MOS Technology 6502

- 1975. way cheaper!
  - smaller
  - better printing tech

→ home computing revolution.

Atari, Apple II, NES, Commodore 64, BBC Micro, ...

Registers

A (accumulator) (8 bits)

X, Y } index registers (8 bits)

P – processor status. (8 bits)

S – stack pointer (8 bits)

PC (16 bits). (64 KB instruction memory)

Instructions

8-bit instruction codes (opcodes).

AAA BBB CC

AAA → operation

BBB → addressing mode.

Operations:

- logic ops
- ADD, SUB → produce a carry bit.
- CMP
- JMP – unconditional jump
- Branch – conditional, relative jump.
- shift + rotate?

Addressing modes

- Immediate — next byte after opcode is a constant.
- Absolute — next 2 bytes are a memory address.
- Zero-page: next byte is a memory address.
  - look up in first 256 bytes of RAM.
- Indirect: look up an address from memory.
  - next 2 bytes are memory address; that memory address + next one itself stores memory address; look that up.
- Indirect indexed:
  - next byte is a zero-page address; look up an address there + add Y to it.