

PSoC BLE Lab 01 Report

University of Western Ontario | ECE 9047

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Objectives

The objectives of the Lab are:

1. Learn the usage of PSoC Creator and Debug design.
2. Implementation of blinking LED with Cypress BLE kit.

Pre-requisite

1. PSoC Creator 3.2 installed in System.
2. Cypress Bluetooth Low Energy Pioneer Kit.

Steps Performed

1. We created a new project in PSoC creator.

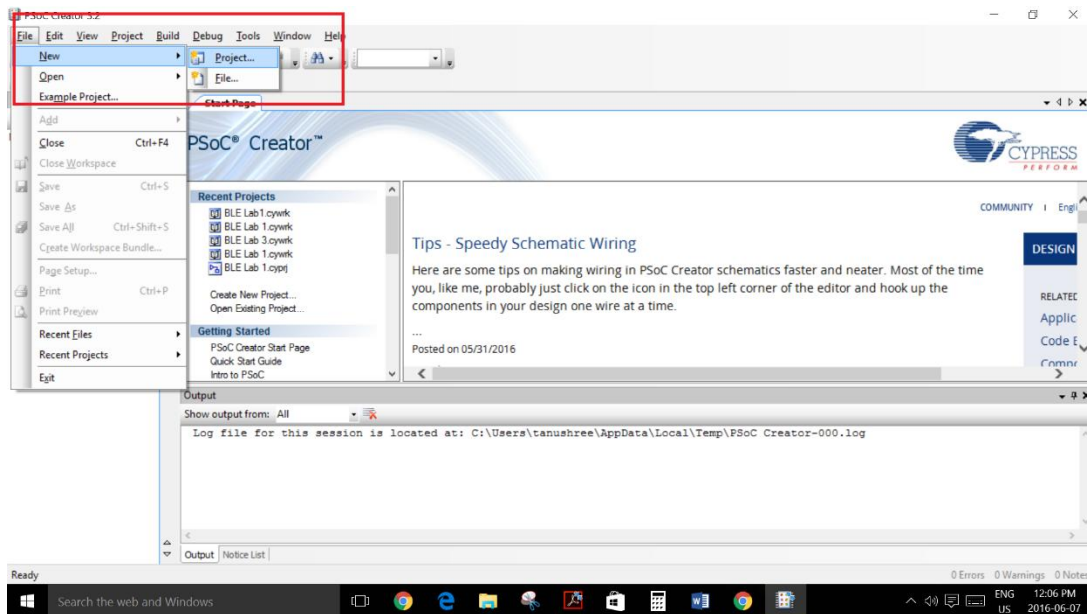


Figure 1 : PSoC Creator

2. We have selected PSoC 4100 BLE/ PSoC 4200 BLE Design from the templates.
3. The File Name given is "BLE Lab 1" as shown in Figure 2.

