

Embedded Hardware and Operating System - Cooja-Contiki

Hands-on

Overview:

The goal of this assignment is to familiarize yourself with Cooja-Contiki and create tasks for execution in Contiki. After completing this assignment, you will be able to:

- Set-up and compile Contiki in the Cooja simulator
- Create and execute tasks in Contiki
- Modify the behaviour of existing tasks in Contiki

Pre-requisite:

Before starting this assignment, you should:

- Have a look on the user manual of Contiki <http://www.contiki-os.org/start.html>, and familiarize yourself with the API
- Download Instant Contiki from the link [Here](#)
- Install VMWare Player on your laptop from the link [Here](#)
- Start up the Contiki image by following the steps in the [Manual](#)

Programming Assignment:

Task 1: Create a new simulation and run the example simulation of 8 motes that send periodic IPv6/UDP packets with ContikiMAC sleepy router functionally. Step-by-step guide is available from the following link:

Task 2: Follow the same steps of above task to change 'number of new motes' from 8 to 6 in the dialogue box of 'Add motes (Sky Mote Type #sky1)'. Click on 'add motes' then 'start'. This task should simulate 6 motes in the Network window.

Task 3: Open the example 'example-abc.c' from folder 'contiki/examples/rime/example-abc.c' Modify the sender code such that receiver code should print out the message *"abc message received: This is task 3"* (hint: locate all printf() and other string commands in the code and modify them one by one to check the result.)

Deliverable.

The following deliverables must be submitted to receive points for this task

Submit a report as a PDF file containing:

- A description of the setup in Task 1 and a short description of the different parts of the system.
- A screenshot demonstrating the running simulation executing Task 1
- A description of the setup in Task 2 and a short description of the different parts of the system. Provide also a short description of the difference when using 6 motes instead of 8
- A screenshot demonstrating the running simulation executing Task 2
- A description of the setup in Task 3 and a short description of the different parts of the system.
- An explanation of your changes to the source code
- A screenshot demonstrating the running simulation executing Task 3

Submit the source code of the following:

- You should provide the source code of the project in Task 1,2 and 3. Create a **separate folder** of the entire project for **each** task, then compress **all folders and the report into one Zip file**. This process is show in the following picture:

