Internet of Things
Computer Science and Engineering
Politecnico di Milano

TinyOS Second Homework

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22-03-2020

Summary

[*An application which two node communicate with each other by request/response diagram which the both request and reponse massages are acknowledged.*]

Description of the Implementation

First of all, for the transmitted data a sensor in simulated in the "sensorC" and "sensorAppC" files in which the data for simulation is coming from the DATA directory, and this component will provide an interface to be used in the main program. In the main program depending on the node ID, a node will send a request or response, which for both a separated function is defined. The rest of the code is followed the Acknowledgment draft in TinyOS with one exception. In the "sendDone" function, if a request packet is not acknowledged the timer for the request will be postponed to twice as the current period of the timer, and if the acknowledgment fails this trend will continue until the timer delay is 20 second. However, if the acknowledgment was successful the delay time will be halved until the delay time is one second, again. Also in the same function, if the acknowledgment fails based on the ID of the node the request or response send will be repeated. In the simulation there is a bi-directional link between node zero and one and the node one will start to work five-second later. Implementation is available in Github[1].

Finally, this kind of acknowledgment is synchronized acknowledgment which there is no queue in the implementation, and because the exercise was based on the higher level; the implementation is done in the same layer instead of going to link-layer an implementing the queue and asynchronous acknowledgment. Also, the project is based on the master branch of the tiny os in the Github[2] and using the other version, because of the incompatibility in the toolchain will cause compile errors or warnings.

[1] `https://github.com/rahnemoon/IoT-Projects-University`
[2] `https://github.com/tinyos/tinyos-main`