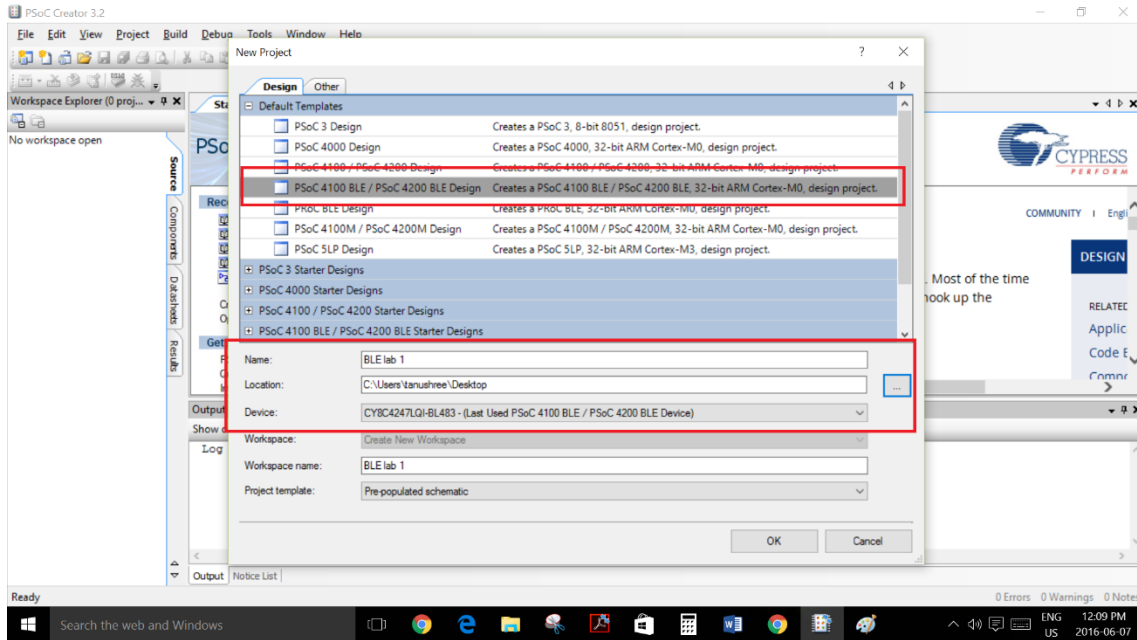


Figure 2: BLE Template

4. We open “My Design” tab. Clear the template.
5. Now, we will drag and drop the “Digital Output Pin[v2.10]” PSoC component from “Port and Pins” tab (Cypress).

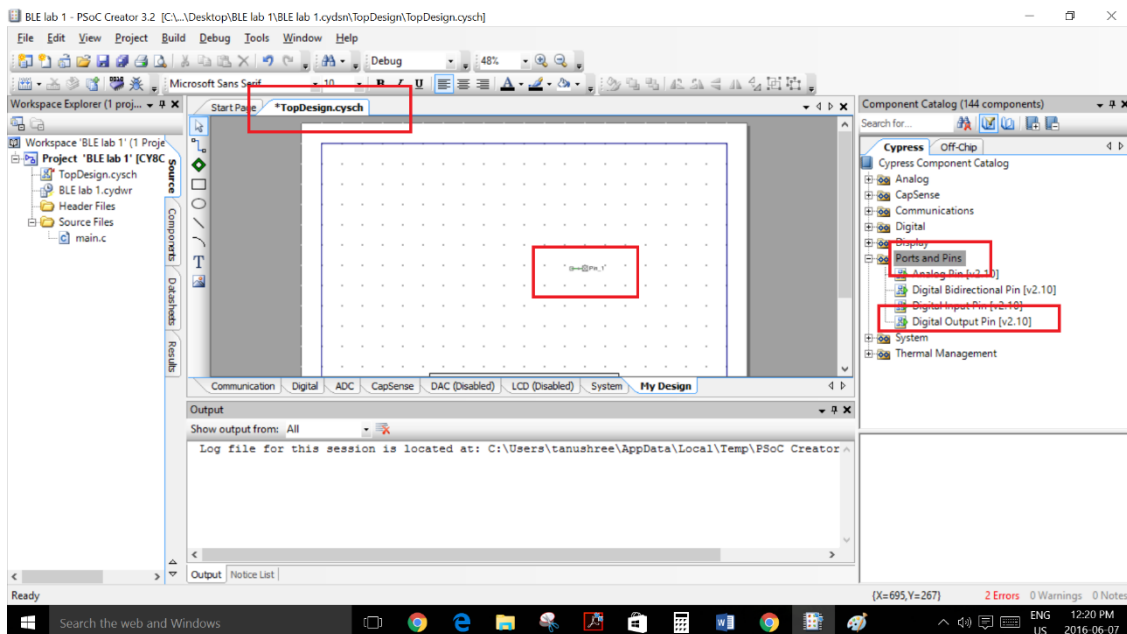


Figure 3: Component Selection

6. We now rename and set the configuration of the component. Also we have to uncheck the H/W connection, as we will drive the LED directly from Firmware.

