Introduction to the PIC18 Microcontroller

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PIC microcontroller vs. Intel MCS-51 (8051)

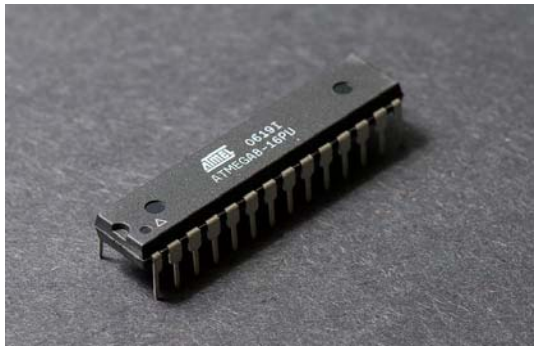
- "Peripheral Interface Controller" made by Microchip Technology

- 8-bit ALU
- Intel's original in the 1980s.
- Several companies offer MCS-51 as IP cores in FPGAs or ASICs.

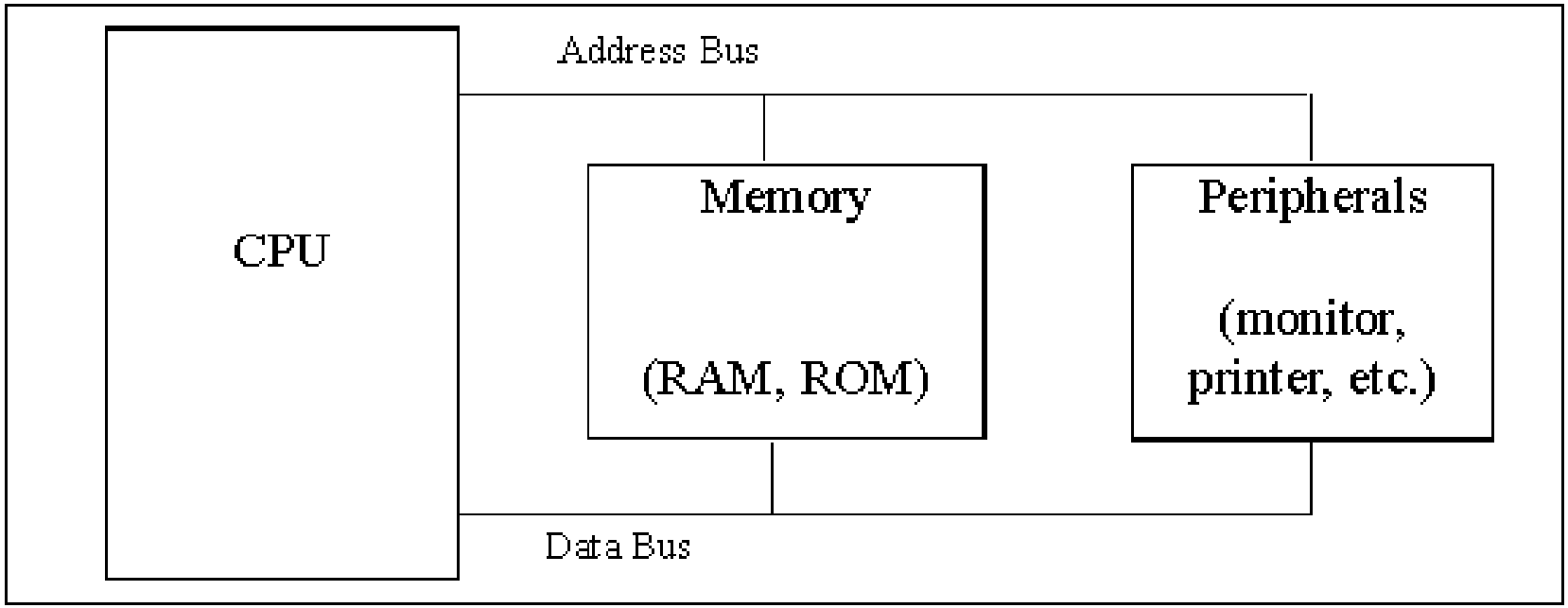
68HC MCU and AVR

- 68HC microcontroller
  - 8-bit microcontroller family introduced by Motorola in 1985. Now produced by Freescale Semiconductor
  - CISC (complex instruction set computer) design

