Tuesday, October 17, 2023 7:38 PM

chapter 3 (1)

Architecture:

- Architecture: attributes visible to the programme
  - — Instruction set, number of bits used for data representation, I/O mechanisms, addressing techniques.
  - — Ex.: Is there a multiply instruction?

organization:

- Organization: how features are implemented. Such details may be hidden from programmer.
  - — Control signals, interfaces, memory technology, number of cores.
  - — Ex.: Is there a hardware multiply unit or is it done by repeated addition?

Intel X86 Architecture:

Book: (1.4)

Intel: X86:

- Intel X86.

→ Intel X86

↳ CISC : many instructions than RISC

↳ can perform Division & Mul op

Mul 4 × 5 clock cycle : 5×5 ;

↳ RISC : less instructions than CISC

(ARM)

↳ simple H.W , fast to perform operation like [+] (1 clock cycle)

5+5 + 5 + 5 + 5 — 5 times (6×) : 1 time

almost same speed : (×) ↳ (1) RISC ; (×) ↳ (5) CISC

Intel processors :

8080 → 8086

8086 → [1] base Model : 16-bit data path, 1 MB

↳ 80286 → 16 MB

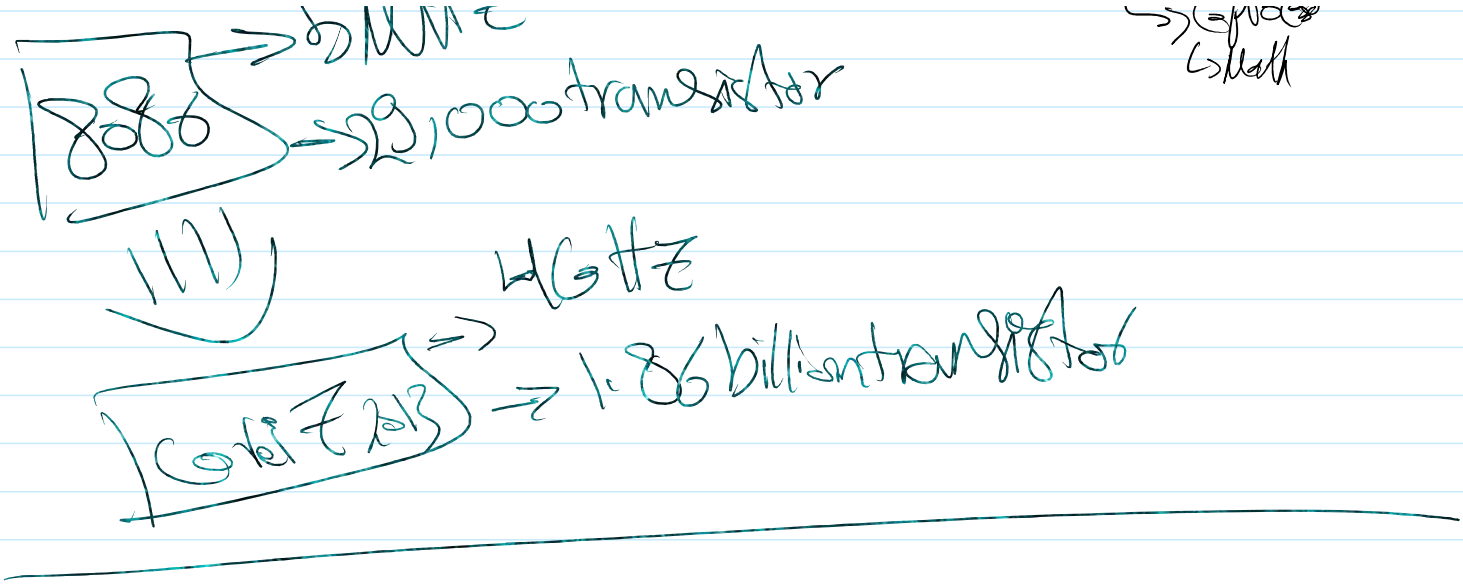
↳ 80386 → 32 bit data path → Multitasking

↳ 80486 → Pipelining, cache, Co-processor ↳ Math

clock speed 5 MHz

→ 5 MHz

transistor


8086
29,000 transistor
111
4GHz
1.86 billion transistor