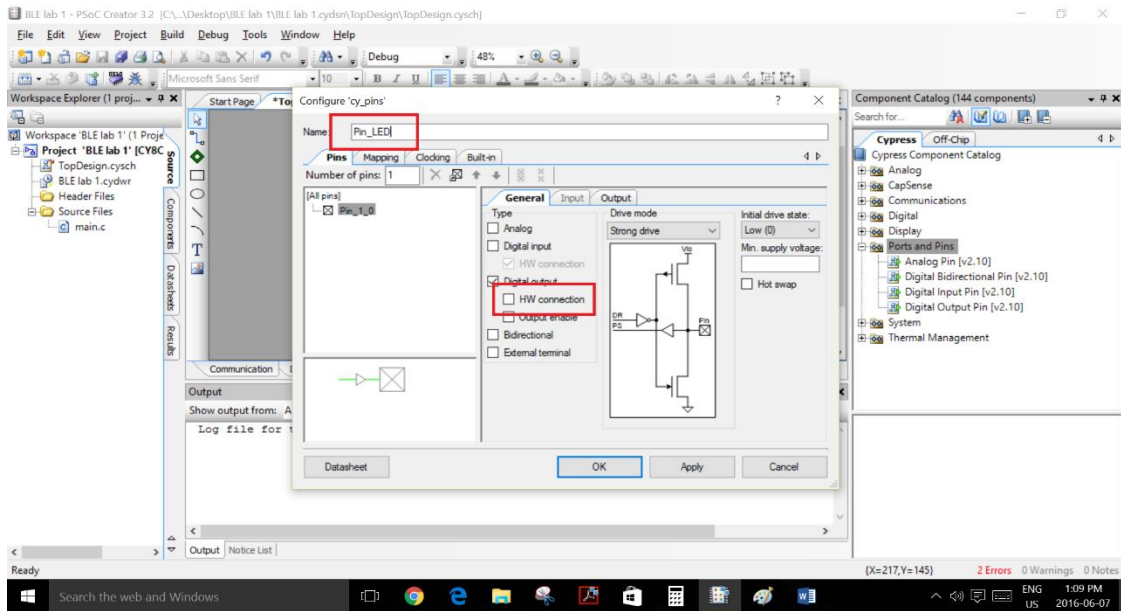


Figure 4 : LED Configuration

7. After configuring LED, we now click on “BLE lab 1.cydwr” in workspace explorer.

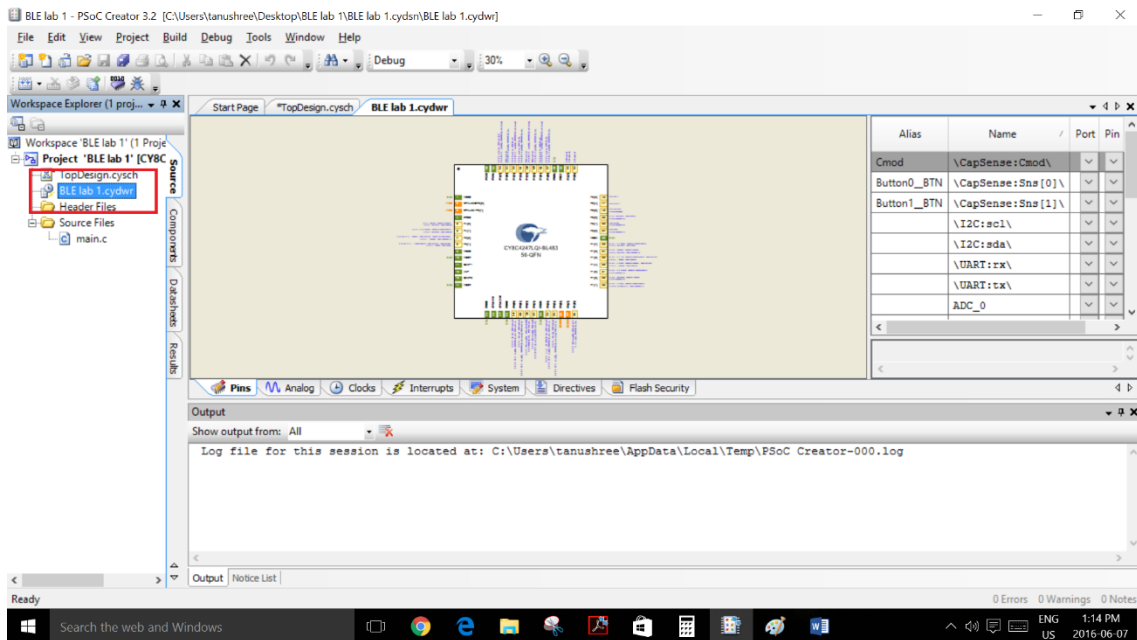


Figure 5: BLE Lab 1.cydwr

