

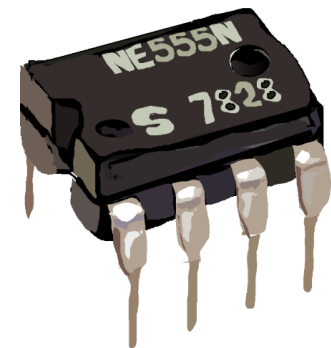
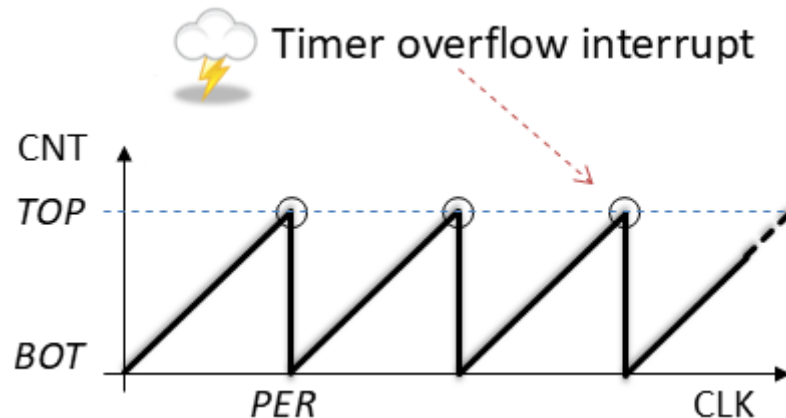
Timers and Interrupts

Embedded Software

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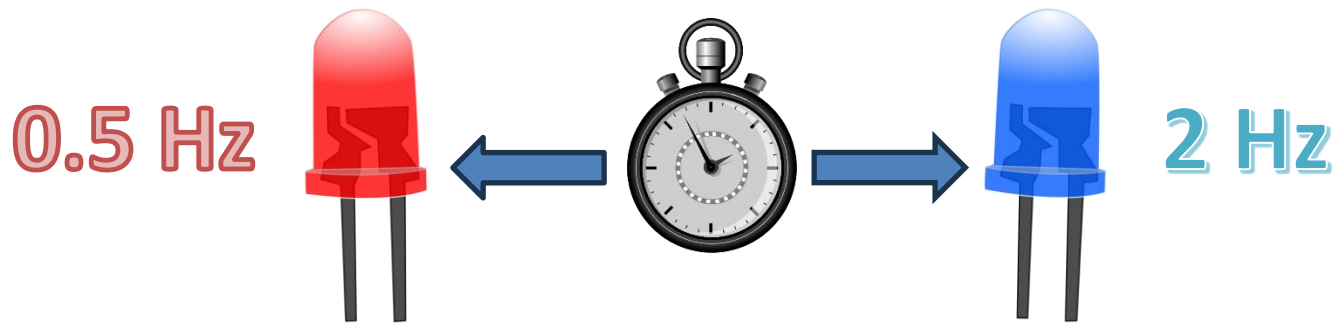
Assignment 1

- Controlling a LED by a Timer
 - Please let the blue LED of the Color Click blink by means of a timer.
 - As of now the loop function will be empty.



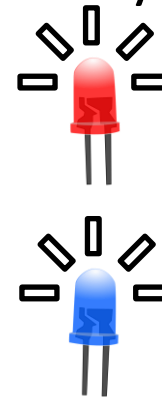
Assignment 2

- Controlling two LEDs by one Timer
 - Please let the LEDs of the Color Click blink by means of a timer as follows:
 - The red LED blinks with a frequency of 0.5 Hz.
 - The blue LED blinks with a frequency von 2 HZ.



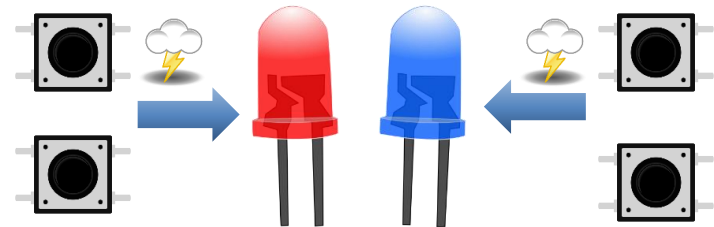
Assignment 3

- Controlling a Timer by a Push Button
 - Please control the LEDs of the Color Click by means of a timers and the 2x2 Key Click as follows:
 - The red LED is blinking with a frequency of 0.5 Hz.
 - The blue LED is blinking with a frequency von 2 HZ.
 - T1 turns the red blinking LED on.
 - T2 turns the red blinking LED off.
 - T3 turns the blue blinking LED on.
 - T4 turns the blue blinking LED off.



