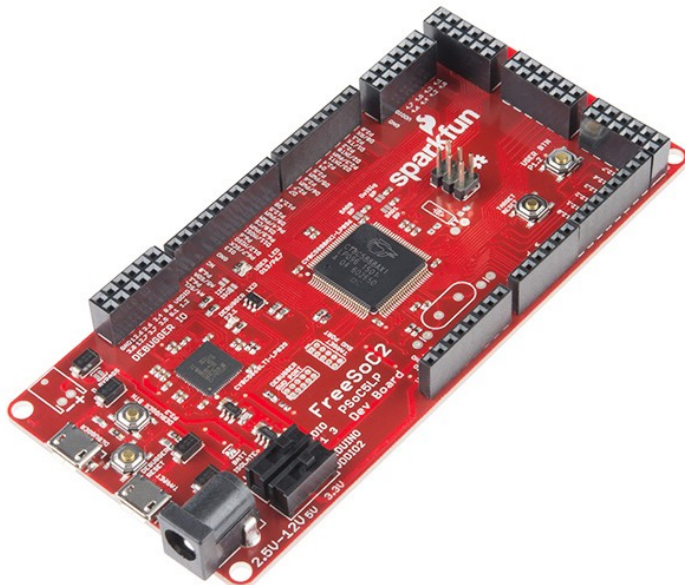# TENET TECHNETRONICS

2016

Interfacing Bluetooth Module with FreeSoc2 (PSoC 5LP) using PSoC Creator

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Version: 1.0

Introduction:

The FreeSoC2 micro-controller based on the PSoC 5LP (Programmable System on a Chip) brings together features of the programmable devices and micro-controller-type systems on chips into one package. By placing a programmable fabric between the peripherals and the pins, the FreeSoC2 allows any function to be routed to any pin! Moreover, the on-board PSoC includes a number of programmable blocks which allow the user to define arbitrary digital and analog circuits for their specific application. To get the most out of the device, you will need to use the PSoC Creator IDE.
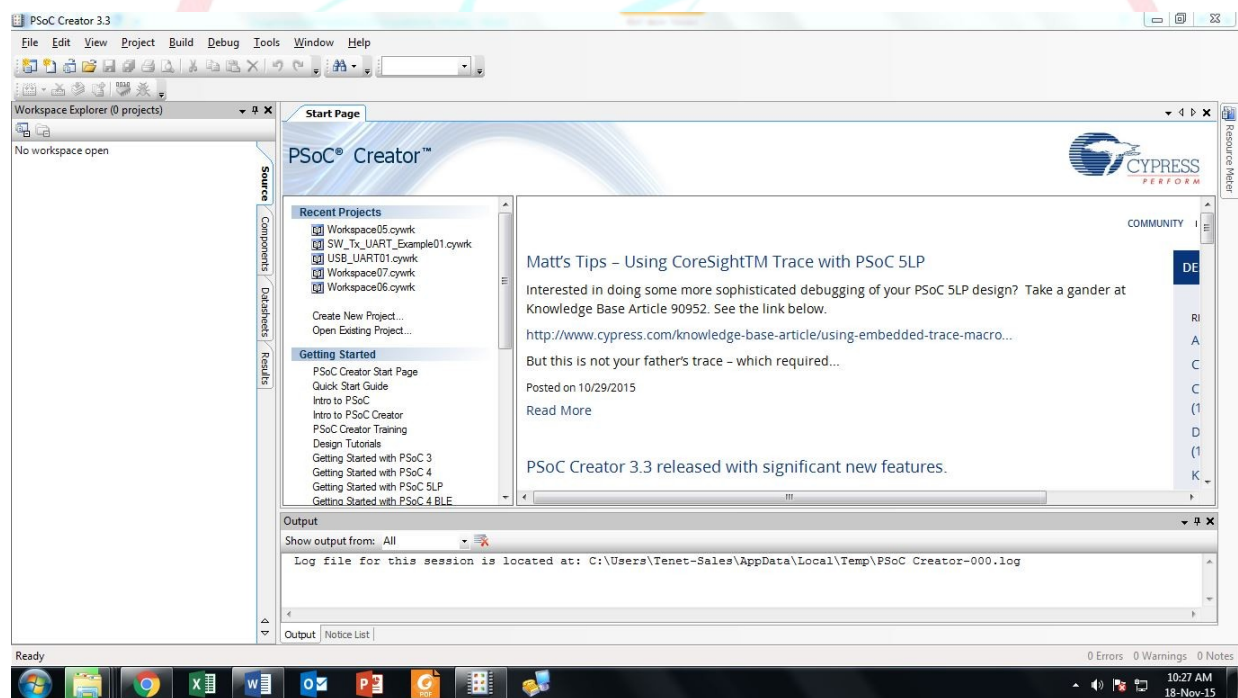
Step 1: Open PSOC creator IDE.

