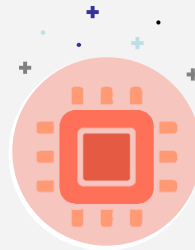




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Microcontrollers

Lecture 1:

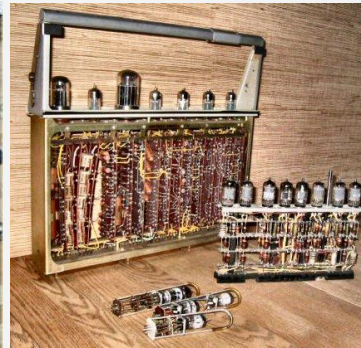
Introduction to Microcontrollers

By: M.Razeghizadeh

[Start now!](#)



Vacuum tube computers



SAGE Blockhouse/Computer:
10,170m², 250 tons, houses More than 200,000
vacuum tubes @ 3,000,000 Watts

← → ↺ Transistor Computers



- 2nd Generation
- From 1956
- Half a room



The Harwell Dekatron Computer under restoration at the British National Museum of Computing

← → ↺  Invention of ICs



- 3rd generation



IBM 360 made by ICs (1964)

← → ↺ First microprocessors/Microcontrollers

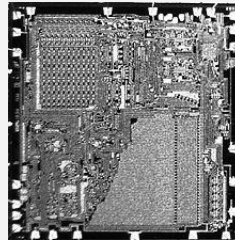


- TI TMS1000
- 4004 (from Intel)
- 6800 (Motorola)



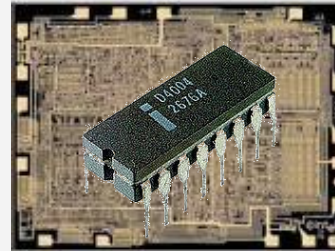
Motorola MC6800
(1974)

http://en.wikipedia.org/wiki/Motorola_6800



PICO1 (1971)

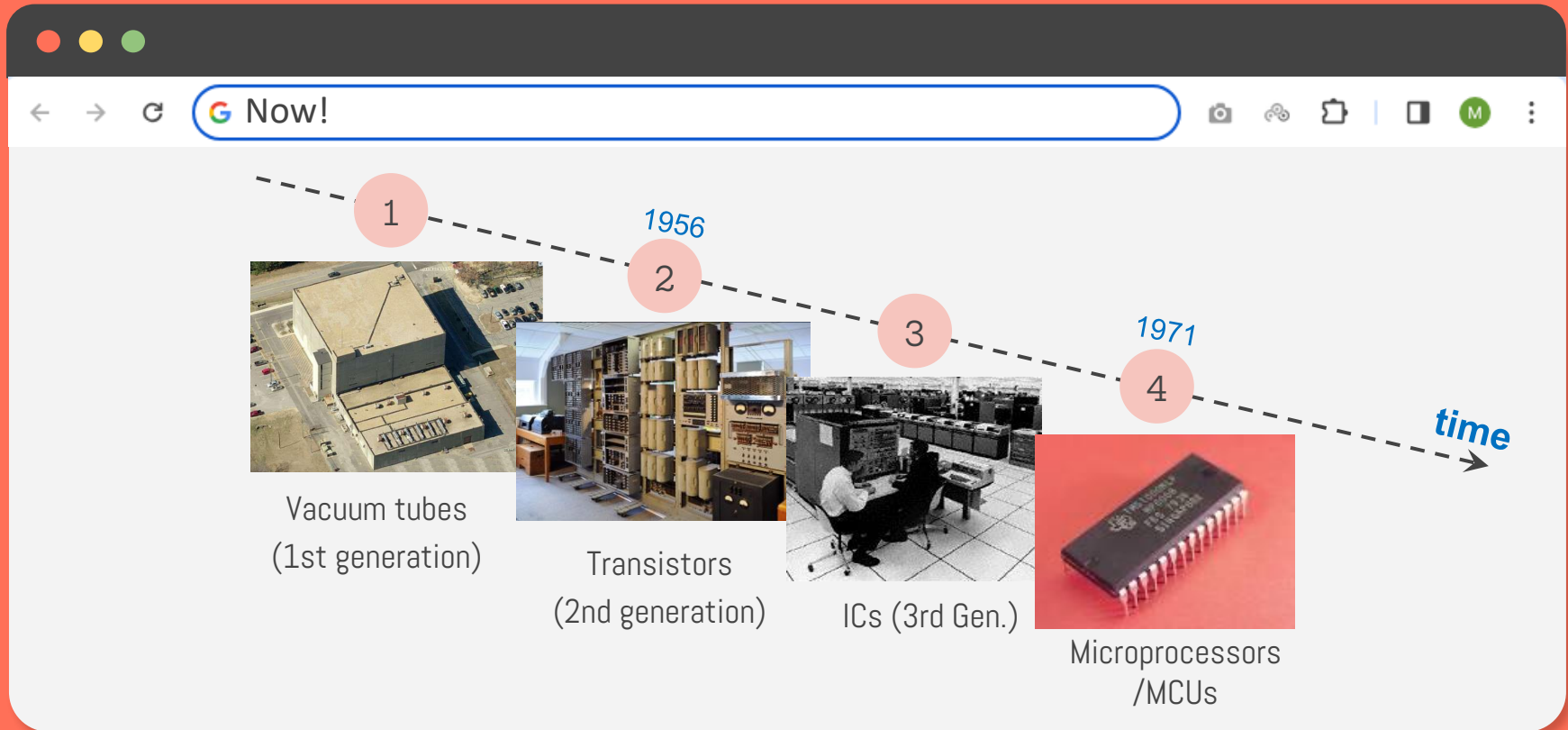
<http://en.wikipedia.org/wiki/Microprocessor>



