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Introduction to lab 3



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Signing up for lab 3

- Lab 1&2 groups won't be reused. Re-sign-up for lab 3.

Everyone Student Groups **Lab 3** Project Groups + Group Set

Self sign-up is enabled for these groups. (?)
Groups are limited to 2 members.

+ Import +Group ⋮

Unassigned Students (48) Groups (25)

Search users

▶ Group 1 Full ⋮

- Select group set “Lab 3”!
- This is to account for possible changes in groups: e.g. students dropping the course



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Time Plan

- Reserved lab hours:
 - Not mandatory; work any time you like
 - TAs available in the second half
- Examination:
 - Contact TA well in advance if you can't attend
 - Schedule to be published

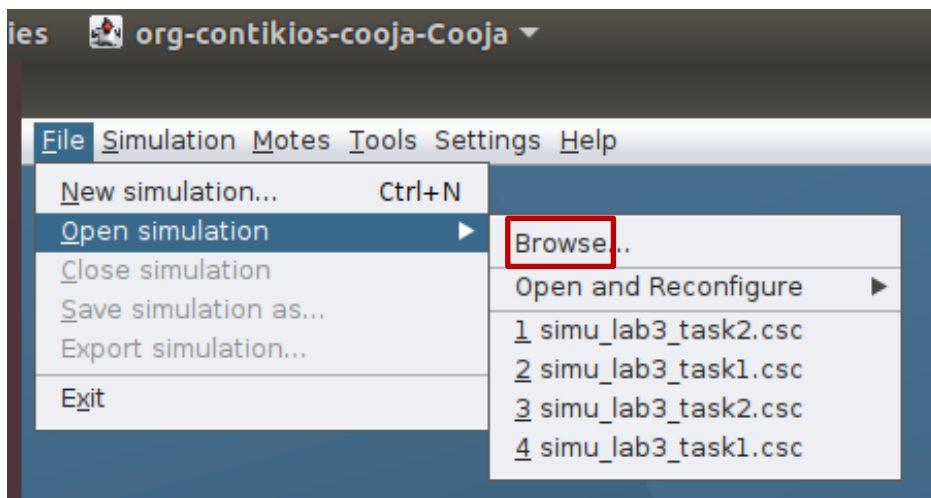


Intro to Cooja Simulator

- Run Cooja under its directory:

```
wcnes@wcnes-VirtualBox:~$ cd contiki-ng-wcnes/tools/cooja/  
wcnes@wcnes-VirtualBox:~/contiki-ng-wcnes/tools/cooja$ ant run
```

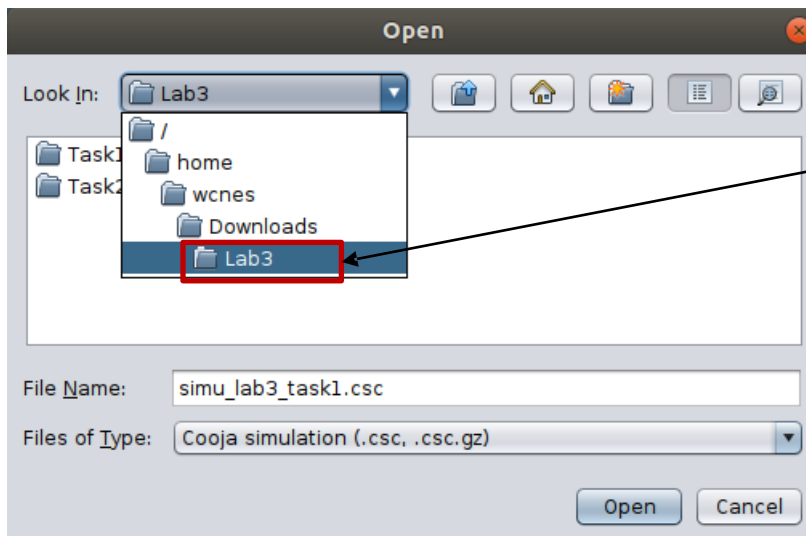
- Open a simulation configuration in Cooja:





Intro to Cooja Simulator

- Open a simulation configuration in Cooja:



*Download the code skeleton
for lab 3 first.*

*Look for files ending
with .csc.*



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Intro to Cooja Simulator

simu_lab3_task1 - Cooja: The Contiki Network Simulator

File Simulation Notes Tools Settings Help

Network

View Zoom

Simulated notes

Simulation control

Run Speed limit

Start Pause Step Reload

Time: 00:00.000
Speed: ---

Control Panel

Enter notes here

Network

The network window shows the positions of simulated notes.

It is possible to zoom (Mouse wheel) and pan (Shift+Mouse drag) the current view. Notes can be moved by dragging them. You can add/remove notes to/from selection (CTRL+Left click) or use the rectangular selection tool (CTRL+Mouse drag). Mouse right-click notes for options menu.

The network window supports different views. Each view provides some specific information, such as the IP addresses of notes. Multiple views can be active at the same time. Use the View menu to select views.