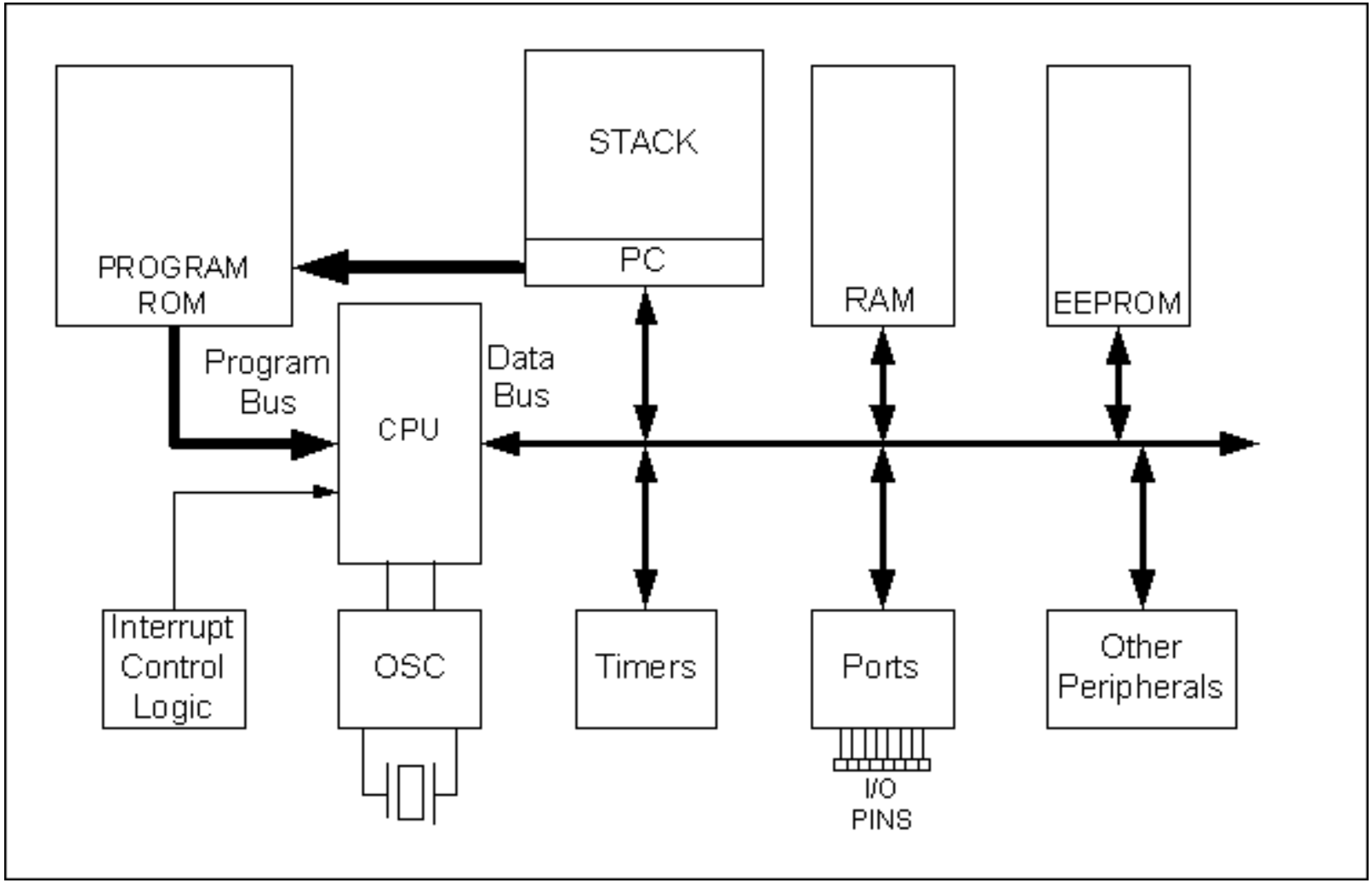
- AVR
  - 8-bit RISC MCU was sold to Atmel from Nordic VLSI