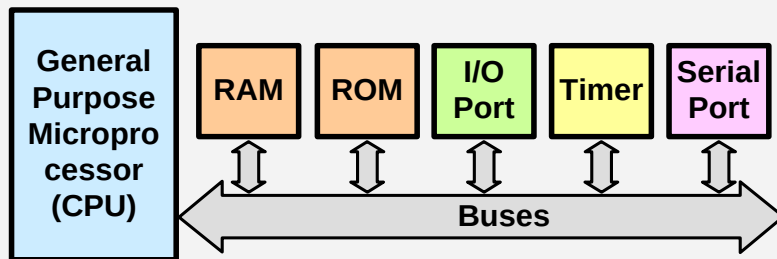
Intel 4004 (1971)
www.computerhistory.org



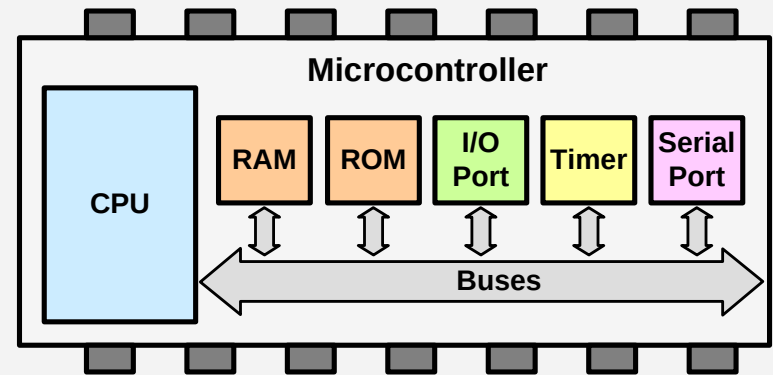
TI TMS1000
(1971-1974)
<http://www.antiquetech.com/>

