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WCNES

Introduction to lab 3

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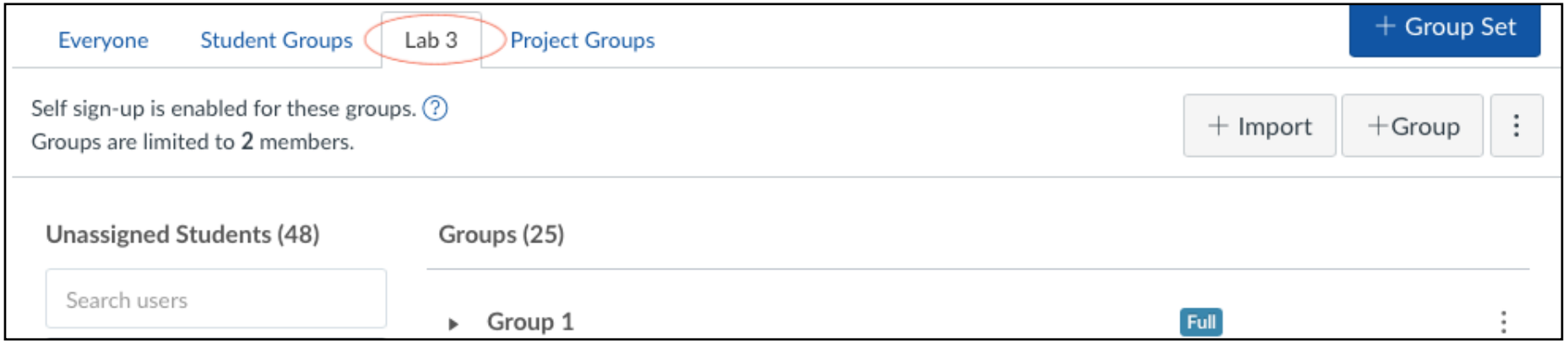
Signing up for lab 3

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



- 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

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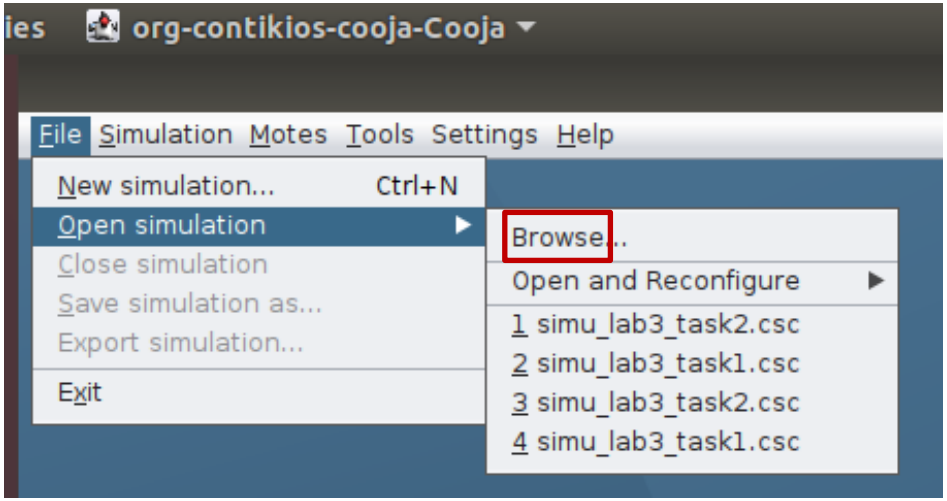
Intro to Cooja Simulator

- 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:



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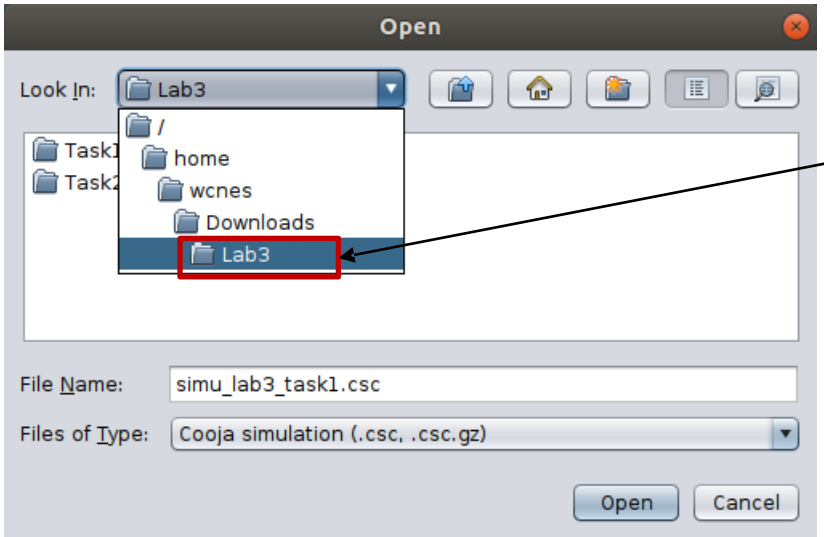
Intro to Cooja Simulator

- Open a simulation configuration in Cooja:



Download the code skeleton for lab 3 first.

