

EECE.3170: Microprocessor Systems Design I

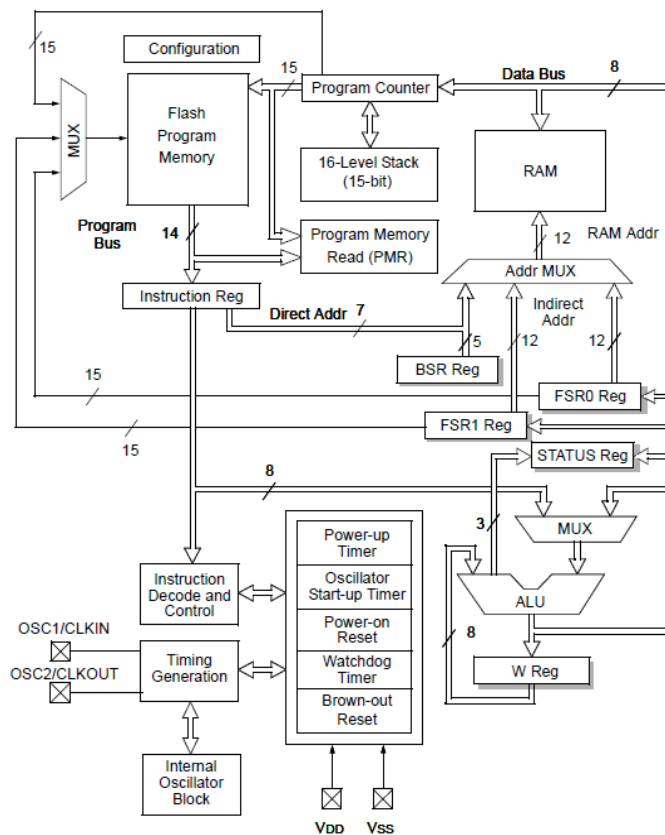
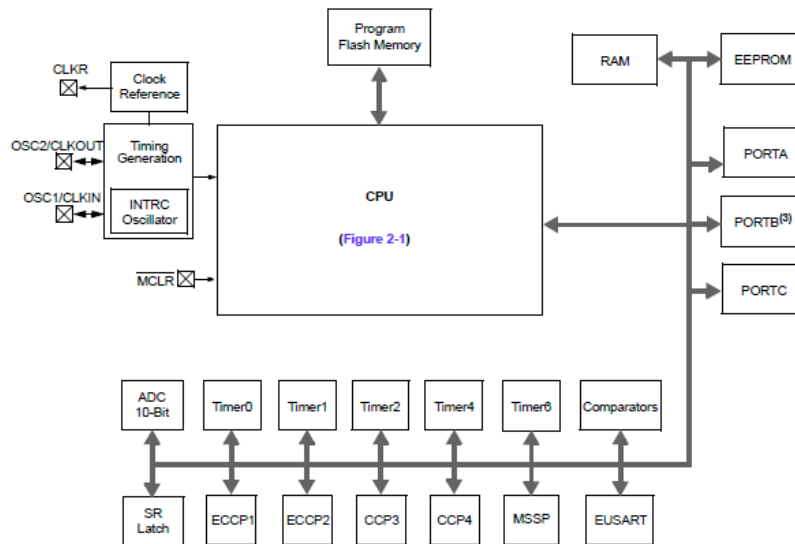
Summer 2017

Lecture 9: Key Questions

June 7, 2017

1. Explain the major differences between a microprocessor and a microcontroller, including the typical features of a microcontroller.
2. Explain the major benefits and limitations of using a microcontroller.

3. Explain the general components of the PIC16F1829 block diagrams shown below.



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7. Briefly describe the contents of the STATUS register.
8. Explain the basic organization of the PIC stack.
9. Explain how different memory banks are accessed in PIC microcontrollers.
10. Explain direct addressing on the PIC microcontrollers.

11. Describe the instruction formats of the PIC 16F1829.

12. Describe how variables can be declared in PIC assembly language.

13. Describe the PIC instructions for clearing or moving registers.

14. Describe the PIC instructions for manipulating a single bit.

15. **Example:** Show the values of all changed registers after the following sequence

```
cblock      0x30
    x
    y
endc
clrw
movwf      x
movlw      0xFE
movwf      y
swapf      y, F
bcf        y, 3
bsf        x, 3
movf       y, W
```

16. Describe the PIC instructions for increment, decrement, and complement operations.

17. Describe the PIC instructions for addition and subtraction.

18. **Example:** Show the values of all changed registers after the following sequence

```
cblock    0x20
    varA
    varB
    varC
endc
clrf      varA
clrf      varB
clrf      varC
incf      varA, W
sublw     0x0F
addwf     varB, F
decf      varB, F
comf      varB, W
subwf     varC, F
```