PSoC 4 BLE – Billboard Display

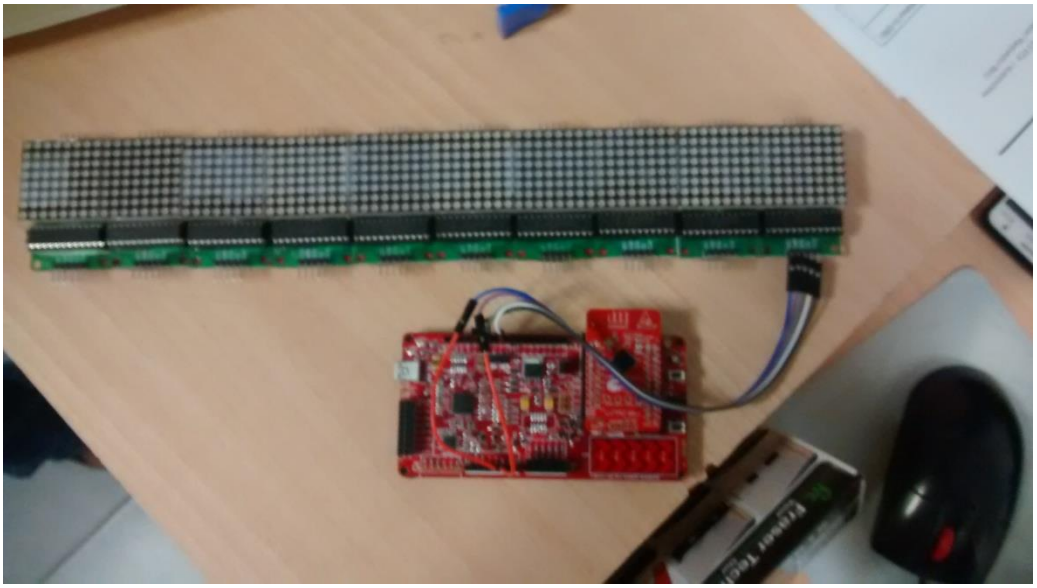
Objective

This project demonstrates how you can implement a Billboard display using the PSoC 4 BLE.

Overview

This example uses the PSoC 4 BLE to get information from a BLE Master device and display it as a ticking Billboard using the MAX7219 and 8x8 LED Matrix modules.

A text entered by the user from an android app is displayed on the LEDs, with the speed and brightness of the display being configurable over BLE.



Requirements

Design Tool: PSoC Creator 3.1 SP1

Programming Language: C (GCC 4.8.4 – included with PSoC Creator)

Associated Devices: All PSoC 4 BLE devices

Required Hardware: CY8CKIT-042-BLE Bluetooth® Low Energy (BLE) Pioneer Kit, MAX7219 and 8x8 LED Modules

Hardware Setup

Connect multiple MAX7219 and LED matrix Modules, with the SCLK and SDATA in parallel for multiple modules, and DIN being serial from the first module to the last. Connect the first module (which becomes the source of input for the billboard) to the BLE Pioneer Kit.

Project Description

The project takes data on a Custom Service with three characteristics – one for Billboard text, second for the speed, and third for the Brightness.

The communication to MAX7219 happens over SPI. The data is fed from one end of the matrix and the LED columns to display text are continuously shifted to give the ticking effect.

Testing the project

Build and Program the hex file to the BLE Pioneer kit and make the hardware connections. The firmware supports 10 LED matrix modules as default, which can be changed.

The project works with the CySmart android app (the standard app customized to support Billboard) as well as a standalone app. Both of these apps are included along with this project.

Related Documents

Table 1 lists all relevant application notes, code examples, knowledge base articles, device datasheets, and Component / user module datasheets.

Table 1. Related Documents

Document	Title	Comment
AN91267	Getting Started with PSoC 4 BLE	Provides an introduction to PSoC 4 BLE device that integrates a Bluetooth Low Energy radio system along with programmable analog and digital resources.
AN91445	Antenna Design Guide	Provides guidelines on how to design an antenna for BLE applications.