LAB 11C

MEASURING THE FREQUENCY AND DUTY CYCLE OF SQUARE WAVES

OBJECTIVES:

- To measure frequency.
- To measure duty cycle.

REFERENCE:

- Mazidi & Naimi "The STM32F103 Arm Microcontroller and Embedded Systems," Chapter 11.

MATERIALS:

- Keil IDE
- Blue pill or any other STM32F10x trainer board
- ST-Link V2
- Square wave generator

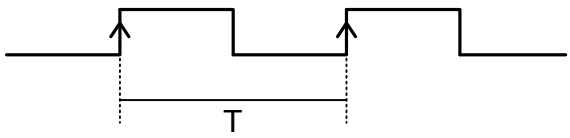
ACTIVITY 1

a) Write a program which measures the distance between two preceding rising edges.
b) Show the result on the LCD or send it using serial to the computer.
c) Using wave generator, generate a 500 kHz wave and connect it to the timer input channel pin.

ACTIVITY 2

d) Modify the program of Activity 1 to calculate frequency of the wave and display it on the LCD.

f = 1/T



ACTIVITY 3

e) Write a program which measures the distance between a rising edge and its preceding falling edge. Show the result on the LCD or send it using serial to the computer.