Mote 0

File Edit View

Time Mote Message

Simulation log

Filter:

Timeline showing 5 notes

File Edit View Zoom Events Notes

1
2
3
4
5

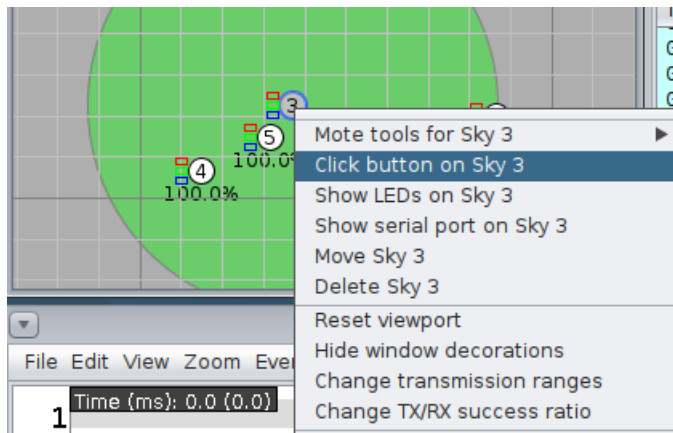
Help message of each window



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Intro to Cooja Simulator

- In the “Network” panel, drag to place nodes or right-click to interact with nodes:



- LEDs can be seen beside the nodes

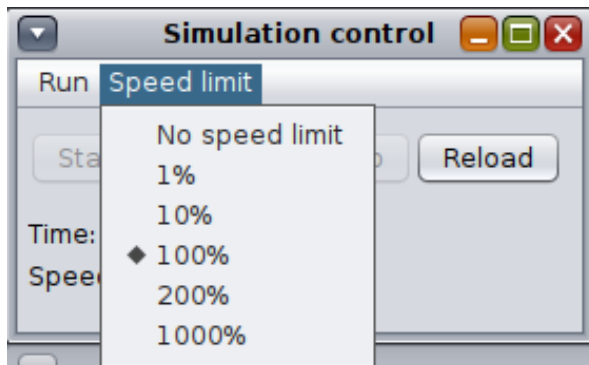




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Intro to Cooja Simulator

- In the “Control” panel, adjust the speed limit
 - This is particularly useful when the simulated nodes’ behavior takes time, e.g. in task 2

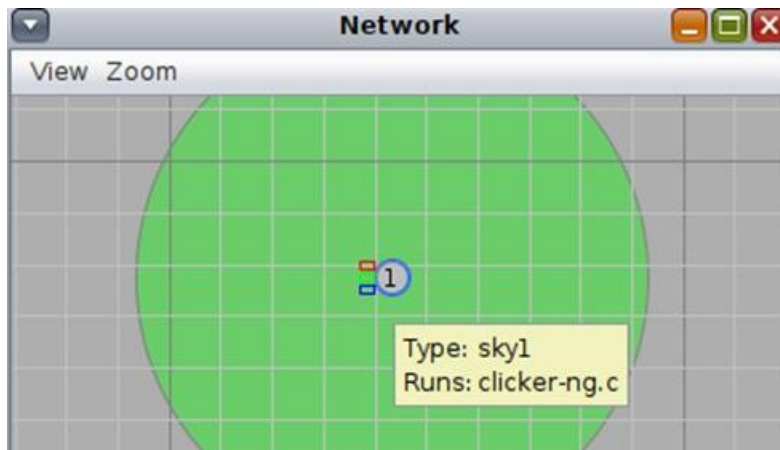




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Intro to Cooja Simulator

- The nodes' types and code to run are defined for you



- Compile the code at the simulation file's folder with:

```
wcnes@wcnes-VirtualBox:~/Downloads/Lab3/Task1$ ll
total 244
drwxr-xr-x 3 wcnes wcnes  4096 feb 24 00:26 ./
drwxr-xr-x 4 wcnes wcnes  4096 feb 22  2022 ../
drwxr-xr-x 4 wcnes wcnes  4096 feb 24 00:06 build/
-rw-r--r-- 1 wcnes wcnes  1495 feb 24 00:25 clicker-ng.c
-rwxr-xr-x 1 wcnes wcnes 220868 feb 24 00:26 clicker-ng.sky*
-rw-r--r-- 1 wcnes wcnes   187 feb 19  2021 Makefile
-rw-r--r-- 1 wcnes wcnes  7256 feb 19  2021 simu lab3 task1.csc
wcnes@wcnes-VirtualBox:~/Downloads/Lab3/Task1$ make TARGET=sky1
```

Modify the code here

*Compile like this.
Alternatively, you can
just simply click "Reload"
in the simulator's control
panel*



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Lab 3 tasks

- Task 1:
 - Detect consecutive button click event
 - Trigger an alarm when 3 different, but neighboring node detects event
 - 3 events should be triggered within a short time
 - Test your solution with the test cases on Studium!

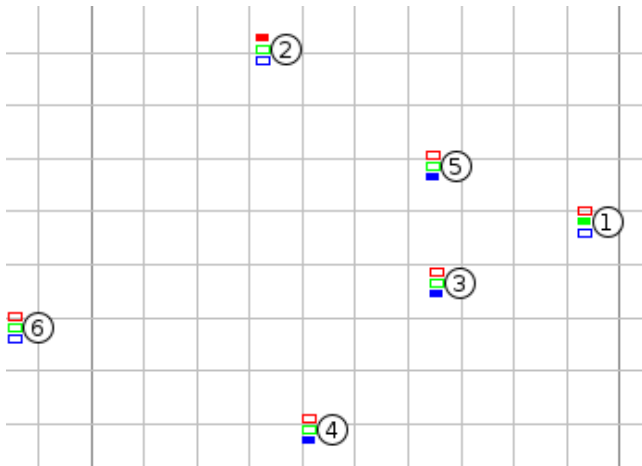
The test cases used to evaluate the assignments are described in this file: [Lab 3 Test Cases](#) ↓



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Lab 3 tasks

- Task 2:
 - Visualizing a RPL routing tree and how it updates
 - Differentiate root node, intermediate nodes, leaf nodes and out-of-network nodes with LED color



- You could look at header file `net/routing/routing.h` for useful functions