NUC240 省电模式唤醒中断

NuMicro® 32 位系列微控制器范例代码介绍

文件信息

代码简述	本范例代码在Power Down模式之下，使用GPIO唤醒MCU，进入 Power Down Wakeup 中断。
BSP 版本	NUC230_240_Series_BSP_CMSIS_V3.01.001
开发平台	NuTiny-EVB-NUC240 V1.2

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1 功能介绍

当NUC240进入Power Down 模式后，经由GPIO状态的变化，可由Power Down 模式唤醒芯片。唤醒后，NUC240先进入PDWU中断，再进入GPIO 中断。
由于Power Down 唤醒的中断来源是从外围过来的，如果中断优先权是同一层，外围硬件中断会先执行。若希望Power Down 唤醒中断先发生，可以将Power Down 唤醒中断优先权提高。

2 代码介绍

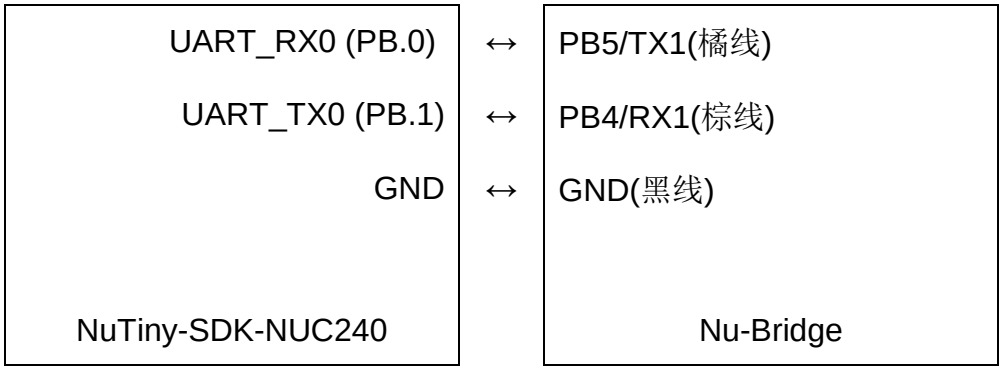
(1)初始化 NUC240 后，设置 PB3 为输入模式，并开启下降沿触发中断。
(2)开启 PDWU 中断
(3)进入 Power Down 模式等待 PB3 下降沿

```
int main(void)
{
    /* Unlock protected registers */
    SYS_UnlockReg();

    /* Init System, peripheral clock and multi-function I/O */
    SYS_Init();

    /* Init UART0 for printf */
    UART0_Init();

    /* Configure PB.3 as Input mode and enable interrupt by falling edge trigger */
    GPIO_EnableInt(PB, 3, GPIO_INT_FALLING);
    NVIC_EnableIRQ(GPAB_IRQn);

    CLK->PWRCON |= CLK_PWRCON_PD_WU_INT_EN_Msk;  /* Enable wake up interrupt source */
    NVIC_EnableIRQ(PWRWU_IRQn);            /* Enable IRQ request for PDWU interrupt */

    NVIC_SetPriority(PWRWU_IRQn,0);
    NVIC_SetPriority(GPAB_IRQn,3);
    /* Waiting for PB.3 falling-edge interrupt event */
    while(1) {
       UART_WAIT_TX_EMPTY(UART0);
       CLK_PowerDown();
    }
```

3 软件与硬件环境

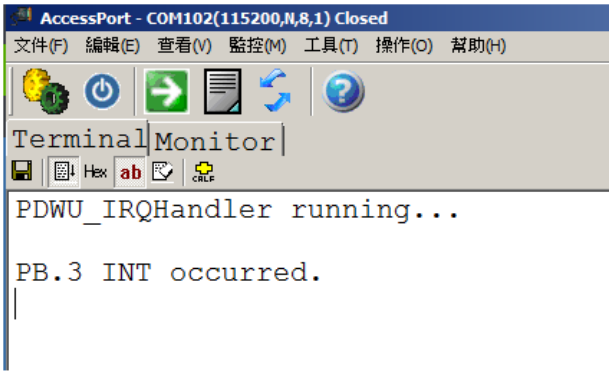
- 软件环境
  - BSP 版本
    - NUC230_240_Series_BSP_CMSIS_Rev3.01.001
  - 案例名称
    - PD_INT_Wakeup.uvproj
- 硬件环境
  - 硬件需求
    - NuTiny-EVB-NUC240 V1.22
  - 接线图

使用 NuTiny-SDK-NUC240 开发板， UART_RX0 (PB.0)、UART_TX0 (PB.1) 连接至 Nu-Bridge，从UART0打印讯息。



在系统管理员找到NuBridge Virtual Com Port (COMx)，将COMx填入终端机，波特率设置115200。执行程序后，终端机打印出讯息。

当PB3接地时，MCU会被唤醒，之后进PDWU 中断，再进GPIO中断。


AccessPort - COM102(115200,N,8,1) Closed
文件(F) 編輯(E) 查看(V) 監控(M) 工具(T) 操作(O) 幫助(H)
Terminal Monitor
Hex ab
PDWU_IRQHandler running...
PB.3 INT occurred.

4 目录信息

- EC_NUC240_PD_INT_Wakeup_V1.00
  - Library: NUC240 Sample code header and source files.
    - CMSIS: Cortex® Microcontroller Software Interface Standard (CMSIS) V3.01.
    - Device: CMSIS compliant device header file.
    - StdDriver: All peripheral driver header and source files.
  - SampleCode
    - ExampleCode: Example code source file.

5 如何执行范例程序

1. 本项目支持Keil uVersion 4.6及以上版本
2. 根据目录信息章节进入SampleCode\ExampleCode\PD_INT_Wakeup\KEIL文件夹，双击文件夹中的PD_INT_Wakeup.uvproj
3. 进入编译模式接口
   a. 编译
   b. 下载代码至内存
   c. 进入 / 离开除错模式
4. 进入除错模式接口
   a. 执行代码

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