

History of the Processor

By Gary Jessop ||| and Caleb Herbel

1823 - The Discovery of Silicon

- In 1823 Baron Jons Jackob Berzelius, a Swedish chemist, discovers silicon.
- Made by heating chips of potassium in a silica container and then carefully washing away the residual by-products.



Logic Gates and Transistors

- 1903 - Nikola Tesla patented logic gates.
- 1947 - John Bardeen, Walter Brattain, and William Shockley invent the first transistor at Bell Laboratories



The First Integrated Circuit

- In 1958 The first Integrated Circuit was developed by Robert Noyce of and Jack Kilby
- Jack Kilby Worked for Texas Instruments and Robert Noyce worked for Fairchild Semiconductor

FET.... MOSFET

- Mohamed Atalla and Dawon Kahng at Bell Labs in 1959
- MOS IC, Fred Heiman and Steven Hofstein at RCA in 1962
- High scalability, high density
- Led to large-scale integration (LSI)
- Then the microprocessor in the early 1970's



JFET



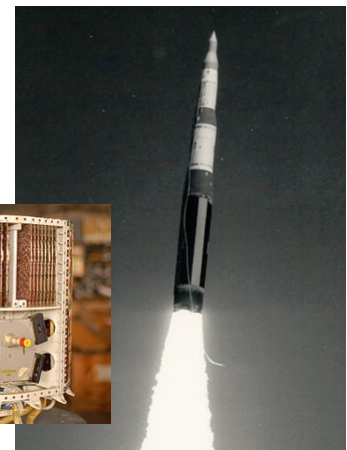
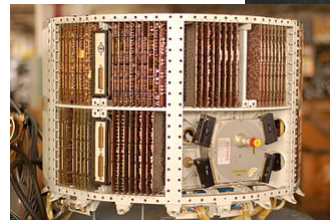
MOSFET

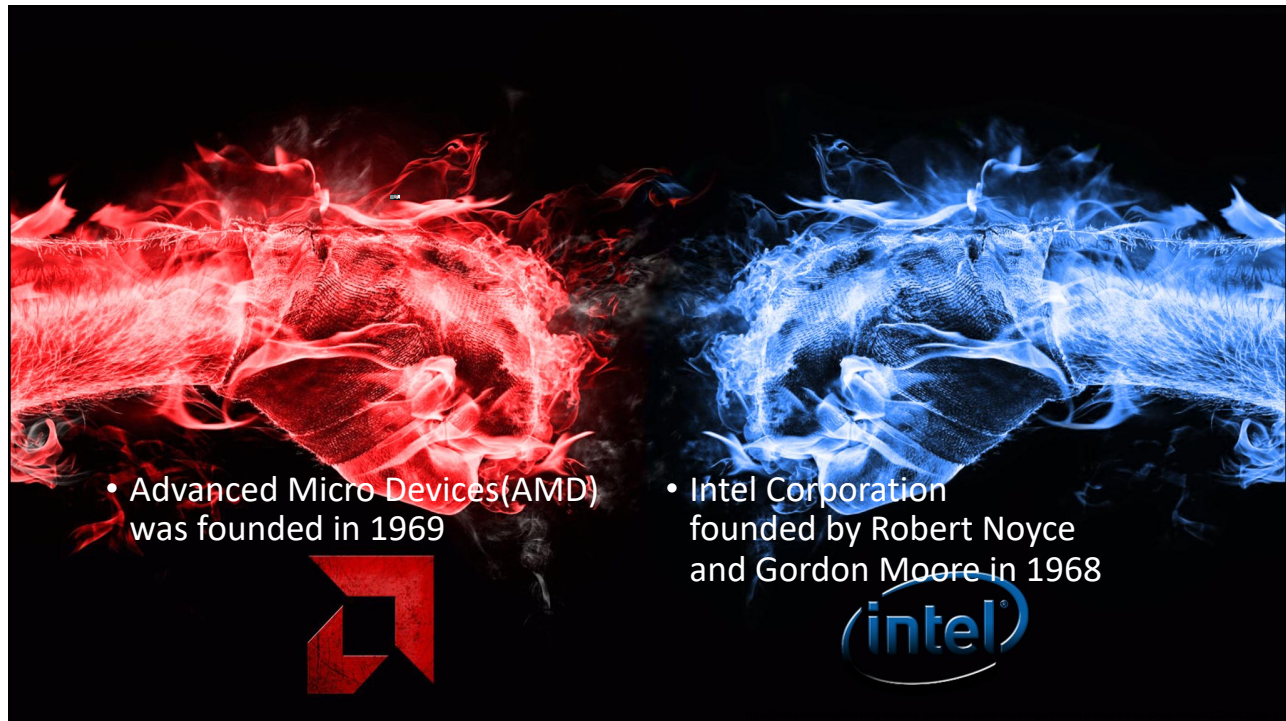


BOBAFET

IBM/NUKES

- 1960 – Developed the first facility for mass production of transistors
- S/360
- Calculator
- Clocks
- Computer(guidance for Apollo)
- Continental(ICBM)





