Down Counter 7-bit (Count7) Example Project
1.0

Features

- Demonstrates basic functionality of Count7 with routed enable signals
- Decrements count value on every press button event and displays it on LCD with user specified refresh rate

General Description

The Count7 component is the most resource efficient implementation of a 7-bit counter that also exposes the count value directly as hardware signals. This example project demonstrates how to count press button events completely in hardware using the Count7 and Debouncer components.

Development Kit Configuration

This example project is designed to run on CY8CKIT-001 from Cypress Semiconductor. A full description of the kit, along with more example programs and ordering information, can be found at http://www.cypress.com/go/cy8ckit-001.
For simplicity, the instructions describe the stepwise process to be followed when testing this design with CY8CKIT-001.

1. Connect P1[7] to SW1 on the CY8CKIT-001 development board
2. Build the project and program the hex file into the target device using a MiniProg3 programmer
3. Press SW1 to decrement the count value and observe the results on the LCD.

Projects Configuration

The example project consists of the Debouncer, Count7, Status register, and Character LCD components. The design schematic is shown in Figure 1. The blue annotation components in the schematic show the external connections required.
On every press button event the debouncer component generates a one clock period pulse on the counter enable input. Thus count7 is enabled for a one clock cycle every time the switch button on DVK is pressed. The status register is used to provide a count output value to the CPU.

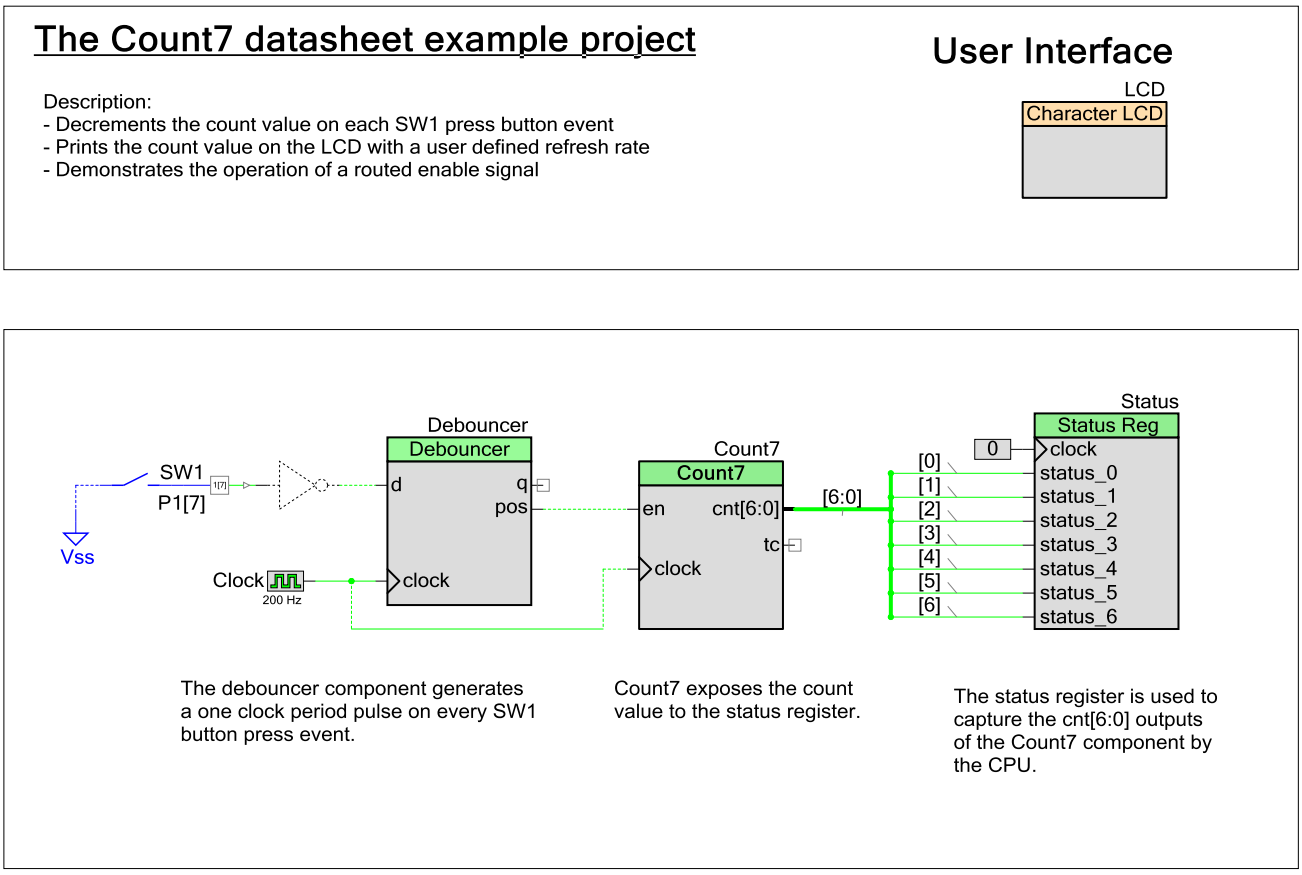

Figure 1. Count7 Component Example Project Schematic

Project Description

In the main firmware routine all the components are started and the initial count value is displayed on the LCD. In the forever loop the count output value is read and displayed on the LCD with a user defined refresh rate. Pressing SW1 on the development kit decrements the count value.

Expected Results

After programming the initial count value of 0 will be displayed on the LCD. First SW1 press will reload the count with a period of 0x14. On every subsequent SW1 press button event the count value is decremented. If the count value is equal 0, it will be automatically reloaded with a period value on the next SW1 press.

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