[2021]

Contiki Cooja

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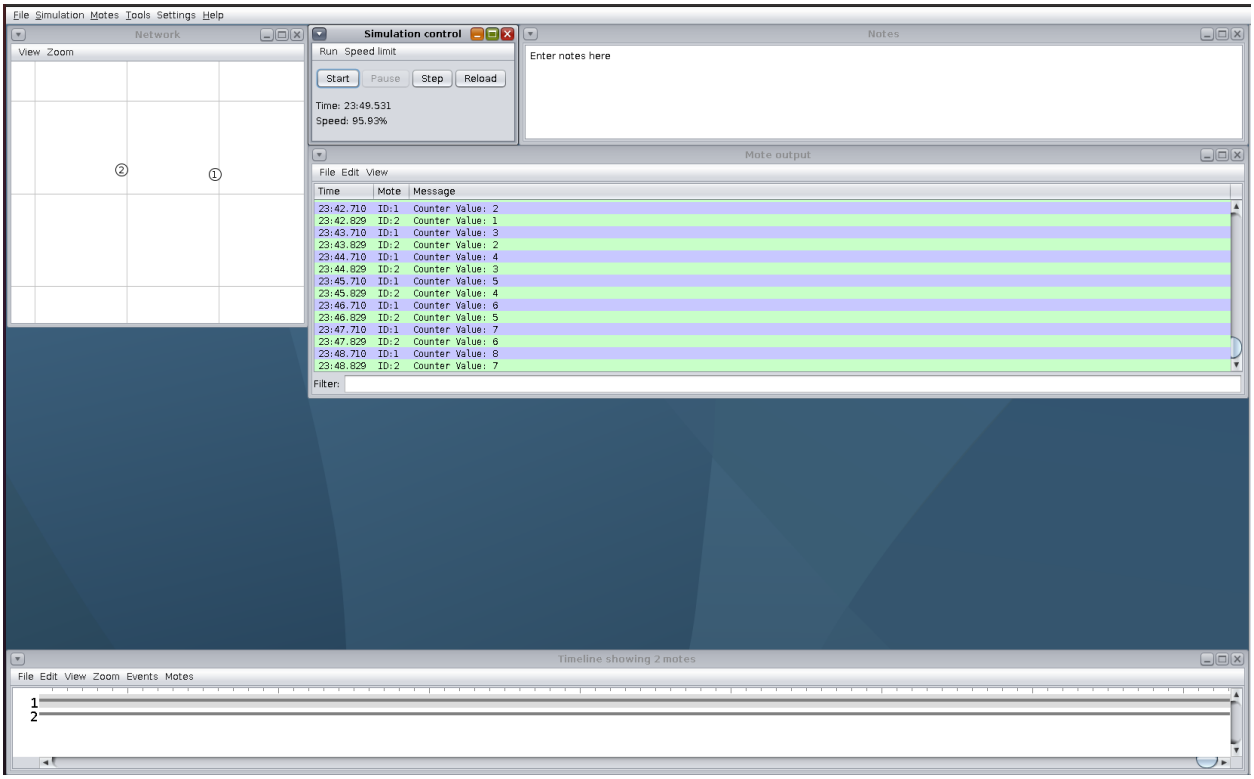
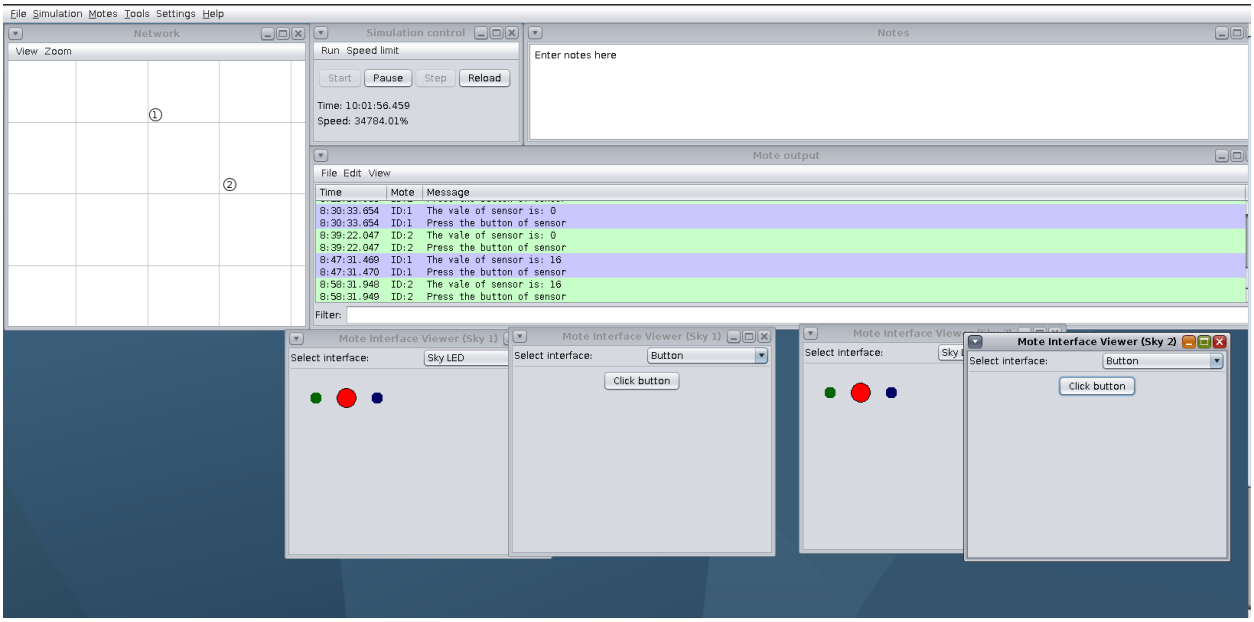
First, we applied the Counter file, every second prints the second number starting from 1 to 10.



