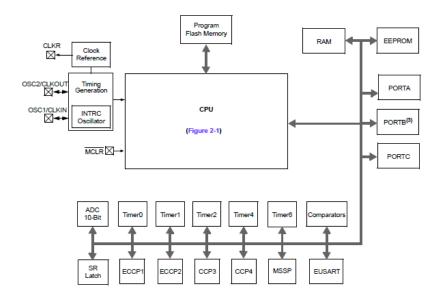
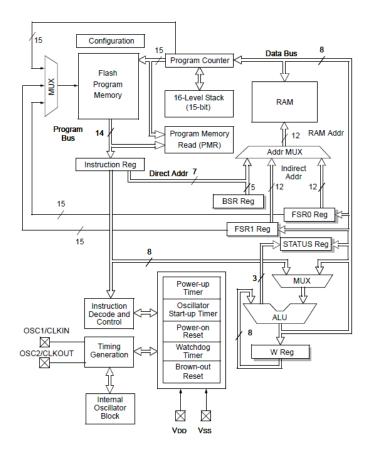
EECE.3170: Microprocessor Systems Design ISummer 2016

Lecture 9: Key Questions June 8, 2016

| 1. | Explain the major differences between a microprocessor and a microcontroller, including the typical features of a microcontroller. | | | | | | | |
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| 2. | Explain the major benefits and limitations of using a microcontroller. | | | | | | | |
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3. Explain the general components of the PIC16F1829 block diagrams shown below.





4. What is the difference between Harvard and von Neumann memory architectures?

5. Explain the basic organization of the PIC data memory.

6. Explain the purpose of the PCL and PCLATH registers.

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.

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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 Х У endc clrw movwf Х movlw 0xFE movwf У swapf у, F bcf у**,** 3 x, 3 bsf 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 | |
|--------|-------|---|
| vai | rA. | |
| vai | сB | |
| vai | rC . | |
| endc | | |
| clrf | varA | |
| clrf | varB | |
| clrf | varC | |
| incf | varA, | M |
| sublw | 0x0F | |
| addwf | varB, | F |
| decf | varB, | F |
| comf | varB, | M |
| subwf | varC, | F |