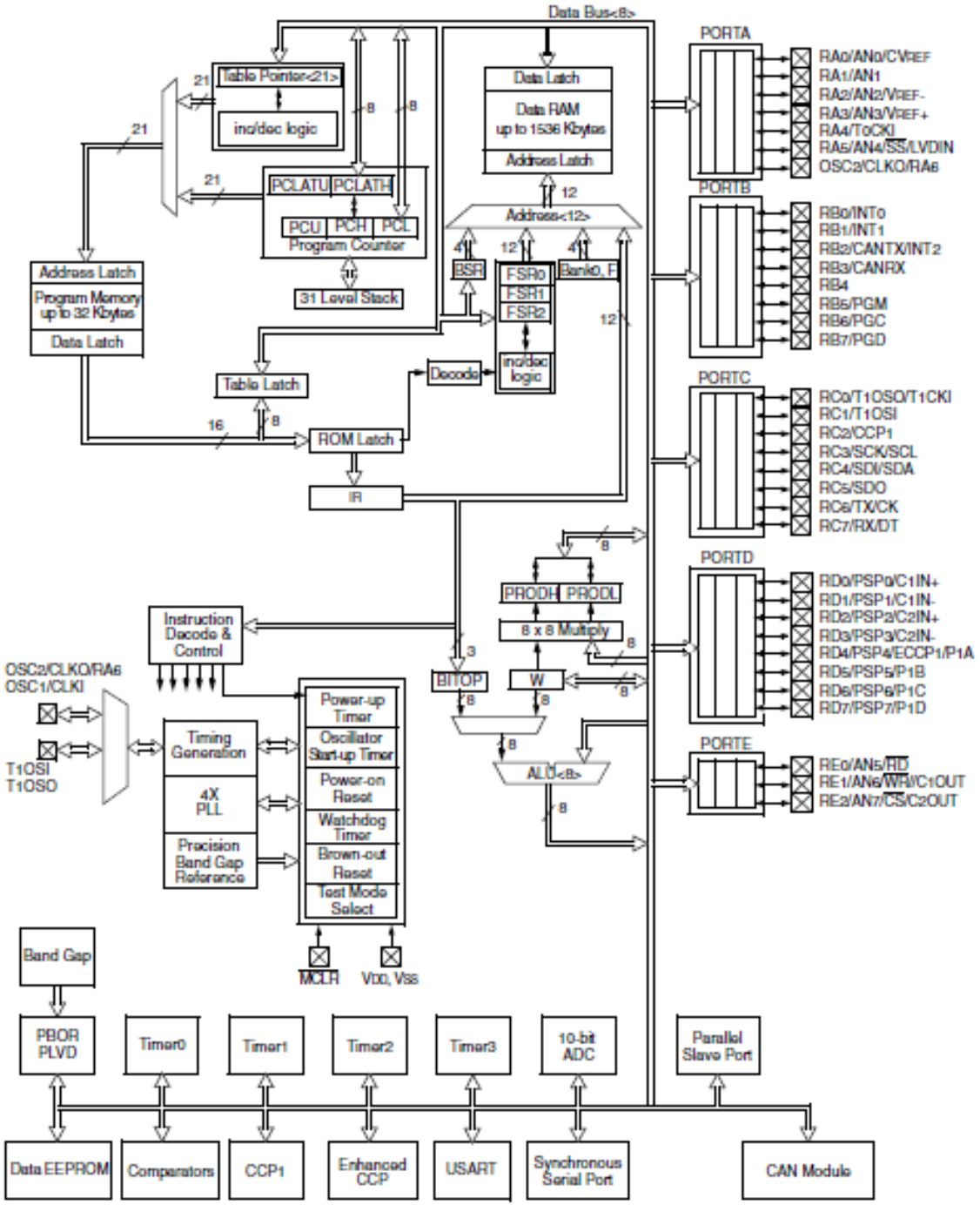
Inside the computer



Simplified view of a PIC microcontroller



PIC18F448/458 block diagram



Outlines

- **1st semester**
  - **PIC architecture & assembly language programming**
  - **Branch, call, time delay loop**
  - **PIC I/O port programming**
  - **Arithmetic, logic instructions**
  - **Bank switching, table processing, macros, modules**
- 2nd semester
  - PIC18 timer programming
  - PIC18 serial port programming
  - Interrupt programming
  - CCP programming
  - ADC programming
  - Term project

Grading policy

- Examinations + on-line tests 75%
- Attendance + efforts + Classworks + Homeworks 25%

Textbook

- M.A. Mazidi, R.D. Mckinlay, D Causey, PIC Microcontroller and Embedded Systems Using Assembly and C for PIC18, Pearson Education Inc., 2008.