POLITECNICO DI MILANO

Internet of Things

Home Challenge 3s

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*First Team Member’s Person code: 10809307

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TinyOs Programming:

At the first step we defined variables below:

```
uint32_t personCode = 10809307;
uint8_t l0Status =0;  //status of LED0 (0 means turned off and 1 means turned on)
uint8_t l1Status =0;
uint8_t l2Status =0;
uint8_t r = personCode % 3; //remainder
```

We benefited from the timer as a "do-while" loop. At each time period we used a couple of "if and else" statements in order to:
1- Perform the Ternary conversion
2- Choose the LEDs to toggle, based on the remainder value
3-Change the status of the chosen LED.
We put the part related to the conversion in an if statement to continue the process until personCode = 2. By coming out of this loop we stop the timer. In the mentioned if statement we covered:
1-deviding PersonCode by 3 at each time period and storing the corresponding remainder in a variable (r) (Ternary conversion)
2- 3 different cases (r=0 or r=1 or r=2) for choosing LEDs
3- 2 different cases for toggling the LEDs which were done by using if and else statements in each previous if statements.
The key point is to use "printf" for obtaining the status of each LEDs at each time period as our output.

Cooja Simulation:

We followed the same procedure of simulating a "sky mote". Then by listening to port 60001 we were able to be connected to a TCP node in node-red in order to transfer our data to out Thingspeak channel.

Node-Red Implimentation:

We used a **TCP node** to be connected to Cooja sky mote.
At this point, we used a **Function node** to define the payload and topic message based on the status of LEDs in each time period and for each LED (0,1 and 2) of each object we defined their corresponding variables (var led0, var led1, var led2). Then we used the channel id for defining topic message and the variables for payload message.
The last step is to upload data on the ThingSpeak channel created before. We used a **MQTT block** and did the same procedure we had done for the previous challenge.

Channel Specifications:

username = HC46FxI0IiI3ODYbLyIiKik
password = BMVATDyxn+eLjVbQjSNtvG+u
ChannelID = 1725182
https://thingspeak.com/channels/1725182

IMPORTANT NOTES:

- For using **printf** we had to modify the "makeFile". So that we also submit it.
- Name of our code files are "BlinkC.nc" and "BlinkAppC.nc" .