Distributed Systems I, Laboration

Assignment I: Multi-node communication
November 14, 2016

The main objective of this assignment is to make the student familiar with using *TinyOS* and basic concept of *nesC* programming language to assist understanding distributed communication in wireless sensor networks.

Task

Design and set up a multiple-nodes-communication simulation in TinyOS-TOSSIM.

Requirements

1. There are at least 10 nodes in the simulation and each node has at least two neighbors within its transmission area.

2. Every node periodically broadcasts a "*request*" packet to its neighbors.
   Meantime, this node sets a timer with "t" time interval to wait for its neighbors "*response*" packets.
   If the node receives all responses from its neighbors during "t", it prints "**success**"; otherwise, it prints "**failure**".
   Assume that the broadcast periodical interval is bigger than t.

3. A neighbor that receives a "*request*" packet, sends a "*response*" packet after a random time τ, $\tau = random(0, 2t)$.

To hand-in

1. In one page report:
   brief explanation of how your application works (behavior of nodes in the network) and the reason behind the failure messages;

2. Final source code of your application;

3. Print out of the communication between nodes.

You will also present your codes and simulation at the class.

∗ Submission: **DT017A_1_group.pdf**, replace "group" with your group number.