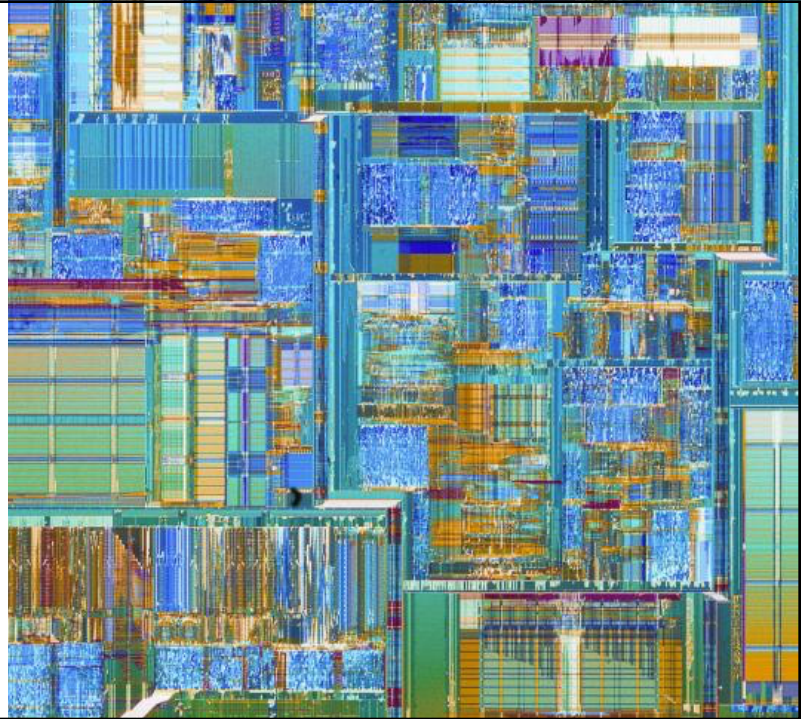
Complex Instruction Set Computing (CISC)

- Was named this after the fact
- Single instruction executes many small operations
- Reduced number of
- Higher code density
- Takes multiple cycles
- (opposite of RISK).....



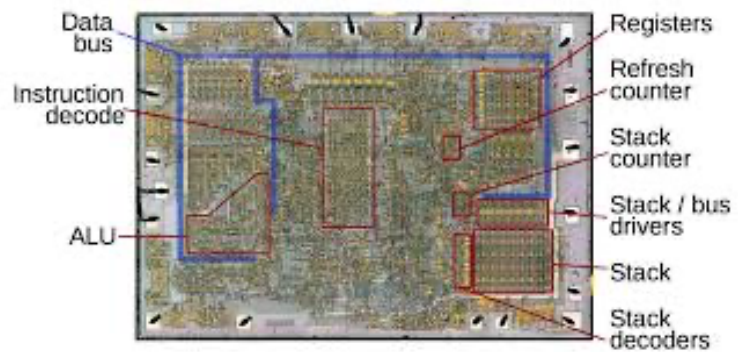
Intel 4004

- Developed in 1971
- 4 Bit Data Width
- 12 Bit Address Width
- 2,300 Transistors
- Performed 60,000 Operations Per Second
- 640 Addressed Bytes of Memory
- \$200



Intel 8008

- Released in 1972
- 8-bit Data Width
- 14-bit Address Width
- 3,500 Transistors
- CPU Clock Rate 200kHz to 800kHz
- Some uses were in Computer Terminals, Calculators, Bottling Machines, and some Industrial Robots