Look for files ending with .csc.

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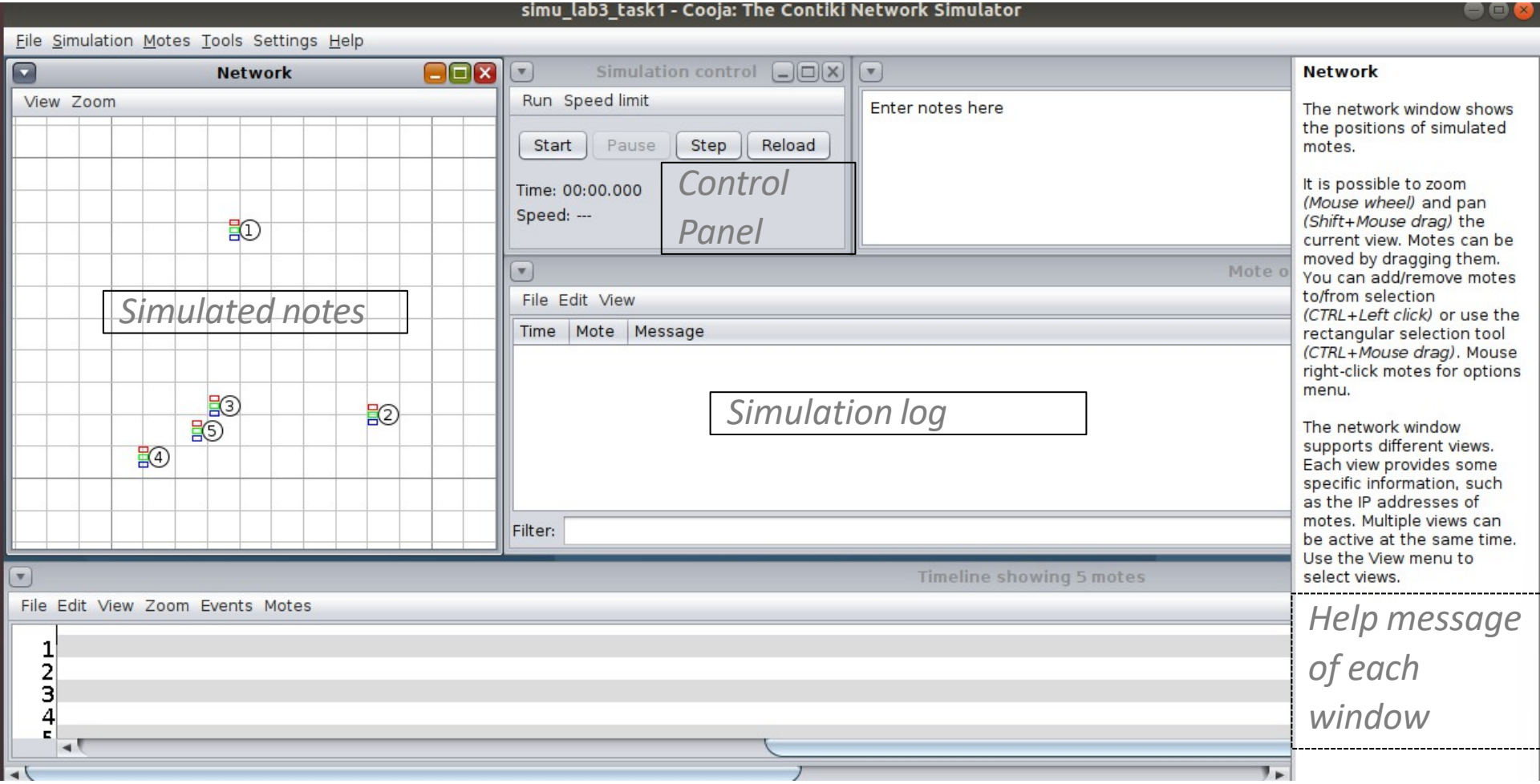
Intro to Cooja Simulator



