

Presentation on  
Evolution of  
**Intel Processors**

**Presented by:**

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Intel 4004



Intel Core i7



# Contents

- Introduction
- 4-bit processors
- 8-bit processors
- 16-bit processors
- 32-bit processors
- 64-bit processors
- Modern Trends
- Conclusion

# Introduction

- Founded on July 18, 1968
- Founders:
  - Robert Noyce
  - Gordon Moore
  - Andrew
- Headquartered in Santa Clara, California
- Grew as start up in 1968 to industrial giant by 1981
- Above 1 lakhs employees, \$55 billion revenue



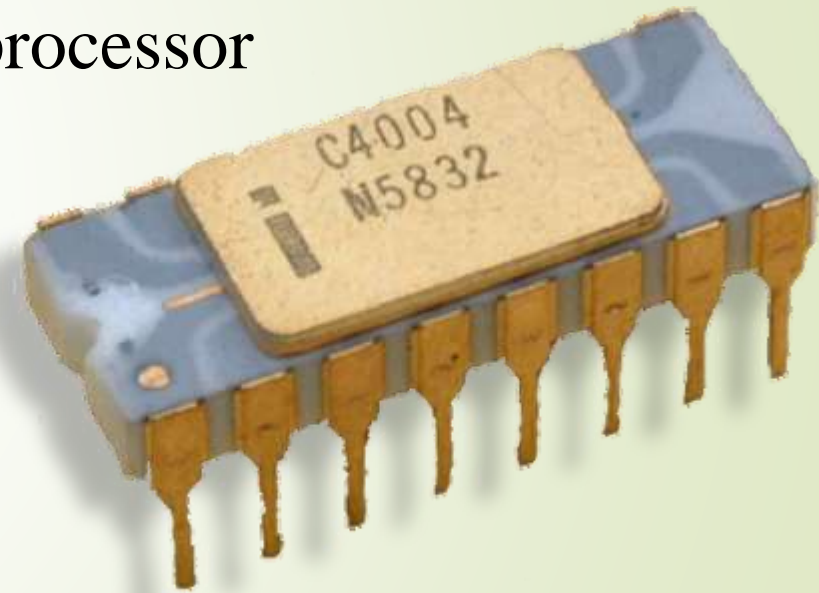
Intel Corporation

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# Intel 4004

- First 4-bit microprocessor
- Introduced November 15, 1971 by Intel
- First commercially available computer processor
- Clock rate 740 kHz.
- Executes 60,000 instructions per second
- Instruction set contained 46 instructions
- Number of Transistors 2,300 at 10  $\mu\text{m}$
- Addressable Memory 640 bytes
- Register set contained 16 registers
- Designed to be used in Busicom calculator





# Intel 4040

- Successor of Intel 4004
- Introduced in 1974
- Clock Speed 500 – 740 kHz
- Instruction set increased to 60 instructions
- Number of Transistors 3,000 at 10  $\mu\text{m}$
- Register set increased to 24 registers