Figure 1

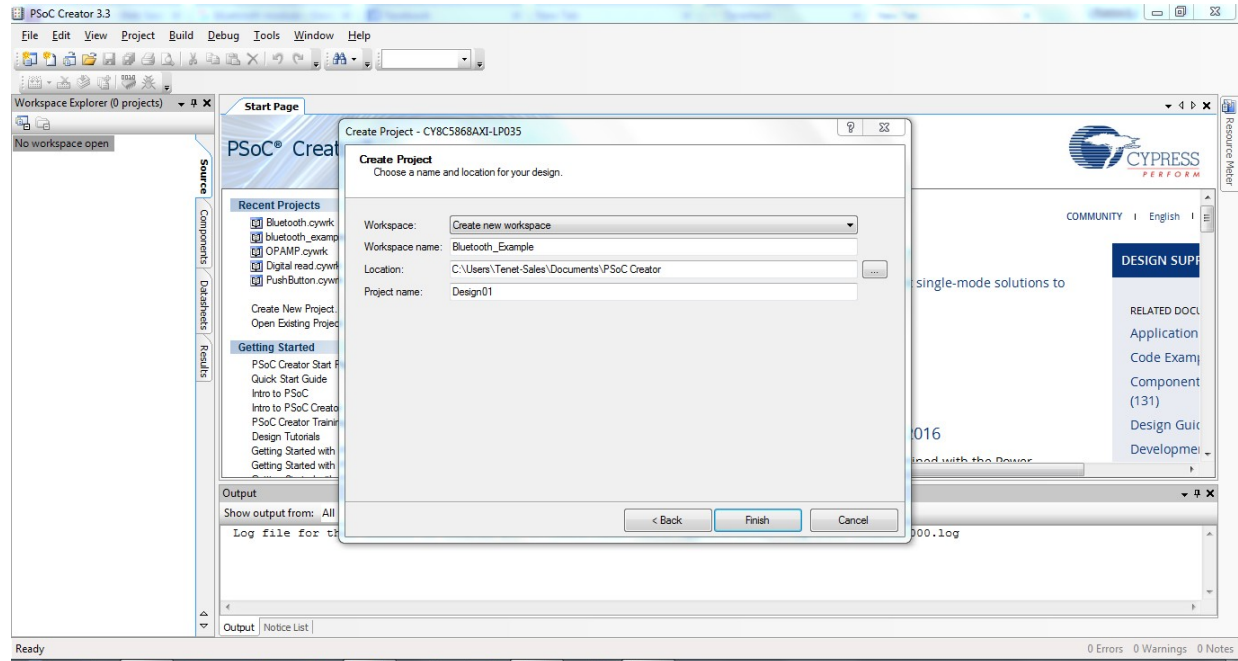**Step 2: File-> new project -> design -> PSoC 5LP design & save with desired name.**

Figure 1
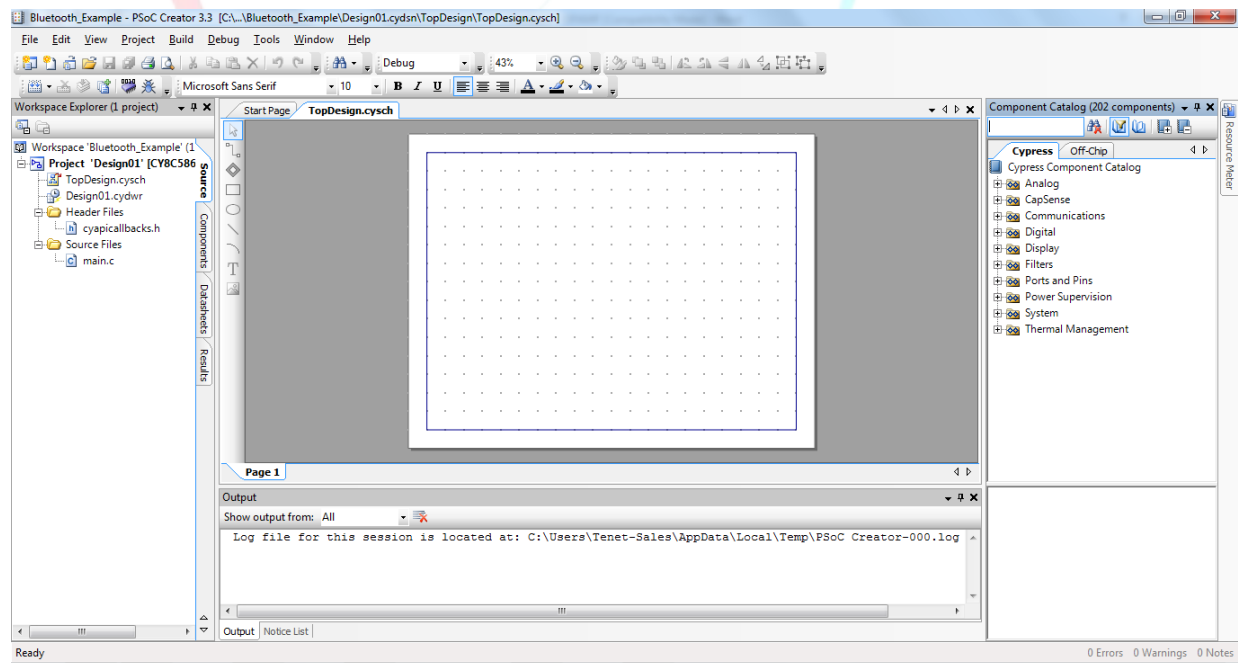
Step 3: Open TopDesign.cysch from workspace explorer.