8. Now from the drop down in right hand side, we assign Pin_LED to P3[7].

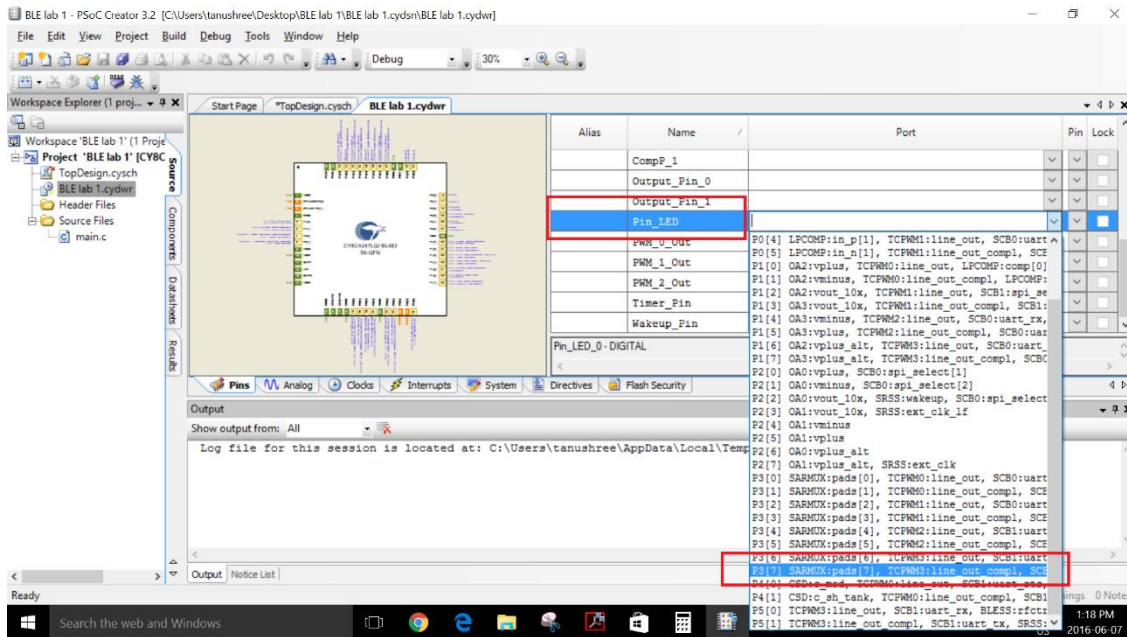


Figure 6 : Pin_LED

9. Now in the next step we build the firmware by adding the following lines of code.

```
for(;;)
{
    Pin_LED_Write(~Pin_LED_Read());
    CyDelay(1000);
}
```

