

# LAB 15-A

## PWM

### OBJECTIVES:

- To generate waves with different duty cycles.

### REFERENCES:

- Mazidi & Naimi “The STM32F103 Arm Microcontroller and Embedded Systems,” Chapter 15.

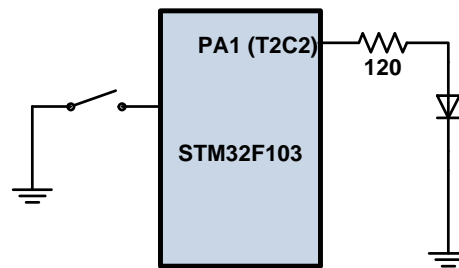
### MATERIALS:

- Keil IDE or any other STM32 IDE
- Blue pill or any other STM32F10x trainer board
- ST-Link V2
- An LED, a switch and a resistor

### ACTIVITY 1

Connect a switch to a pin on one of the GPIOs. Use this switch for choosing the duty cycle of the generated wave, as shown in the following table:

SW	Duty Cycle
0	30%
1	100%



### ACTIVITY 2

Modify Activity 1, so that the lightness of the LED increases gradually from 0% to 100% and then decreases from 100% to 0%; as if the sun rises and sets.