Figure 2

Step 4: Search for UART component from the Component catalog on right side of the window. Drag the UART component onto the workspace. Double click on the UART component and change the name if you wish to. Configure the UART as 8-bit and baud rate of 9600 bps.
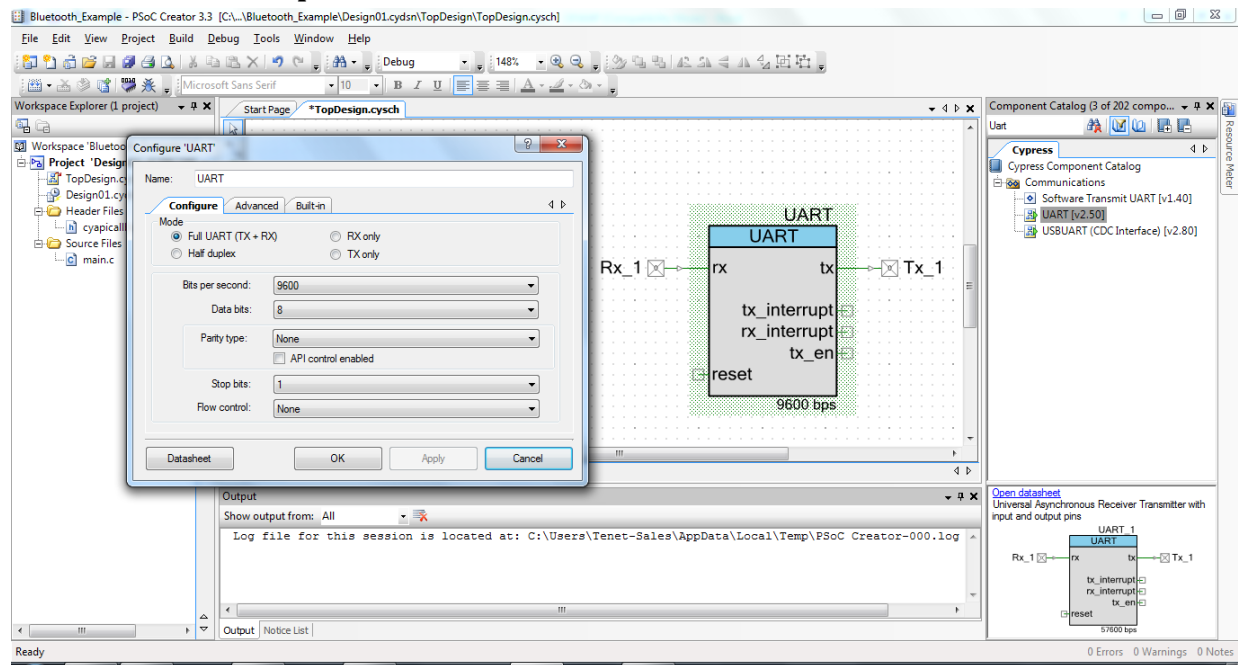

Figure 3

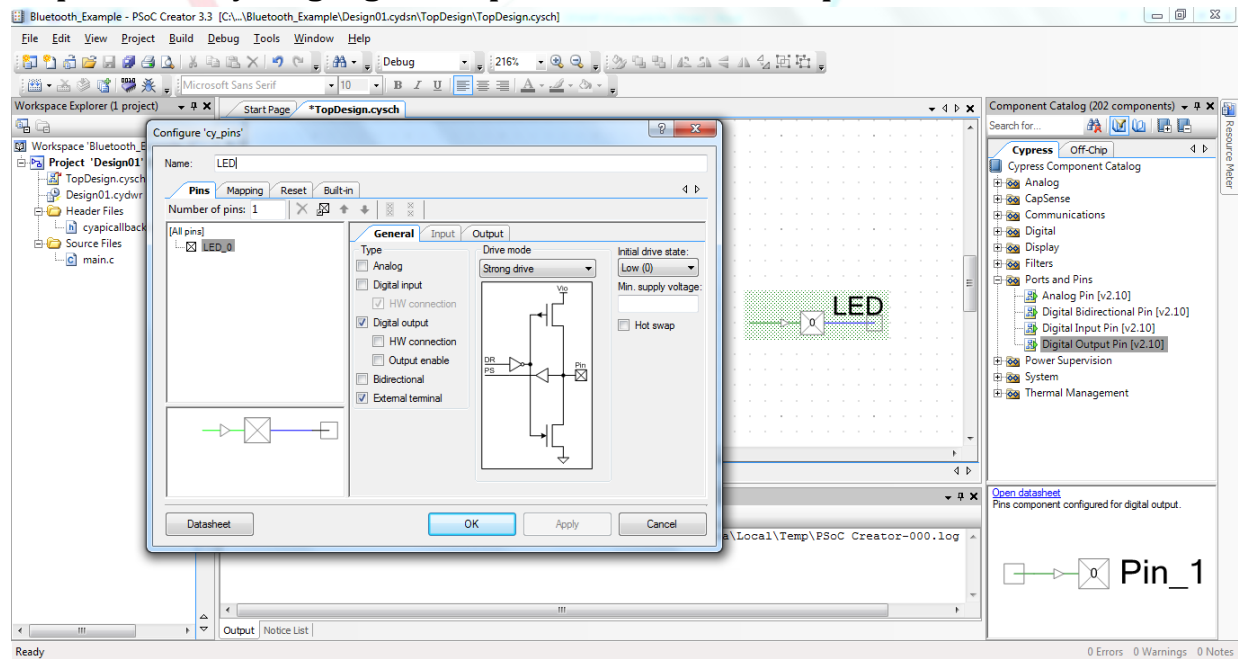**Step 5: Similarly drag Digital Output Pin onto the workspace.**