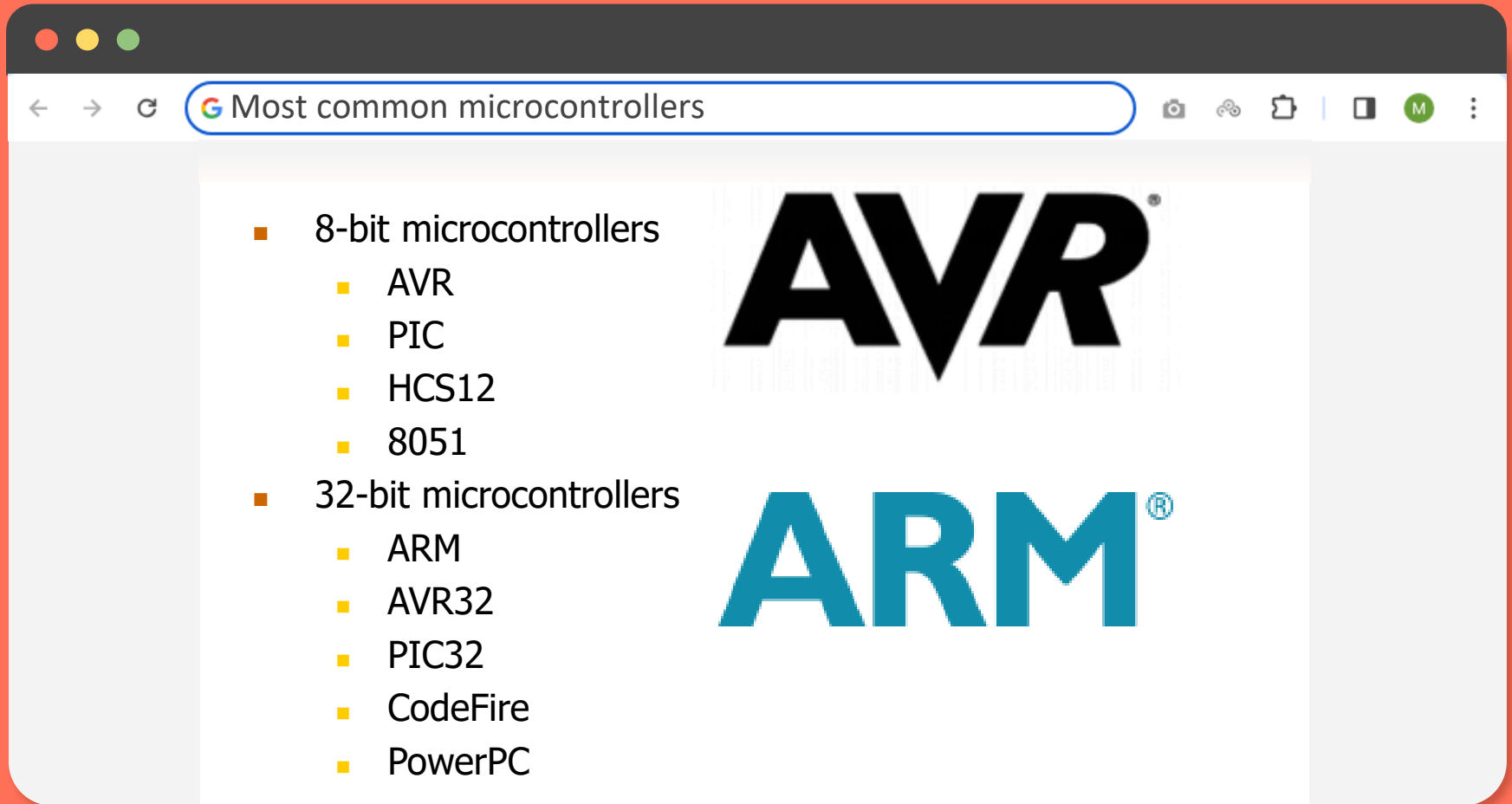


General Purpose Microprocessors



Microcontrollers





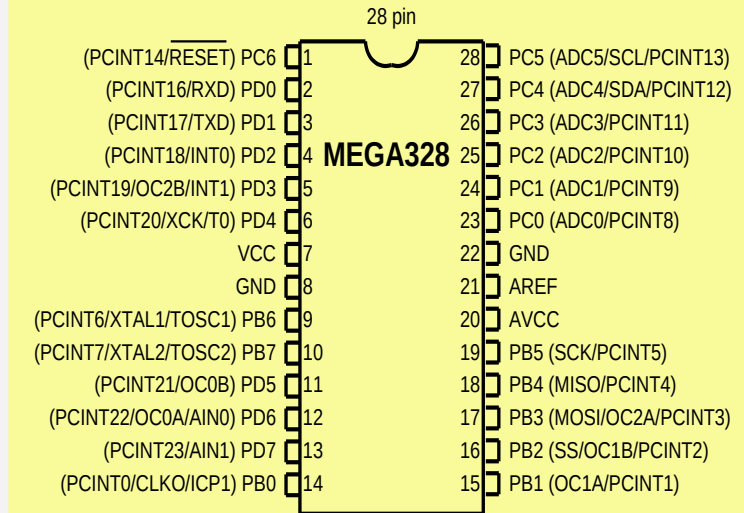
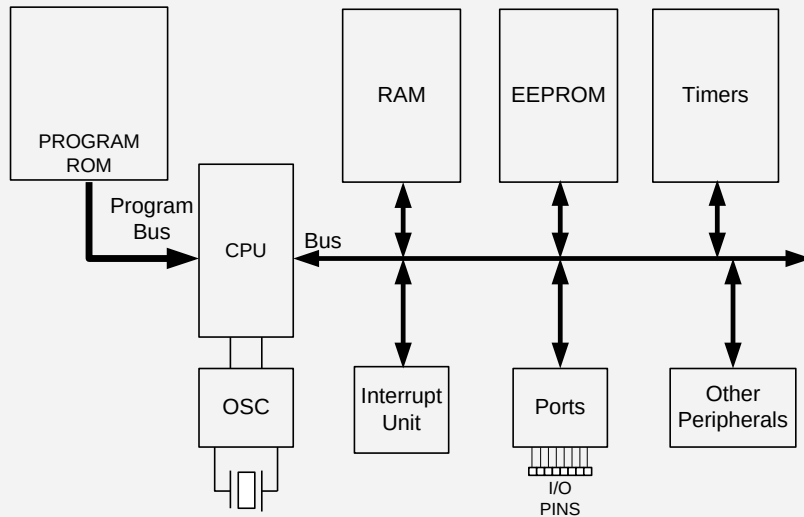
A screenshot of a web browser window. The address bar shows a search for "Most common microcontrollers". The search results are displayed on a light gray background. On the left, there is a list of microcontroller types and specific models. On the right, there are large logos for AVR and ARM.

- 8-bit microcontrollers
 - AVR
 - PIC
 - HCS12
 - 8051
- 32-bit microcontrollers
 - ARM
 - AVR32
 - PIC32
 - CodeFire
 - PowerPC

AVR[®]

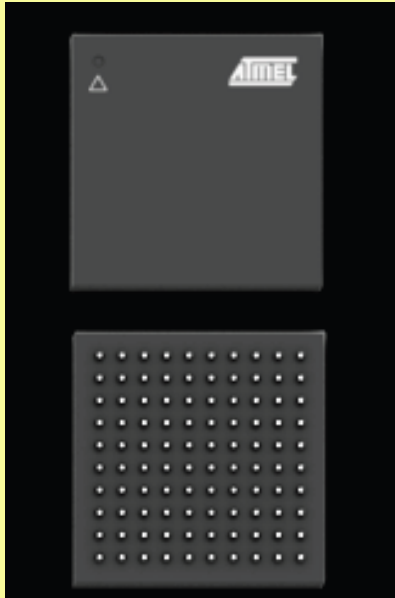
ARM[®]

