

## F<sup>2</sup>MC-16FX Family, Delayed Interrupt

This application note describes the functionality of the Delayed Interrupt and gives an example.

### 1 Introduction

This application note describes the functionality of the Delayed Interrupt and gives an example.

#### 1.1 Key Features

- Interrupt Generation for OS Task Switching

### 2 Delayed Interrupt

The Basic Functionality of the Delayed Interrupt

#### 2.1 Functionality

The Delayed Interrupt is mainly used by operating systems. It can be used for dispatching after all tasks were finished. Therefore the Delayed Interrupt should have the lowest priority, so that all other Interrupts are preferred (such as scheduler-timer).

#### 2.2 Register

##### 2.2.1 Delayed Interrupt Request Register (DIRR)

The DIRR consists of the following bit:

**Table 1. DIRR**

Bit No.	Bit Name	Initial Value	Description
7 ... 1	–	X	Undefined Bits; write "0" to them
0	R0	0	"1" sets Interrupt Request; "0" clear Interrupt Reset

If "1" is written to the R0 Bit and no other interrupt with higher or same priority is pending, the Interrupt service routine of the Delayed Interrupt is called.

The request is cleared by writing "0" to the R0 Bit.

### 3 Delayed Interrupt Example

Example for the Delayed Interrupt Usage

#### 3.1 Generate Delayed Interrupt Request

The following sample code shows how to generate a Delayed Interrupt Request. Please note that vectors.c is contained in our standard template project.

**vectors.c**

```
void InitIrqLevels(void)
{
    . . .

    ICR = (12 << 8) | 6;      /* priority level 6 for Delayed interrupt of
                               16FX Family */
    . . .
}
/* ISR prototype */
__interrupt void ISR_Delayed_Interrupt (void);

. . .

#pragma intvect ISR_Delayed_Interrupt 12      /* Delayed Interrupt of 16FX
                                              Family */
. . .
```

**Main.c**

```
void main(void)
{
    InitIrqLevels();
    __set_il(7);          /* allow all levels          */
    __EI();               /* globally enable interrupts */

    /* do something */

    . . .

    /* set Delayed Interrupt here. If no other higher/same priority interrupt
       is pending */
    /* Delayed Interrupt is executed after next instruction.          */

    DIRR = 0x01;

    /* do something */

    . . .
}

__interrupt void ISR_Delayed_Interrupt (void)
{
    DIRR = 0x00;          /* clear Delayed Interrupt request */

    /* do something else */

    . . .
}
```

## 4 Additional Information

Information about Cypress Microcontrollers can be found on the following Internet page:

<http://www.cypress.com/cypress-microcontrollers>

## 5 Document History

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Revision	ECN	Orig. of Change	Submission Date	Description of Change
**	-	NOFL	06/23/2006	Initial Release
			02/21/2007	Reviewed the document and updated with review findings
			08/10/2007	Clarification in SW example
*A	5074677	NOFL	03/02/2016	Migrated Spansion Application Note MCU-AN-300211-E-V12 to Cypress format
*B	5868077	AESATP12	08/30/2017	Updated logo and copyright.

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