Figure 5

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Email: info@tenettech.com, Phone: 080 - 26722726

Step 6: For improved documentation we can use external components from Off-Chip Component Catalog. The Off-Chip library in the Component Catalog provides a way for you to mix external and internal components on the same schematic. This makes it possible to improve documentation and better understand the internal schematic and entire design.
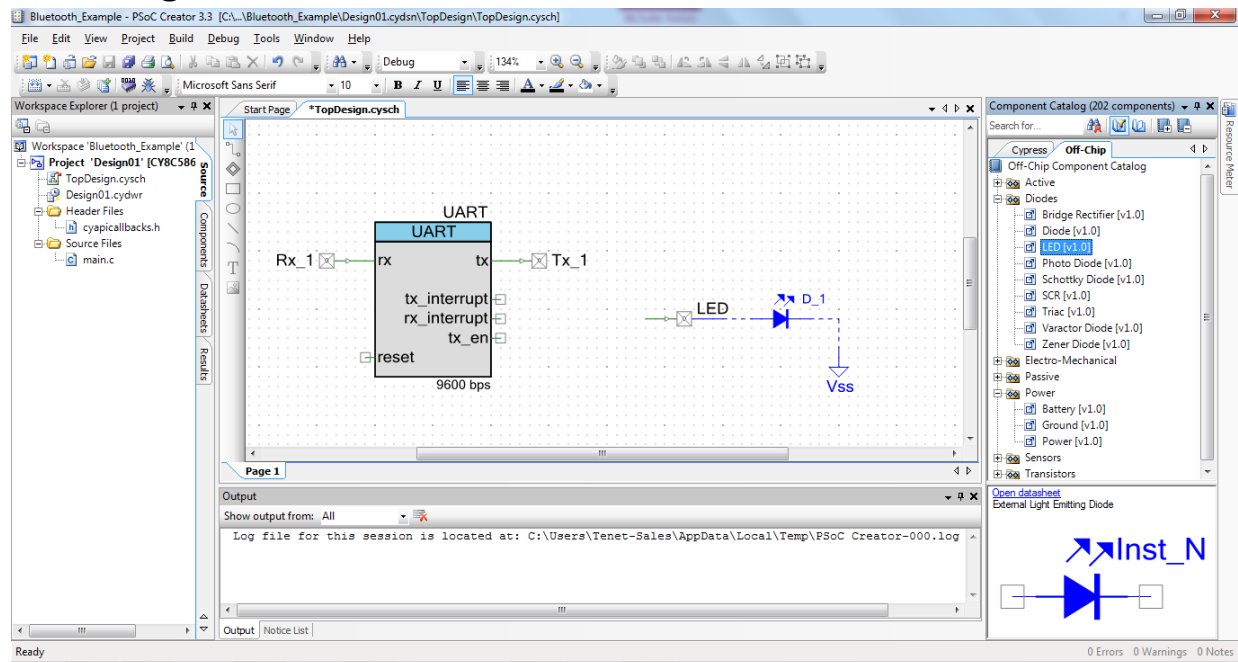

