EE2361 - Lecture 17

10/17/16

Return graded Exam 1

at the end of lecture

Interrupts

- useful macros for C with XC16
- Peripheral Pin Select

The Timer 1 examples used some of the capability that is included with the XC16 compiler

⇒ xc.h will use the information from your project to include a file for the device you are using

p24fj64ga002.h

All the SFRs get symbolic identifications

Instead of a hex number for the SFR address, instead

LATBbits.LATB15

this is created by a C-structure included in the header file

More macros defined that make the C-coding even easier

general form is

```
#define _BIT SFRNAMEbits.BIT
```

So, for example

```
#define _LATB14 LATBbits.LATB14
#define _TRISB14 TRISBbits.TRISB14

#define _T1IF IFS0bits.T1IF
```

this is in the device header file

_T1IF ← this is replaced by the longer expression

I can simplify some other more complex expressions

So the attribute for an ISR

```
__attribute__ ((interrupt, no_auto_psv))
```

So instead you can use _ISR

```
#define _ISR __attribute__ ((interrupt, no_auto_psv))
```

for defines you can change them, for example

```
#undef _ISR
#define _ISR __attribute__ ((interrupt, auto_psv))
```

Compare the 2 tier codes

Peripheral Pin Selects

On low-pin count devices the pins represent a very limited resource

⇒ small number of pins reduces the foot print of the device on a PC board

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→ Flexibility for I/Os for peripheral devices - may not need all the pins

→ Flexibility in placement of the pin on the PC board.

Peripheral Pin Selects correspond to pins labeled RPn (CRP = remapable peripheral)

Peripherals that use the PPS are all digital, they are a subset of all the digital peripherals on the device

⇒ Remappable peripherals don't have default pins

RB15/IC/~~RP3~~

From the PIC24F family reference manual DS39711B

Section 12 – I/O