Control & Automation Engineering Department

KON309E Microcontroller Systems

Experiment 1

Aim: LED control application using built-in LED on STM32F1 Kit.

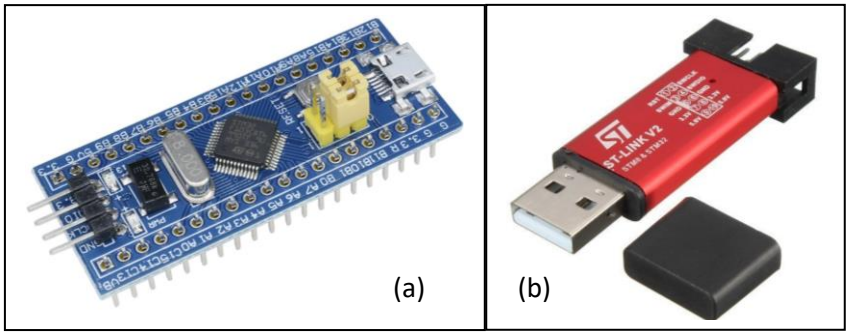

Figure 1: (a) STM32F103C8T6 development board (b) ST-LINK V2 Mini Programmer.

In this experiment, development board seen in Figure 1(a) will be used. In order to program this board, ST-LINK V2 Mini Programmer (Figure 1(b)) is needed. Keil IDE version 4.74 will be utilized for all experiments. A document explaining the installation steps of Keil can be found on the DOST/NINOVA system.

In this experiment, participants are expected to complete **two** tasks given below.

1. Led control application will be done by programming on the register level without using peripheral library functions.

   (To see the details about GPIO registers please visit the user manual document, which you can find on the DOST/NINOVA system)

2. Led control application, which is defined below, will be realized using peripheral library functions.
    - 2 external buttons will be used as input.
    - The LED will start blinking with 1000ms period when first button is pressed once.
    - When led is on, if the second button is pressed once, blinking period of led will reduced to half (500ms). If the second button is pressed twice (once again), blinking period will be back to 1000ms.
    - When the LED is on (blinking), if the first button is pressed, led will be off.

Pinout scheme of STM32F103C8T6 development board can be seen in Figure 2.

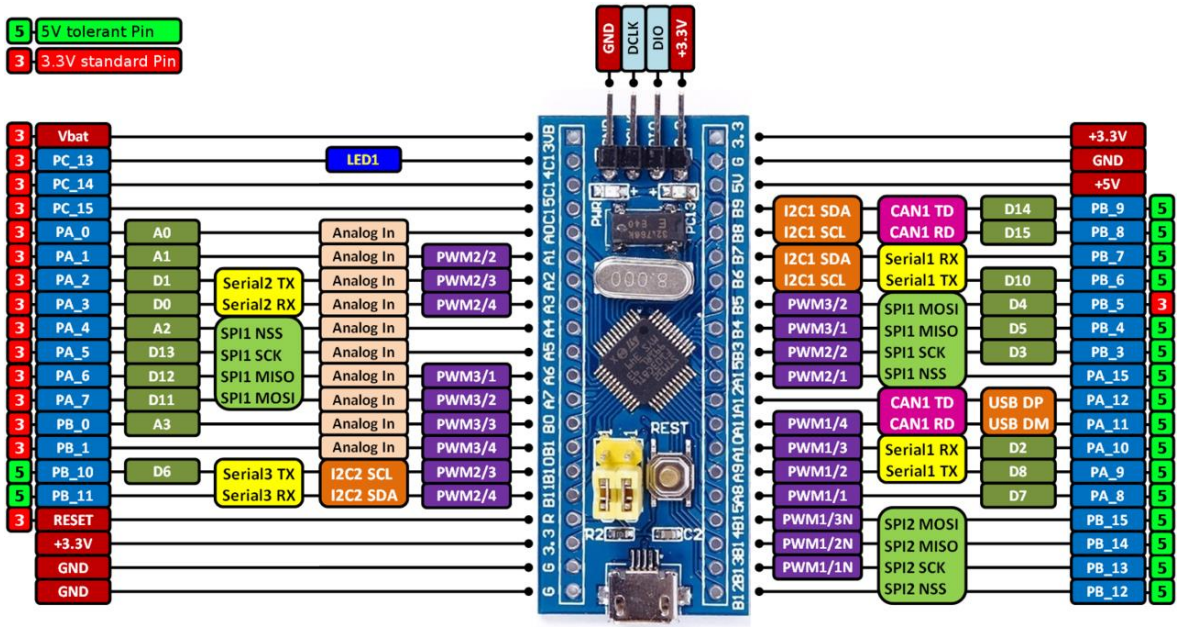

Figure 2: Pinout scheme of STM32F103C8T6 development board.

The deadline for the report is **10.11.2020**.

Please consider the following steps when preparing your reports.

1. Describe the experiment **in your own words**.
2. Add your main codes.
    - Don't forget to comment your codes **in your own words** explaining how each line of code works.
3. Add a photo of your whole circuit.
4. Take a video of your system while running, upload it on YouTube, Drive, etc. and include the link on your report for us.