This report provides the details to setup a blinking application on Nucleo-F446RE through STM32CUBEIDE tool. The report will include the steps to initialize and configure the peripherals, C code with HAL libraries and program to blink the LED on the board.

The hardware used in this milestone are:

1. Nucleo-F446RE
2. USB to Mini USB B cable

To start off, launch the STM32CubeIDE tool. A window will display on the desktop which prompt the user to select their dedicated workspace as shown in Figure 1.

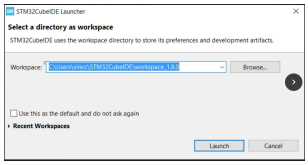

Figure 1: Window prompt user to select their dedicated workspace.

After that, user needs to create a new project by select “New Project” under “File”. From the “Board Selector” section, NUCLEO-F446RE is filtered and selected to start the project. User can skip these two steps if starting from an existing project.

After the board is selected, the tool will automatically install or initialize the pin-out setting for the board such as LED, pin assignment for the communication interfaces and more. In this milestone, the LED pin LD2 on the board is located at PA5 pin in the tool. Figure 2 shows the pin-out setting.

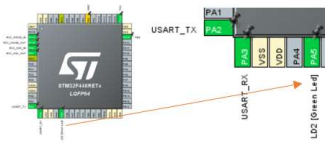

Figure 2: Pin-out setting.

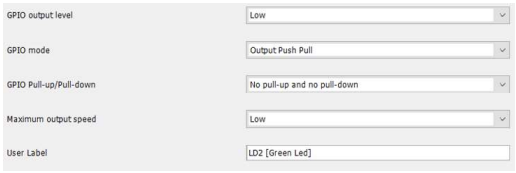

Figure 3: GPIO.

In addition, the tool will automatically configure the internal clock systems with 80MHZ High Clock HCLK. User able to change this setting under “Clock Configuration” tab. Besides, user allows to configure the LED under “GPIO” tab as shown in Figure 3. In this case, the LED is set to be low by default and operates in push pull mode.

To code the LED, user needs to generate the code by selecting the button “Device Configuration Tool Code Generator” . A main.c file will automatically be generated. User can add their code inside the while(1) loop. For the LED blinking, the following codes were included:

```
HAL_GPIO_WritePin(GPIOA, GPIO_PIN_5, 1);

HAL_Delay(1000);

HAL_GPIO_WritePin(GPIOA, GPIO_PIN_5, 0);

HAL_Delay(1000);
```

Then, NUCLEO-F446RE is connected to a computer through a USB to MINI-B cable. By clicking on the run button, the project will be compiled and programmed to the board. Now, the blinky application has successfully launched on NUCLEO-F446RE.