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# Internet of Things - Home Challenge 1

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*Repository: https://github.com/TheFalco/IoT_HW1_Falconi_Fiozzi/*

The challenge was met by developing a system of 3 sky motes, communicating with each other via radio messages. In this document are reported the assumptions made on the requests for the delivery.

## Assumptions:

- "**The message is composed by a counter and the sender id**":

  We defined a new structure:

```
typedef nx_struct radio_message {
  nx_uint16_t counter;
  nx_uint16_t moteID;

} radio_message;
```

  in order to ensure that each mote had its own node id, we used the default value TOS_NODE_ID.

- "**All the messages are sent in BROADCAST**":

  With broadcast, we assume that the sender of the message don't receive it itself.
  E.g.: Mote 1 sends message {10, 1}, message {10, 1} is received by Mote 2, Mote 3.

- "**Messages are sent at: 1 Hz for Mote 1, 3 Hz for Mote 2, 5 Hz for Mote 3**":

  We've approximated the sending period of mote 2 to 1000/3 milliseconds.

- "**Messages with 'counter mod 10' == 0 turn off all the LEDs**":

  A check is made when a message arrives: if the counter mod 10 == 0, all the leds are turned off and nothing else is checked. If the counter mod 10 is different from 0, the corresponding led is turned on, based on the specification.

```
      // Turn off all LEDs when counter mod 10 == 0
       if ((rcm->counter) % 10 == 0) {
         call Leds.led0Off();
         call Leds.led1Off();
         call Leds.led2Off();
       }
      // Check which mote sent the message in order to toggle
the right LED
       else {
              if (rcm->moteID == 1) {call Leds.led0Toggle();}
              if (rcm->moteID == 2) {call Leds.led1Toggle();}
              if (rcm->moteID == 3) {call Leds.led2Toggle();}
       }
```