Usevalad Milasheuski (10816982)

ThingSpeak (https://thingspeak.com/channels/1727264)

- TINYOS

  -Challenge3C.nc

  Similarly to the laboratory activity, Leds, Timer<TMilli> and Boot interfaces were used. As asked for the challenge, every minute a Timer called to decide the LED to toggle. In order to keep track of the states of the LEDs, the bool values (*state0, state1, state2*) were used (0/1 – off/on respectively). To define the toggled LED, two variables were used: *quotient* – initialized as ID, which is rewritten at every step with a floored result of the division by 3; *remainder* - initialized as 0, which is rewritten at every step with a remainder of the division by 3. Depending on the remainder, *switch-case* is activated to toggle the corresponding LED and change the state. At every step, the values of the states are outputted in Cooja in a concatenated format (ex.: "101" – led0 is on, led1 is off, led2 is on). The mote on Cooja was modeled the same way as it was discussed during the class (Sky mote + view LEDs). When the *quotient*== 0, it means that the iterations must stop, thus for this case *Timer0.stop()* is called to stop the timer.

  -Challenge3AppC.nc

  In this file all the components are wired, and since there might be problematic for the node-red to use PrintfC, SerialPrintfC and SerialStartC were used.

  -Makefiele

  Same as the one for the printing example, with only line *COMPONENT = Challenge3AppC.nc* different.

  The compilation was done using the *make telosb* command.

- NODE-RED

  Firstly, a *TCP-node* was used using the port from Cooja (serial socket (server): 60001), configured to output stream of strings delimited by '\n'. Then the message is passed into the *function-node* in order to create a payload and the topic needed for the *mqtt-node* with the value and the channel ID. Since the TCP node outputs a string of three characters, we can easily separate them by using *var fieldi = msg.payload[i]* for every *i* corresponding to the fields. MQTT-node was configured using the methods discussed during the second challenge using the credentials from the Thingspeak which was made public for the results evaluation.