INTERNET OF THINGS: PROJECT 2

SMART LIGHTS WSN.

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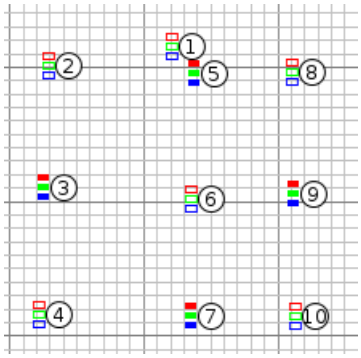
In this project we have implemented a network of smart lights to visualize luminous pattern inside a predefined topology. The topology is composed of ten motes: one used as controller node and 9 light nodes. The messages that are sent are composed of:

- a field 'sender' that indicates the mote from which the message comes,
- an array that contains the pattern of Leds to be turned on
- a field reset of type Boolean that specify if we want to turn off or turn on the Leds. If reset is set as TRUE every mote needs to turn off its led and forward the message to the mote N-1 if it is inside the same column.

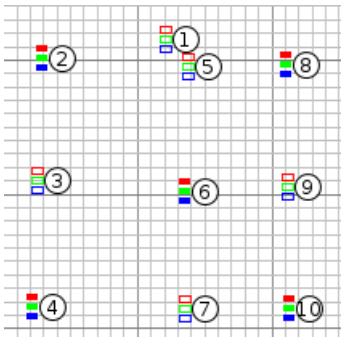
In our projects three different patterns of light (one with Leds 2,4,6,8,10, the second with 6,4,7,10 and the last with 5,3,7,9) are cyclically turned on, and between one pattern and the other all the Leds are switched off. In order to do this, we have used four different timers, that starts at different initial times, with a corresponding event that is performed whenever the specified time period has elapsed. Only motes 2, 5,7 are in the range of the controller node 1. The mote 1 send the messages towards 2,5,7 and these motes, accordingly to the pattern, forward the messages along the branches. When a mote receives a message, it triggers the event 'Receive' that takes care of turning on the Led if the node ID is contained in the message's array, turn it off if reset is set as TURE and forward the messages to the following mote (inside the same column) if the following motes' ID are contained in the message's array.

Then we have reconstructed the given network topology in Cooja and we have simulated the application. (In the folder is present the cooja file of the simulation) We have reported in this document the screenshots of the nodes with the corresponding Leds in the three configurations used.

The screenshot of the first pattern with Leds 5,3,7,9 switched on:



The screenshot of the second pattern with Leds 2,4,6,8,10 switched on:



The screenshot of the third pattern with Leds 6,4,7,10 switched on: