PSoC 4 Watchdog Example Project
1.0

Features

- WDT enabled to reset device
- Periodic interrupt generation

General Description

This example project demonstrates the basic operation of the WDT: the device reset and periodic interrupt generation.

Development Kit Configuration

This example project is designed to run on the CY8CKIT-042 kit from Cypress Semiconductor. A description of the kit, along with more example programs and ordering information, can be found at http://www.cypress.com/go/cy8ckit-042.

The project requires configuration settings changes to run on other kits from Cypress Semiconductor. Table 1 is the list of the supported kits. To switch from CY8CKIT-042 to any other kit, change the project's device with the help of Device Selector called from the project's context menu.

Table 1. Development Kits vs Parts

Development Kit	Device
CY8CKIT-042	CY8C4245AXI-483
CY8CKIT-042-BLE	CY8C4247LQI-BL483
CY8CKIT-044	CY8C4247AZI-M485
CY8CKIT-046	CY8C4248BZI-L489

The pin assignments for the supported kits are in Table 2.

Table 2. Pin Assignment

Pin Name	Development Kit			
	CY8CKIT-042	CY8CKIT-042 BLE	CY8CKIT-044	CY8CKIT-046
LED_WdtInt	P0[2]	P3[6]	P2[6]	P5[3]
LED_Reset	P1[6]	P2[6]	P0[6]	P5[2]
LED_WdtReset	P0[3]	P3[7]	P6[5]	P5[4]

Project Configuration

The example project consists of the Global Signal Reference and Interrupt components. The WDT API is part of the cy_boot component.

The Global Signal Reference component is configured to hook a WDT interrupt signal to an interrupt component. The Interrupt component defines the hardware-triggered interrupt and provides the API to pend interrupts.

The cy_boot component provides the system functionality for a project to give better access to chip resources. The functions are not part of the component libraries but may be used by them. The System Reference Guide describes functions supplied by the PSoC Creator cy_boot component and can be accessed from the Help menu of the PSoC Creator, System Reference submenu.

The WDT is configured to generate the interrupt when the WDT counter 0 reaches 0x4FFF and to generate device reset when the WDT counter 1 reaches 0x0008. The counters are configured in the cascade mode. Thus, the number of interrupt events from counter 0 before device reset is equal to the counter 1 match value.

Project Description

At the beginning of the main function, the last reset cause is determined and either the red or blue LED is turned on for 0.5 second to indicate the device startup on PowerUp/XRES or WDT reset event respectively. In the ISR, the WDT interrupt is cleared, and the green LED is toggled.

Expected Results

Program the device with the project and observe that the red LED is turned on for 0.5 second. This indicates the device startup after PowerUp/XRES event. Then the green LED is toggled (inside of the WDT counter 0 ISR) with approximately 0.5 second intervals. After 4 green LED blinks, the blue LED is turned on for 0.5 second to indicate device startup after WDT reset. The sequence of green and blue blinking LEDs is repeated until the power is supplied to the development board. The red LED is turned on only once after PowerUp/XRES.

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