Intel 8080

Released in 1974

8 Bit Data Width

16 Bit Address Width

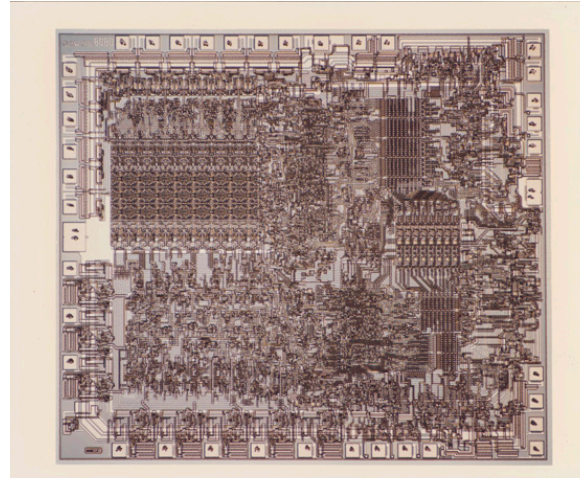
1 Core

6,000 Transistors

7 – 8 bit registers

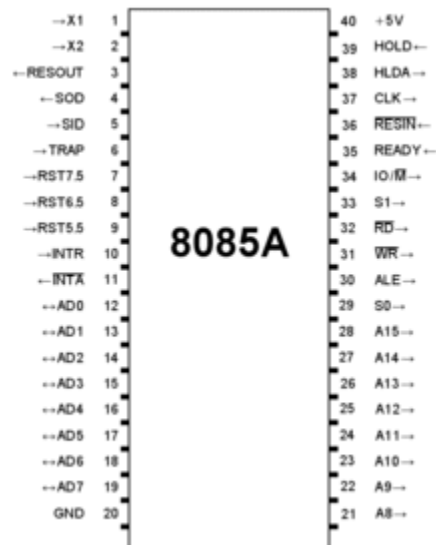
Instruction Set: 8080

Originally sold for \$360



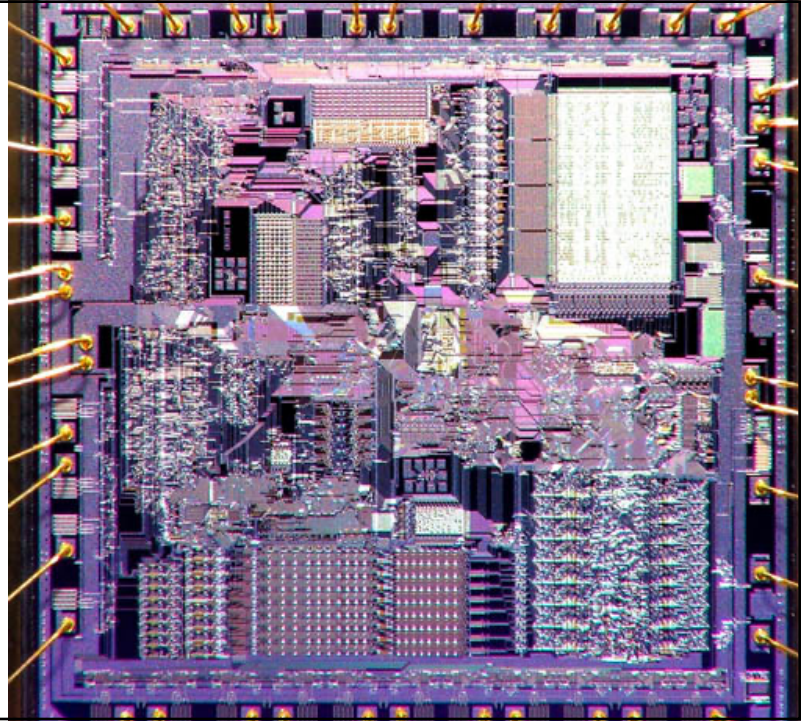
Intel 8085

- Released March 1976
- 8 Bit Data Width
- 16 Bit Address Width
- 6500 Transistors
- Max Clock Rates of 3, 5, 6 MHz
- 7 – 8 bit Registers
- Instruction Set: 8085



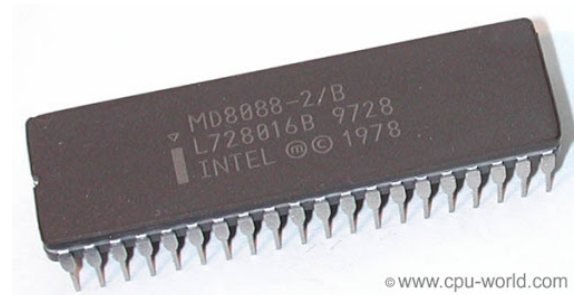
Intel 8086

- Released June 1976
- 16 Bit Data Width
- 20 Bit Address Width
- 29,000 Transistors
- Max Clock Rate: 5 to 10 MHz
- About 8 - 16 Bit Registers
- Instruction Set: x86-16



Intel 8088

- Released in 1979
- 8 Bit Data Width
- 20 Bit Address Width
- 29,000 Transistors
- Instruction Set x86-16
- Very Similar to the 8086



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Motorola 68000

- 16 Bit Data Width
- 24 Bit Address Width
- 68,000 Transistors
- Used in the Apple Lisa and Macintosh, Amiga Computers, and HP 9000
- Also Used in Atari's Food Fight Arcade Game, Sega System 16, and Sega Genesis



The rest is after the 80's

Bibliography

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