Digital Utility Example Project
1.0

Features

- A Basic Counter is used to count falling edge events from a pin.
- A Digital Comparator component is used to reset the Basic Counter.
- A Digital Constant component provides one value for the Digital Comparator.
- An Edge Detector component allows falling edges to produce a single pulse for the en input of the Basic Counter.

General Description

This example project demonstrates the usage of the Basic Counter component, the Digital Comparator component, the Digital Constant component, and the Edge Detector component.

Development kit configuration

1. This project is written for a 2X16 LCD display as the one available in the Cypress kit CY8CKIT-001.
2. Build the project and program the hex file on to CY8C3866AXI-040 using MiniProg3.
3. Connect pins as described below and power cycle the device.
4. Press the SW1 button, and observe the count on the LCD.

Project configuration

The example project consists of Basic Counter, Digital Comparator, Digital Constant, Edge Detector, Pins, Status Register, and Char LCD components. The top design schematic is shown in Figure 1. The Character LCD component is used for displaying the count value.

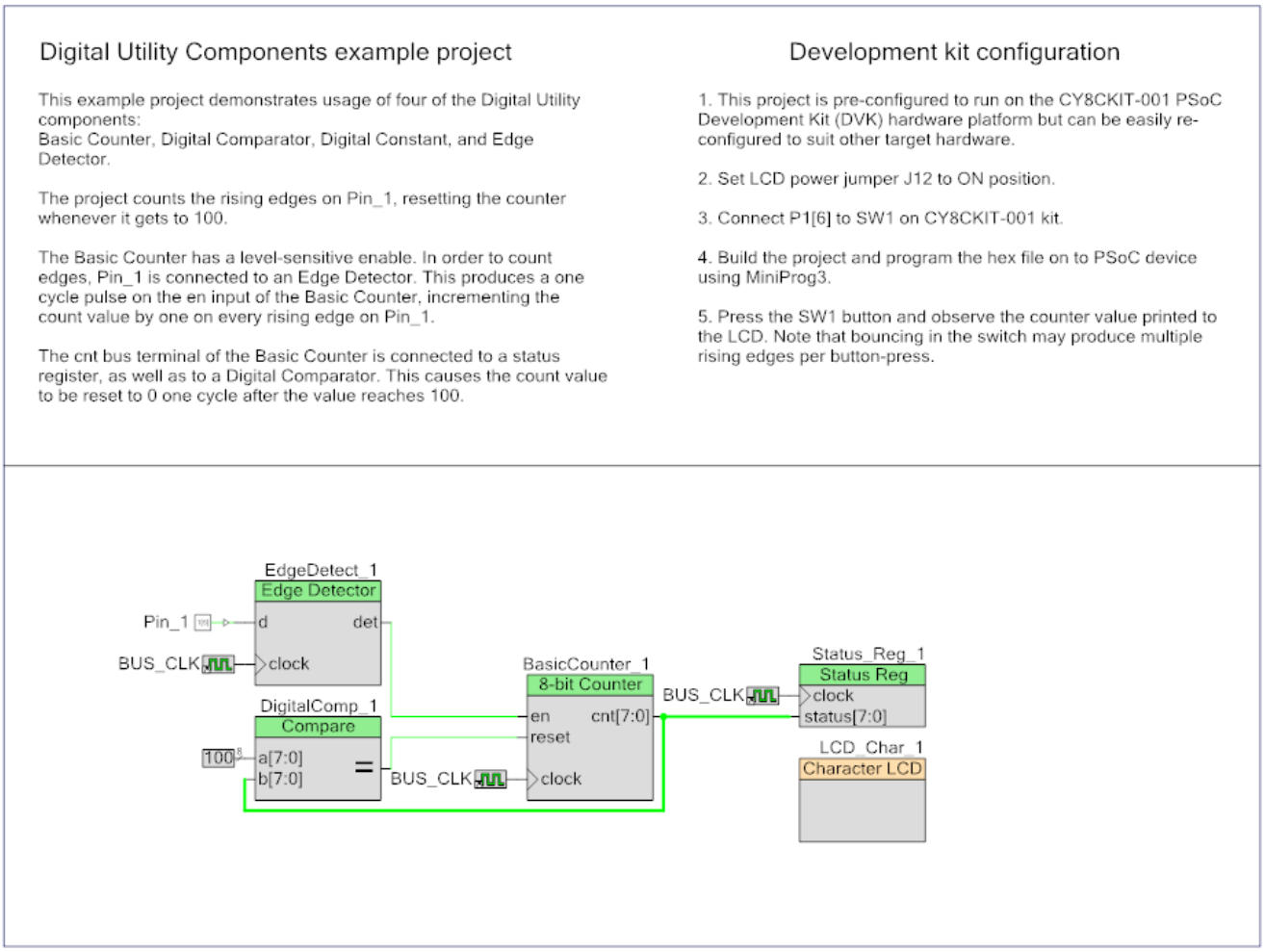

Figure 1. Top design schematic.

The Character LCD, Status Register, and the Digital Input Pin are configured in their default configurations. The Basic Counter is configured with Width = 8. The Edge Detector is configured with EdgeType = “Falling Edge.” The Digital Comparator is configured with Width = 8, and CmpType = “=”. The Digital Constant is configured with Width = 8, Value = 100, and DisplayAsHex = false.

Project description

The main function starts the Character LCD, and continually prints the value from the Status Register to the LCD.

Pin_1 is placed on P1[6] so it can be easily connected to the SW1 button. Every time a falling edge occurs on Pin_1, the Edge Detector transmits a single pulse to the Basic Counter, incrementing the count value by 1. When the count value reaches 100, it is reset.

Expected Results

The count value should increase by at least one (may be more due to mechanical bounce) every time the SW1 button is pressed. When the count value reaches 100, it should immediately reset back to 0.

© Cypress Semiconductor Corporation, 2009-2013. The information contained herein is subject to change without notice. Cypress Semiconductor Corporation assumes no responsibility for the use of any circuitry other than circuitry embodied in a Cypress product. Nor does it convey or imply any license under patent or other rights. Cypress products are not warranted nor intended to be used for medical, life support, life saving, critical control or safety applications, unless pursuant to an express written agreement with Cypress. Furthermore, Cypress does not authorize its products for use as critical components in life-support systems where a malfunction or failure may reasonably be expected to result in significant injury to the user. The inclusion of Cypress products in life-support systems application implies that the manufacturer assumes all risk of such use and in doing so indemnifies Cypress against all charges.

PSoC® is a registered trademark, and PSoC Creator™ and Programmable System-on-Chip™ are trademarks of Cypress Semiconductor Corp. All other trademarks or registered trademarks referenced herein are property of the respective corporations.

Any Source Code (software and/or firmware) is owned by Cypress Semiconductor Corporation (Cypress) and is protected by and subject to worldwide patent protection (United States and foreign), United States copyright laws and international treaty provisions. Cypress hereby grants to licensee a personal, non-exclusive, non-transferable license to copy, use, modify, create derivative works of, and compile the Cypress Source Code and derivative works for the sole purpose of creating custom software and or firmware in support of licensee product to be used only in conjunction with a Cypress integrated circuit as specified in the applicable agreement. Any reproduction, modification, translation, compilation, or representation of this Source Code except as specified above is prohibited without the express written permission of Cypress.

Disclaimer: CYPRESS MAKES NO WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, WITH REGARD TO THIS MATERIAL, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. Cypress reserves the right to make changes without further notice to the materials described herein. Cypress does not assume any liability arising out of the application or use of any product or circuit described herein. Cypress does not authorize its products for use as critical components in life-support systems where a malfunction or failure may reasonably be expected to result in significant injury to the user. The inclusion of Cypress' product in a life-support systems application implies that the manufacturer assumes all risk of such use and in doing so indemnifies Cypress against all charges.

Use may be limited by and subject to the applicable Cypress software license agreement.