarium) and:
   1. Check if the midlet properly works.
   2. Take screenshots of the results and include them in the results summary.

5) In a real scenario, not all the nodes can reach each other inside the network. To solve this problem, one node should act as a "relay" (repeating information received from other node). Let´s simulate this behavior with the topology shown in the next figure:

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1. Modify the midlet created in point 3 to send the temperature sensed instead of print it (it will be the sensing node)
2. Sensing node should send the measures to the relay node, which will receive it and send forward to the sink
3. Create a new midlet to manage the sink (read data received and dump on screen)
4. Add 3 nodes to the Solarium (sensing node, relay and sink)
5. Deploy the specific midlet to each node
6. Run the emulation and take screenshots when working properly

6) Fill in a lab report, including the commented code and screenshots showing each one of the requisites indicated in points 3 and 5. Comments on the results of this first lab assignment are welcome.