Figure 6

Step 7: After configuring build the project. As we can generate user-defined APIs which will ease us while writing code. We can see APIs generated in the Workspace Explorer on the left side of the window.
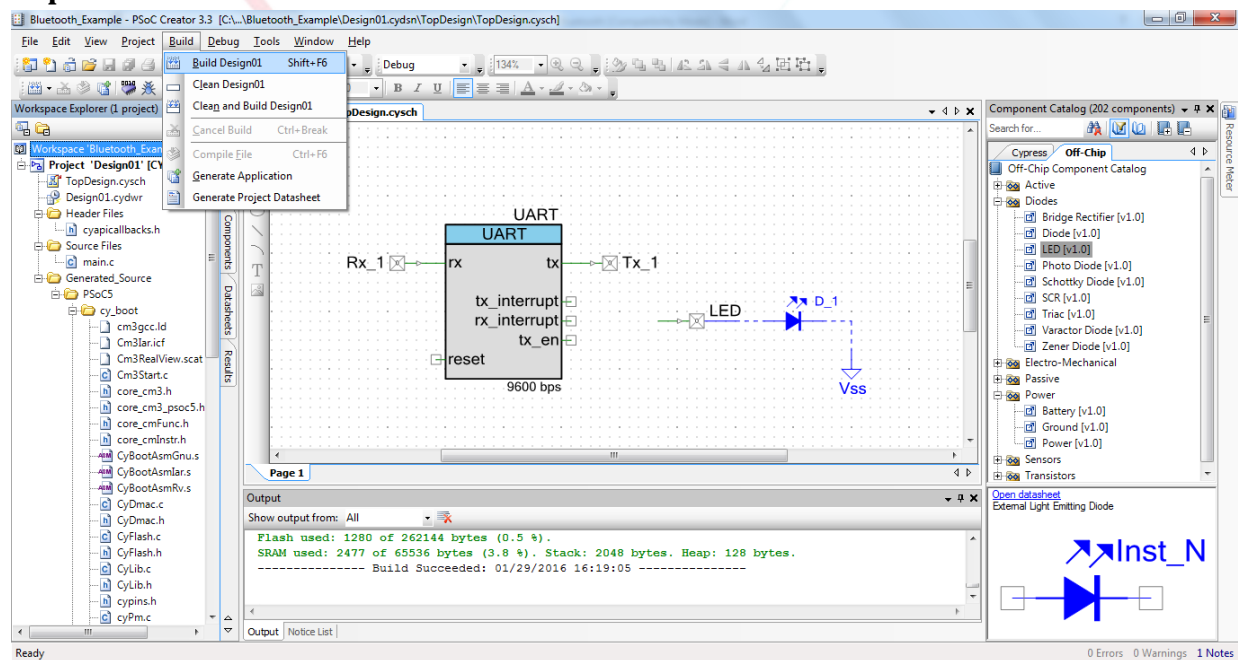

Figure 7

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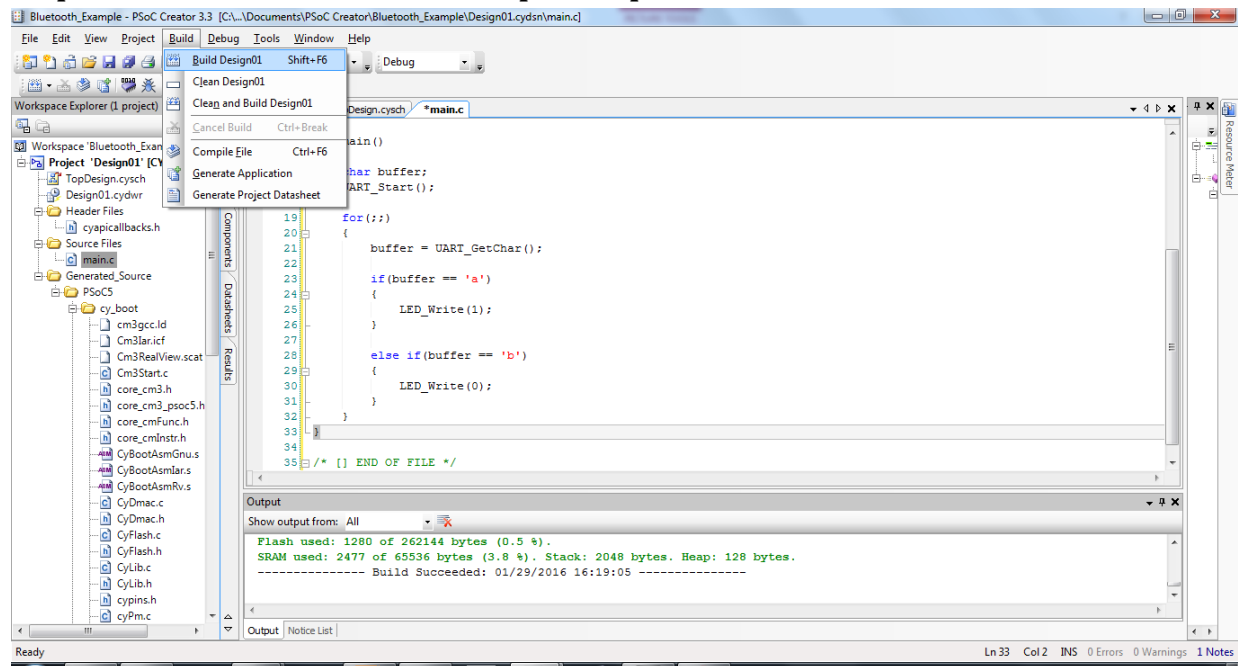**Step 8: Click on main.c from Workspace Explorer. Write the code and Build it.**