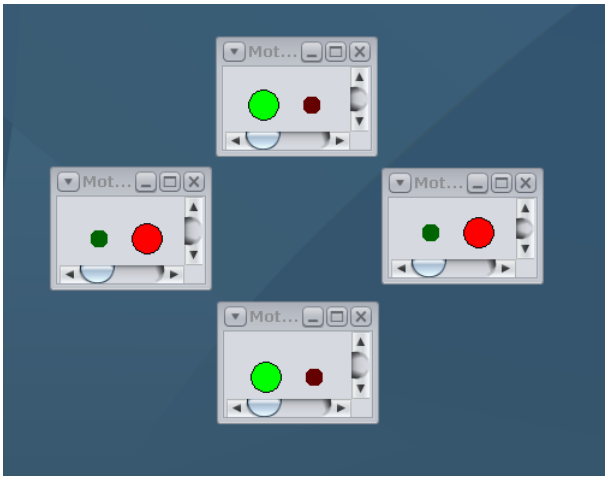
Second, the led file is just activating the led on pressing the button and prints the value of the led that's being activated based on it's color.

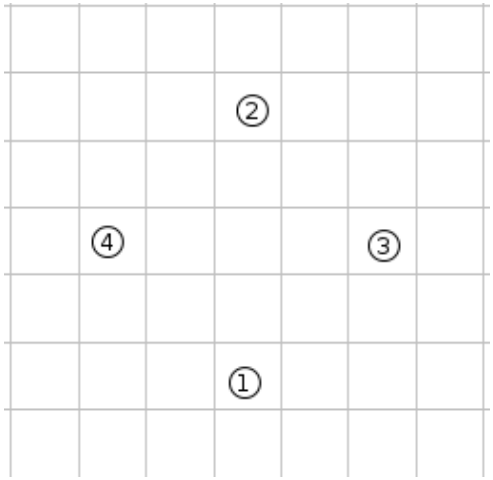


For simulating the traffic light system, it has been needed to create two files, each one is responsible for two motes, the first is responsible for the north and south motes and the other is responsible for the other two directions.