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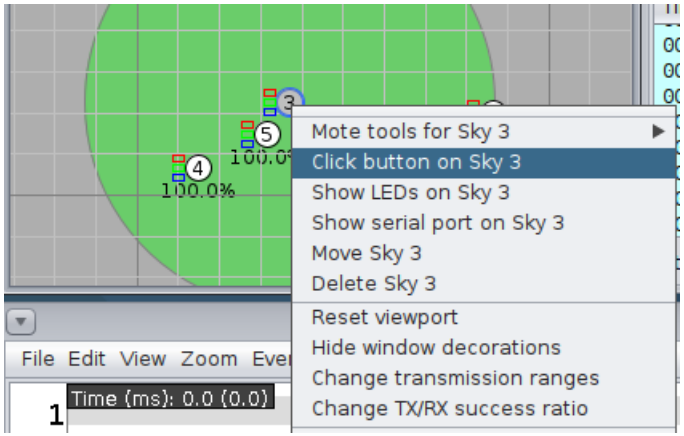
Intro to Cooja Simulator

- 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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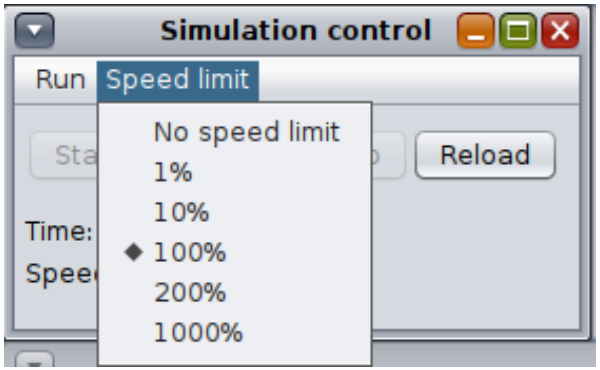
Intro to Cooja Simulator

- 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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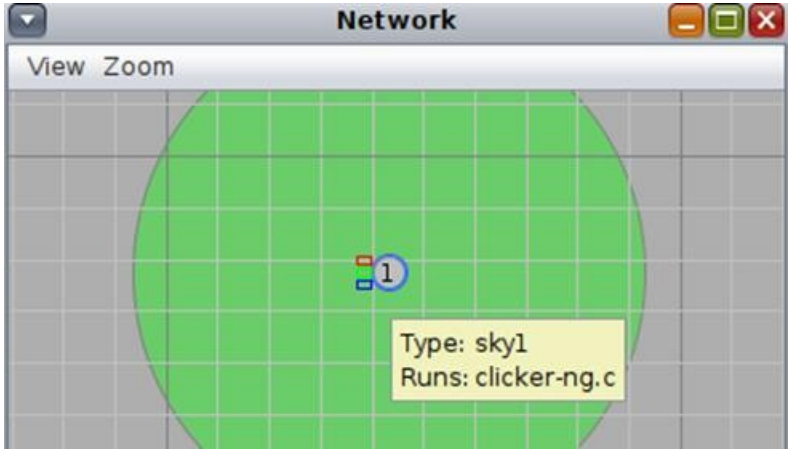
Intro to Cooja Simulator

- 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------- 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------- 1 wcnes wcnes    187 feb 19  2021 Makefile
-rw------- 1 wcnes wcnes   7256 feb 19  2021 simu_lab3_task1.csc
wcnes@wcnes-VirtualBox:~/Downloads/Lab3/Task1$ make TARGET=sky
```

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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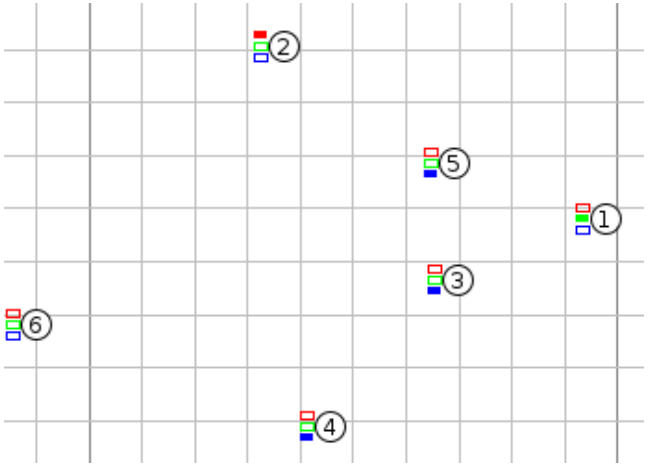
Lab 3 tasks

- 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