Figure 8

CODE:

```c
#include <project.h>

int main()
{
    char buffer;
    UART_Start();

    for(;;)
    {
        buffer = UART_GetChar();

        if(buffer == 'a')
        {
            LED_Write(1);
        }

        else if(buffer == 'b')
        {
            LED_Write(0);
        }
    }
```

}

Step 9: Finally, double click on Design01.cydwr and assign pins to desired port and build it.
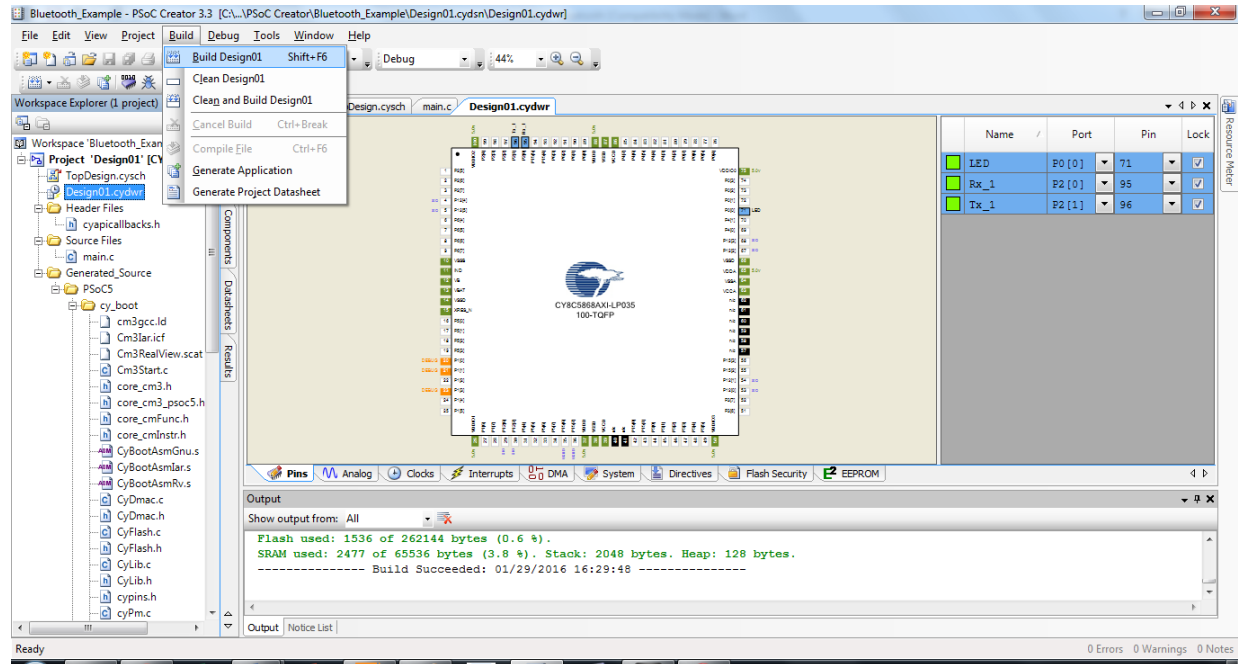

Figure 9

Step 10: If all goes well, go to Debug and click on Program.
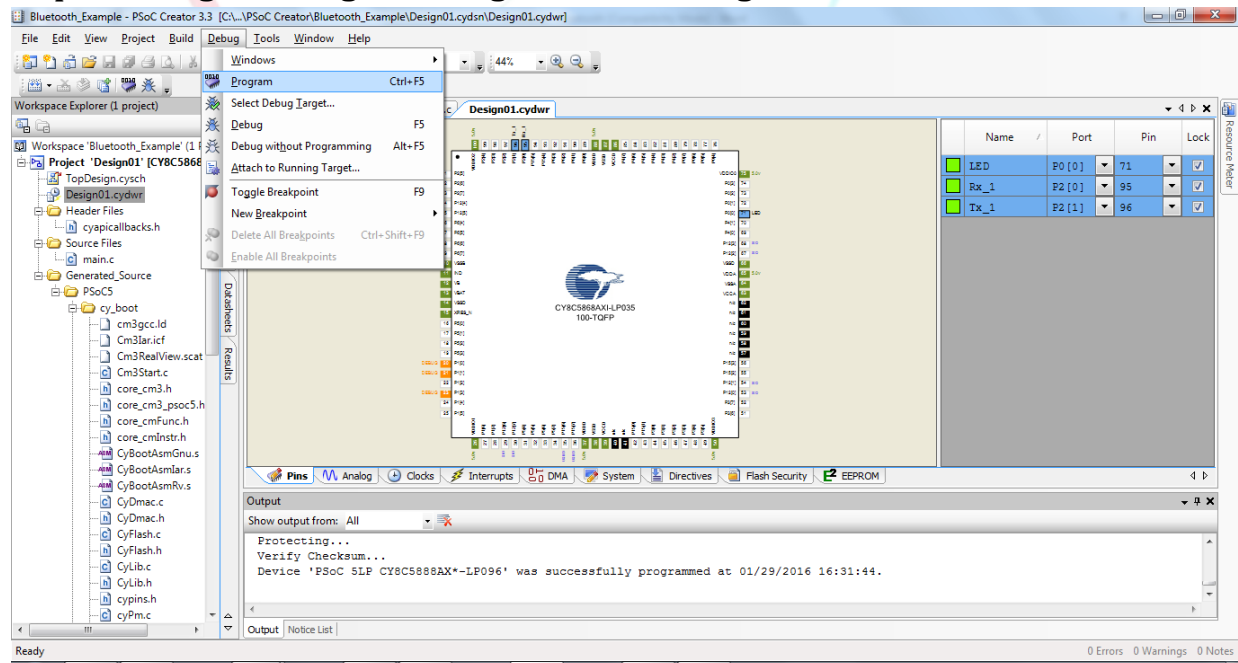