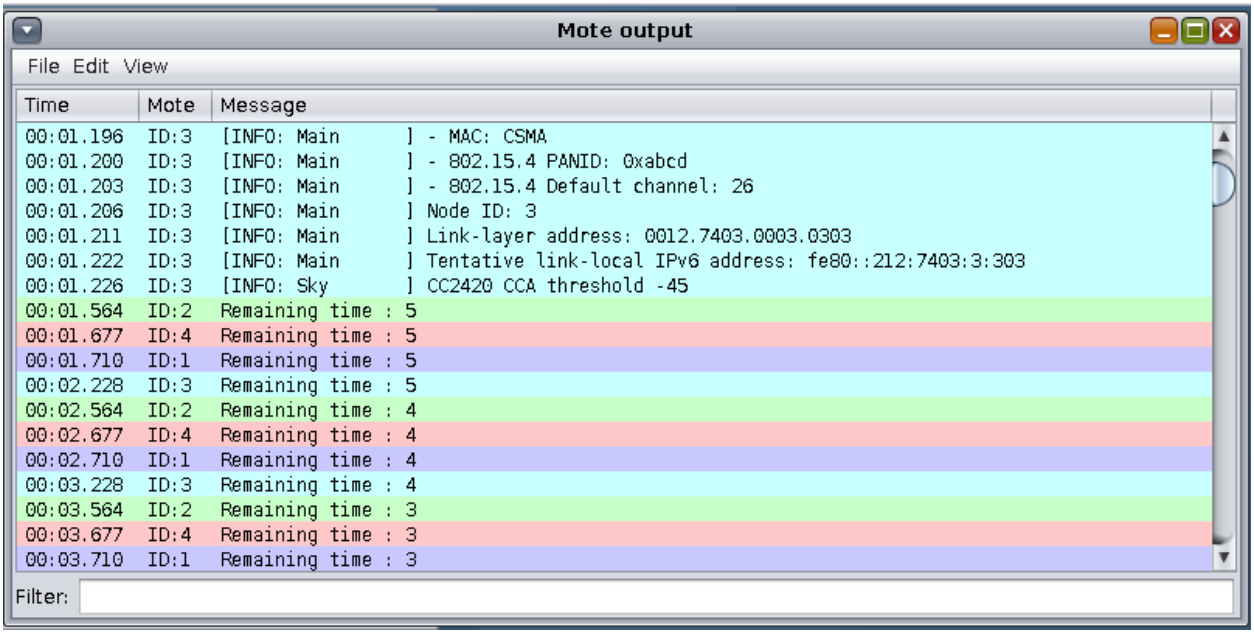
so just combining the counter with the led in the same process in each file results in having the four motes working appropriately the way the traffic lights work.

every five seconds, the first file motes activate the green lights, in the same time the other ones are activating the red lights and vice versa.





every seconds it shows a message with the remaining seconds for the light to change as the picture shows below.



The files are almost the same except the led colors are interchangeable in them.

```c
#include "contiki.h"
#include <stdio.h>
#include "dev/leds.h"
#include "sys/etimer.h"
#include "counter.h"
#include "dev/gpio-hal.h"

PROCESS(led_process, "LED Process");
AUTOSTART_PROCESSES(&led_process);

static struct etimer timer;
static int count = 0;

PROCESS_THREAD(led_process, ev, data) {

    PROCESS_BEGIN();


    while(1) {

        etimer_set(&timer, CLOCK_SECOND);
        PROCESS_WAIT_EVENT_UNTIL(etimer_expired(&timer));
        count = next_round(count);
        if (count < 6)
        {
        printf("Remaining time : %d\n", 6-count);
        leds_on(LEDS_RED);
        leds_off(LEDS_GREEN);

        }
        else
        {
        printf("Remaining time : %d\n", 11-count);
        leds_off(LEDS_RED);
        leds_on(LEDS_GREEN);
        }
   }


    PROCESS_END();


}
```

The second file code.

```c
#include "contiki.h"
#include <stdio.h>
#include "dev/leds.h"
#include "sys/etimer.h"
#include "counter.h"
#include "dev/gpio-hal.h"
#include <stdint.h>
#include <stdbool.h>

PROCESS(led_process, "LED Process");
AUTOSTART_PROCESSES(&led_process);

static struct etimer timer;
static int count = 0;

PROCESS_THREAD(led_process, ev, data) {

    PROCESS_BEGIN();


  while(1) {

        etimer_set(&timer, CLOCK_SECOND);
        PROCESS_WAIT_EVENT_UNTIL(etimer_expired(&timer));
        count = next_round(count);
        if (count < 6)
        {
        printf("Remaining time : %d\n", 6-count);
        leds_on(LEDS_GREEN);
        leds_off(LEDS_RED);

        }
        else
        {
        printf("Remaining time : %d\n", 11-count);
        leds_on(LEDS_RED);
        leds_off(LEDS_GREEN);
        }
   }
    PROCESS_END();
}
```

Makefile:

combines the two files

```
CONTIKI_PROJECT = led
all: $(CONTIKI_PROJECT)


PROJECT_SOURCEFILES += counter.c


CONTIKI = ../..
all:led2.c
include $(CONTIKI)/Makefile.include
```