10. After this we build the project.

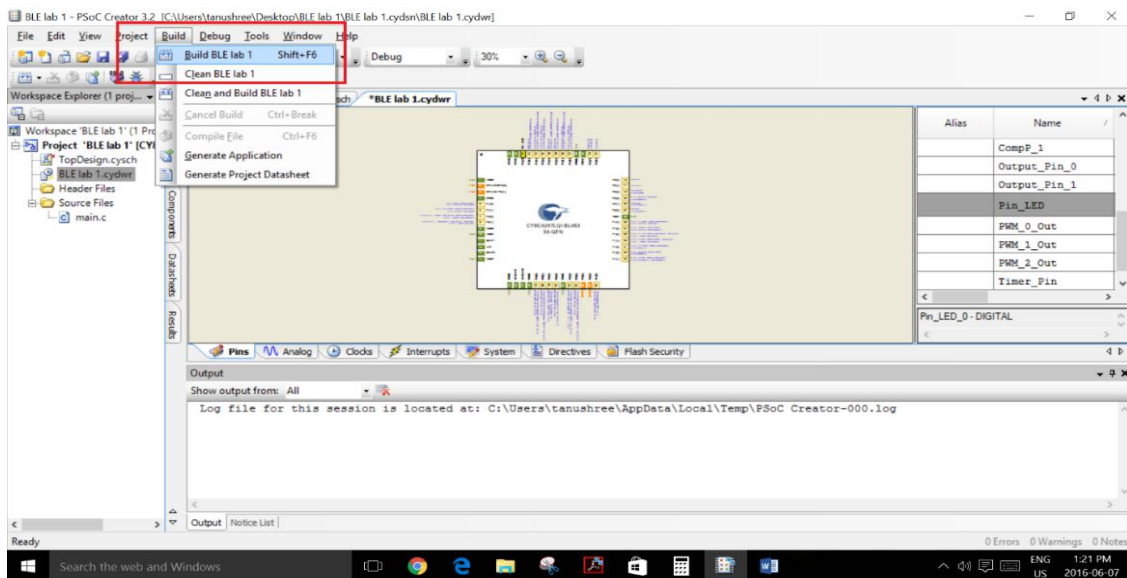


Figure 7: Build Project

The screenshot shows the PSoC Creator 3.2 IDE. The 'Debug' menu is open, with 'Program' highlighted. The workspace shows the project 'BLE lab 1' with files like 'TopDesign.cysch' and 'BLE lab 1.cydsn'. The design view shows a CY8C4245 chip with various components connected. The output window shows the following text:

```
arm-none-eabi-gcc.exe -Wl,--start-group -o ".\CortexM0\ARM_GCC_484\Debug\BLE lab 1.elf" ".\CortexM0\ARM_GCC_484\Debug\main.o" ".\CortexM0\ARM_GCC_484\Debug\cyfcool.exe" -C "C:\Users\tanushree\Desktop\BLE lab 1\BLE lab 1.cydsn\CortexM0\ARM_GCC_484\Debug\BLE lab 1.elf" --flash_row_size:
cyfcool.exe -S "C:\Users\tanushree\Desktop\BLE lab 1\BLE lab 1.cydsn\CortexM0\ARM_GCC_484\Debug\BLE lab 1.elf"
Flash used: 72192 of 131072 bytes (55.1 %).
SRAM used: 9644 of 16384 bytes (58.9 %). Stack: 2048 bytes. Heap: 128 bytes.
----- Build Succeeded: 06/07/2016 13:22:52 -----
```

12. After this the “Blue LED” starts blinking.

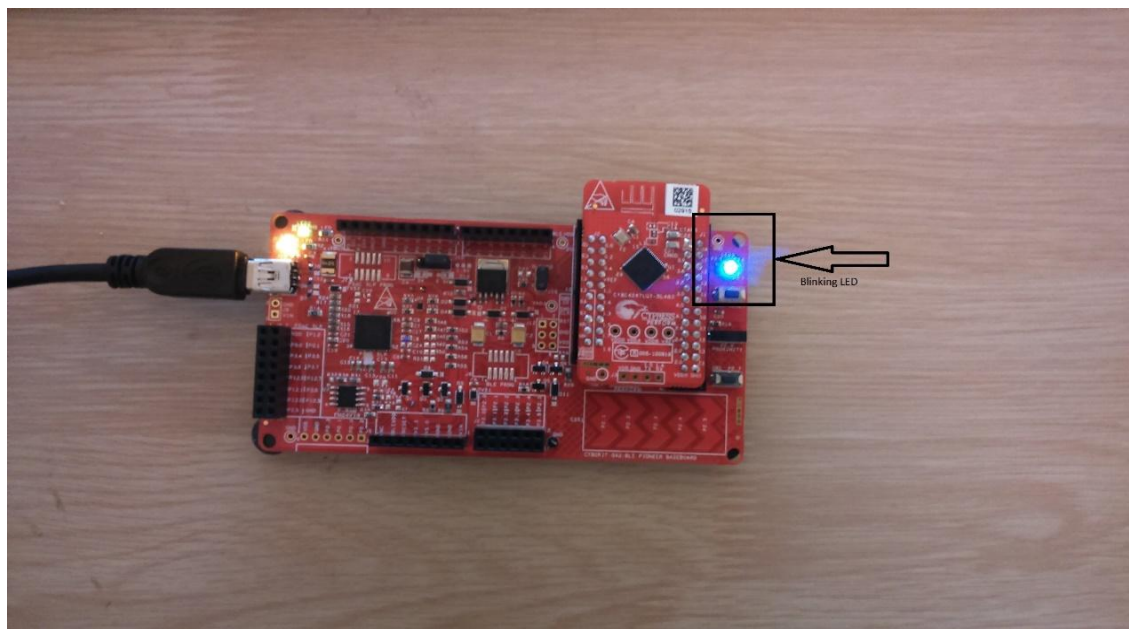


Figure 10: Blinking LED

Conclusion

In this Lab, we had an introduction to PSoC3.2 creator through demonstration of Blinking LED. We select the required component and then do the configuration settings. The component configuration settings gets programmed into the device by PSoC creator. Next, we select a physical pin for connecting the LED on the kit from a drop down menu provided in the PSoC creator. In Lab 1, we have connected the LED to P3[7] of PSoC chip. We write our firmware using Read/write function and a Delay function to cause toggling of LED and then we program the Kit. After Debug operation we can see the LED blinking.