Figure 10

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Project Explanation:

In this project, we send characters from Bluetooth Application in Smart phone to control the LED states. By sending a character 'a', the LED will go HIGH and sending a character 'b', the LED will go LOW. Same thing can be used to control the direction of motors, by sending different characters to control them.
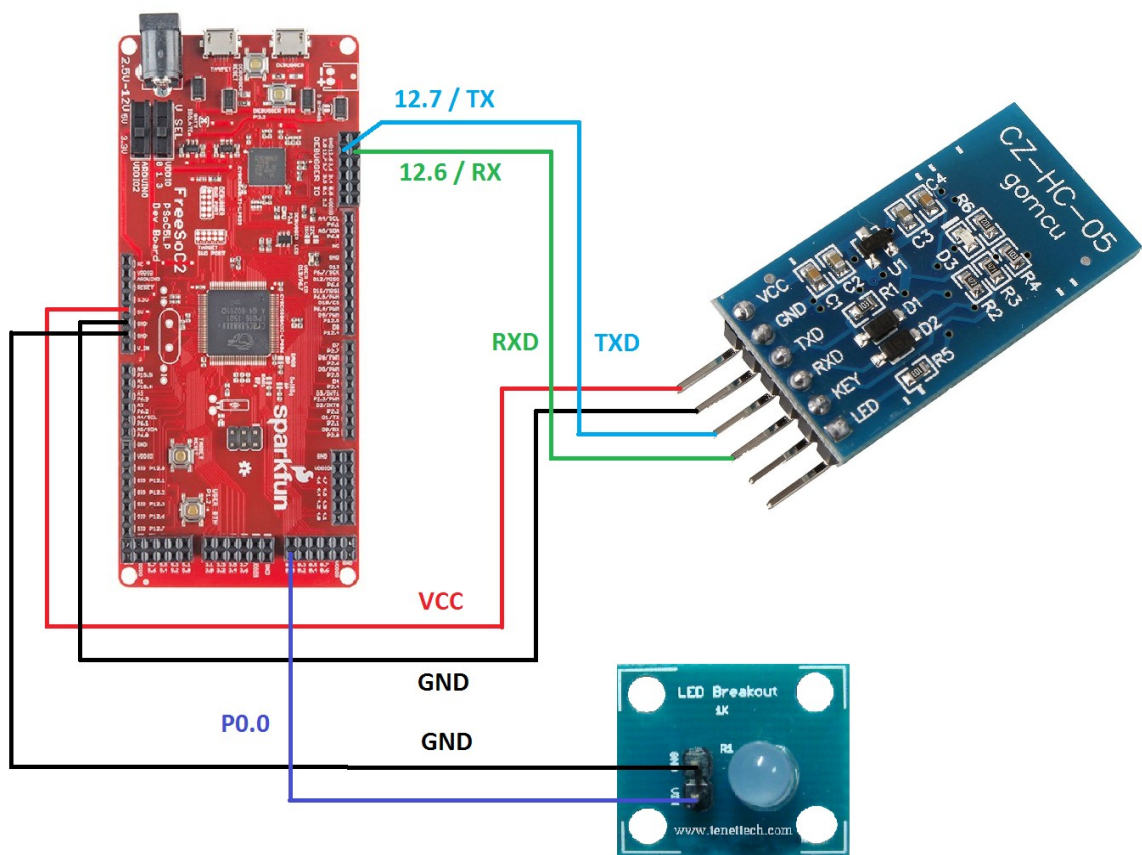
Connection diagram:

Figure 11
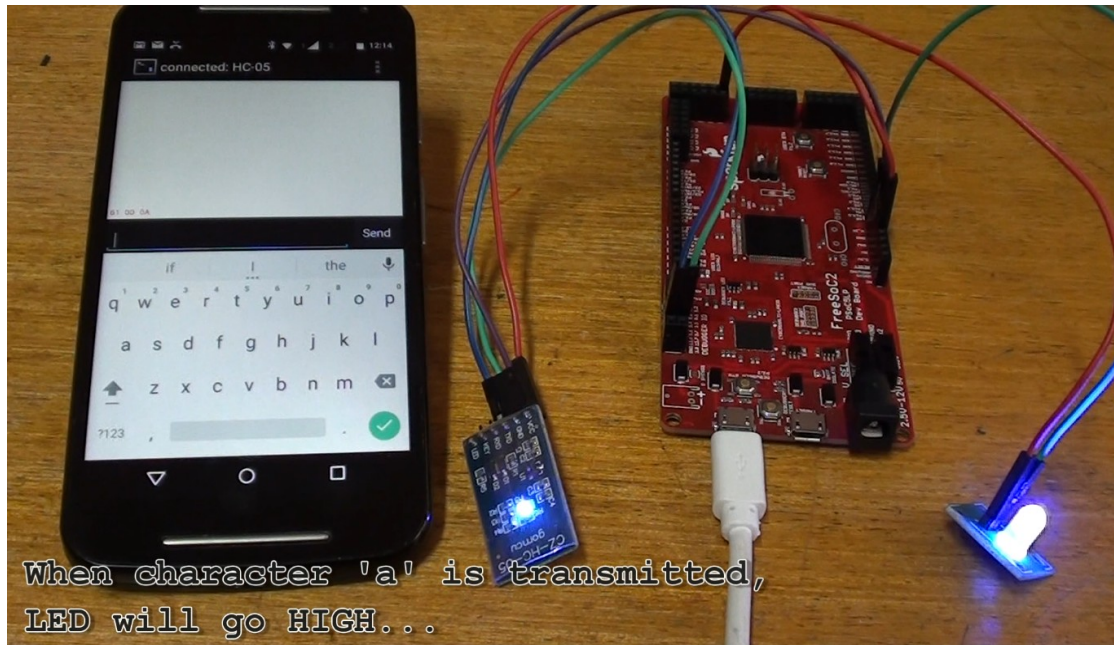
OUTPUT:

When character 'a' is transmitted, LED will go HIGH...

Figure 12

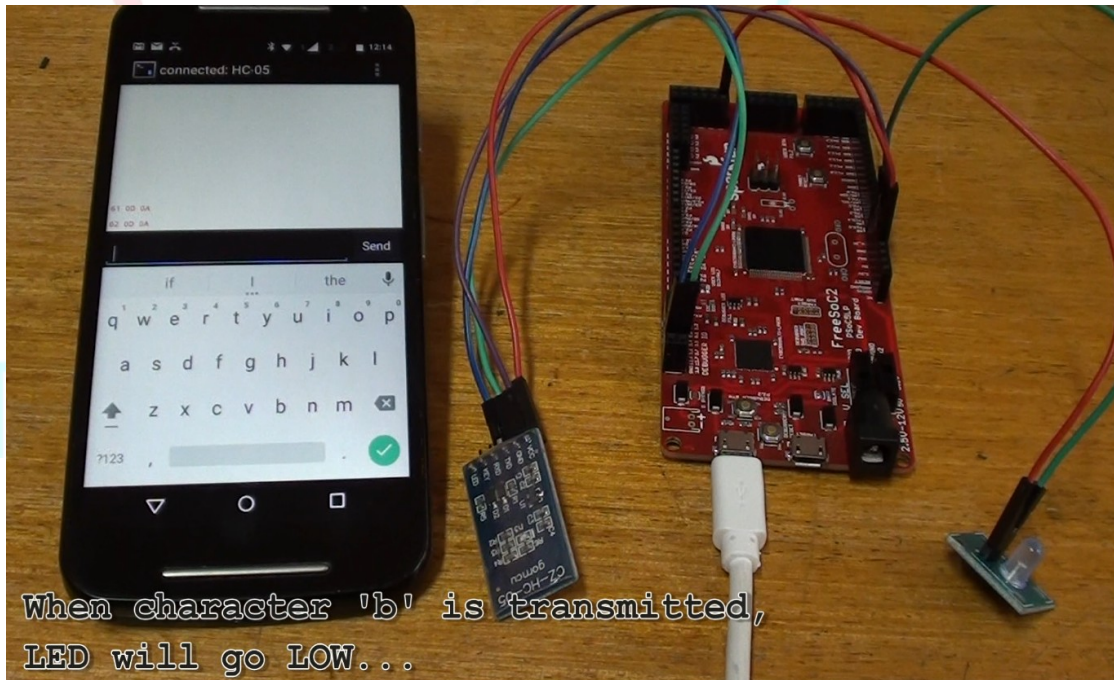**When character 'b' is transmitted, LED will go LOW...**

Figure 13

For product link:

1. http://www.tenettech.com/product/7241/freesoc2-development-board-psoc5lp

2. http://www.tenettech.com/product/2442/16-x-2-character-lcd-display-with-backlight-jhd162a-green

For more information please visit: www.tenettech.com

For technical query please send an e-mail: info@tenettech.com