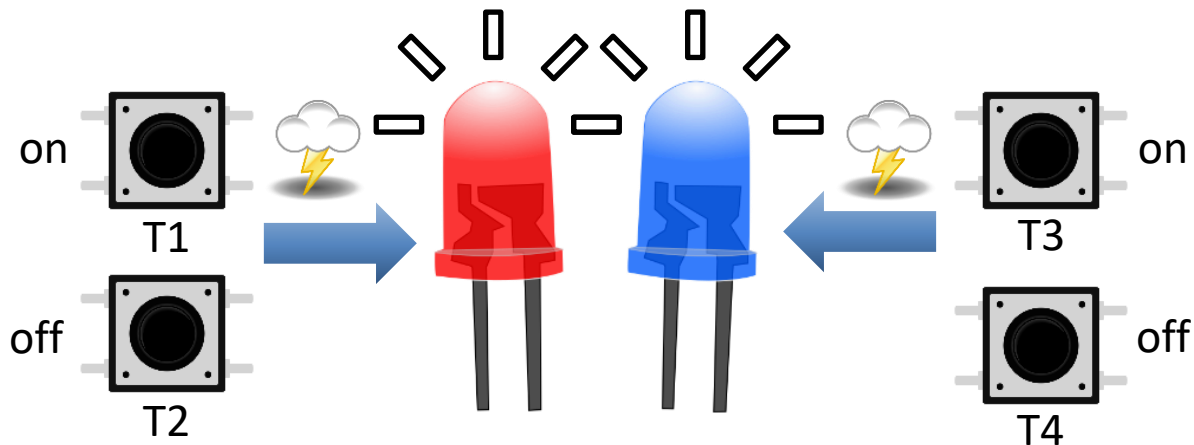
Assignment 4

- Buttons and External Interrupts I
 - Please control the LEDs of the Color Clicks by means of the 2x2 Key Click as follows:
 - T1 turns the red LED on.
 - T2 turns the red LED off.
 - T3 turns the blue LED on.
 - T4 turns the blue LED off.
 - The push button controls by an external interrupt
 - The loop function is empty.



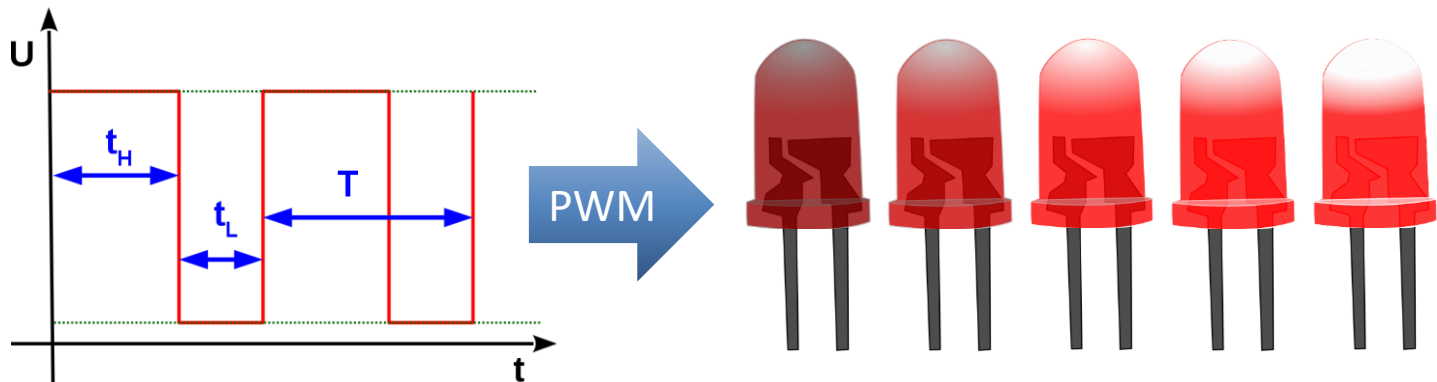
Assignment 5

- Buttons and External Interrupts II
 - Do the same as in assignment 4 but:
 - The red LED is blinking with a frequency of 0.5 Hz.
 - The blue LED is blinking with a frequency von 2 HZ.



Assignment 6

- Pulse-width Modulation
 - Please dim the red LED of the Color Click by means of the LED control module of the ESP32.
 - The loop function remains empty.



Assignment 7

- Creating Random Colors
 - Please define an arbitrary color and display it by means of the Color Click.

```
#define red ...  
#define green ...  
#define blue ...  
  
const int red = ...;  
const int green = ...;  
const int blue = ...;
```