AVR internal architecture



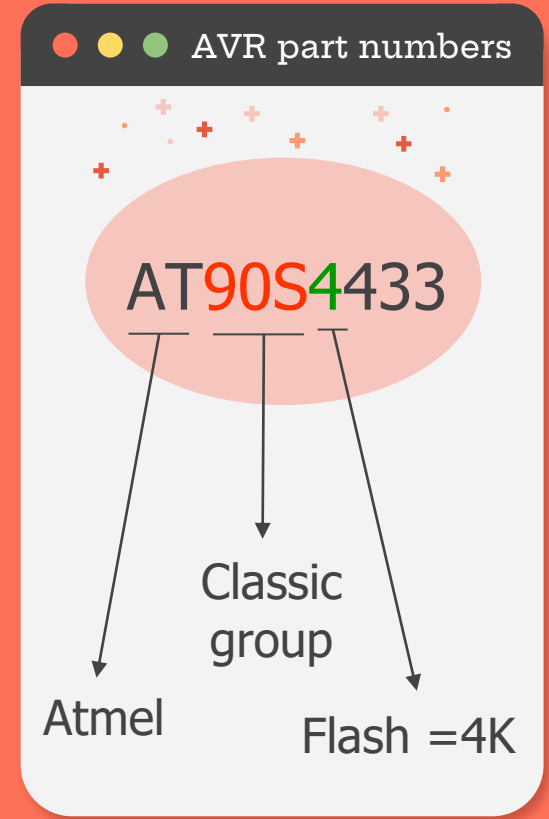
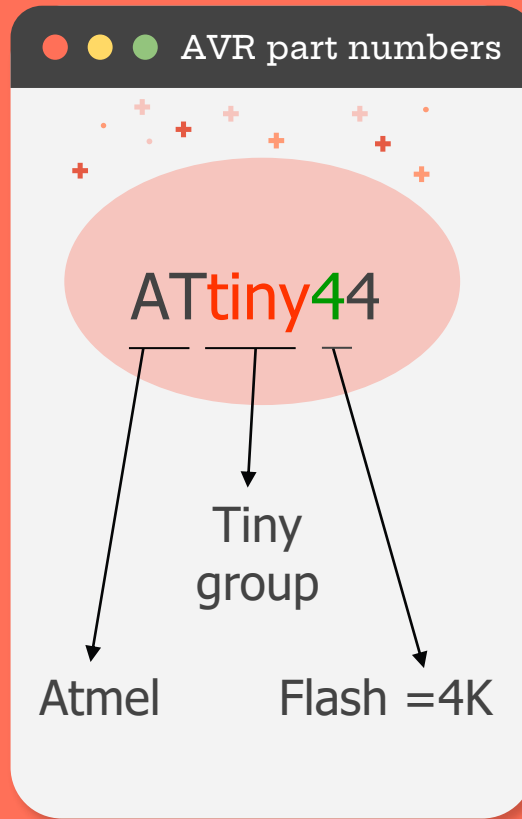
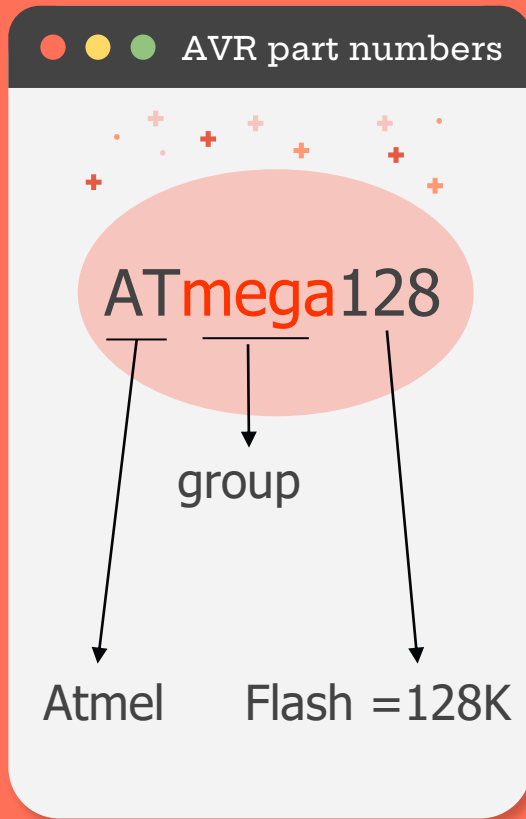
AVR different Types

S4433



CBGA

Product	Flash	SRAM	I/O	16-bit Timers	SPI/TWI/USART	12-bit ADC	Analog Comparator
ATxmega64A1	64	4	78	8	4/4/8	2x8	4
ATxmega128A1	128	8	78	8	4/4/8	2x8	4
ATxmega192A1	192	8	78	8	4/4/8	2x8	4
ATxmega256A1	256	16	78	8	4/4/8	2x8	4
ATxmega64A3	64	4	50	7	4/4/7	2x8	4
ATxmega256A3	256	16	50	7	4/2/7	2x8	4
ATxmega16A4	16	2	36	5	2/2/5	1x12	2
ATxmega32A4	32	4	36	5	2/2/5	1x12	2
ATxmega64A4	64	4	36	5	2/2/5	1x12	2
ATxmega128A4	128	8	36	5	2/2/5	1x12	2





Thanks!



Do you have any questions?

razeghizade@gmail.com

Razeghizade.pudica.ir

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