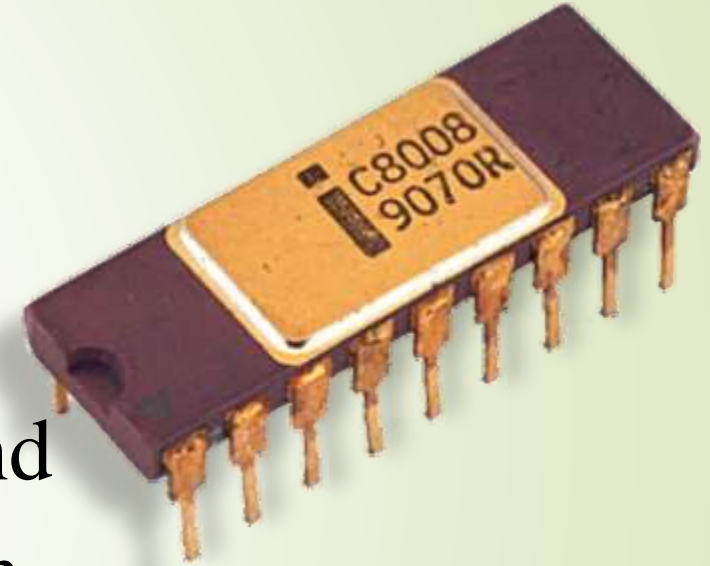
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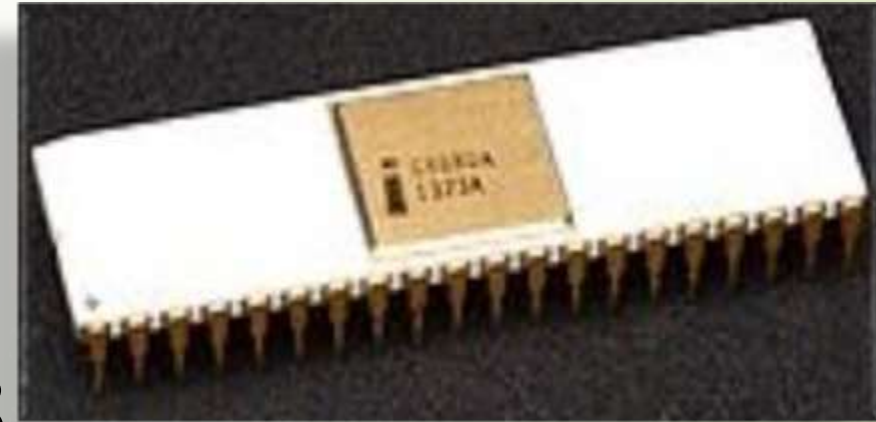
# Intel 8008

- First 8-bit processor
- Introduced April 1, 1972
- Clock Speed 500 kHz
- Execute 50,000 instructions per second
- Number of Transistors 3,500 at 10  $\mu\text{m}$
- Addressable Memory 16 KB
- Register set contained 7 registers
- Designed for use in Datapoint 2200 microcomputer



# Intel 8080

- Introduced April, 1974
- Clock Speed 2 MHz
- Transistors 4,500 at 6  $\mu\text{m}$
- 10 times faster than Intel 8008
- Execute 500,000 instructions per second



# Intel 8085

- Introduced 1976
- Clock Speed 3 MHz
- Executes 0.37 MIPS
- Number of transistors 6,500 at 3  $\mu\text{m}$
- 100 million copies were sold



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# Intel 8086

- First 16-bit processor
- Introduced in June 8, 1978
- Introduction of x86 architecture
- Clock speed is 4.77 – 10 MHz
- 29,000 transistors at 3  $\mu\text{m}$
- Execute 2.5 MIPS
- Used in portable computing, IBM PS/2 computers





# Intel 8088

- Introduced June 1, 1979
- Backward compatible 8086
- Clock speed is 5 – 10 MHz
- Created as a cheaper version of Intel's 8086
- Used first in IBM-PC
- Highly successful due to large sale of IBM-PC





# Intel 80186 & 80188

- Introduced in 1982
- Clock speed was 6 MHz
- 80188 was a cheaper version of 80186
- 55,000 transistors at 3  $\mu\text{m}$
- Had additional components like:
  - Interrupt Controller
  - Clock Generator
  - Local Bus Controller
  - Counters



# Intel 80286

- Introduced in February 2, 1982
- Clock speed was 8 MHz
- 134,000 transistors at 1.5  $\mu\text{m}$
- Execute 4 MIPS
- First with memory management, protection abilities
- Introduces “Virtual Memory Concept”
- Widely used in IBM PC



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# Intel 80386

- First 32-bit processor
- Introduced in October 17, 1985
- Clock speed 16 – 33 MHz
- 2,75,000 transistors at 1.5  $\mu\text{m}$
- Address 4 GB of memory
- Concept of paging was introduced
- Best selling microprocessor in history



# Intel 80486

- Introduced in 1989
- 1.2 million transistors at 1  $\mu\text{m}$
- Clock speed 16 – 100 MHz
- 1 TB Virtual Memory
- Cache Memory of 8 KB was introduced
- Used in Desktop computing and Servers



# Intel Pentium

- Introduced in March 22, 1993
- Originally named 80586
- Clock speed 60 – 66 MHz
- Executes 110 MIPS
- 3.1 million transistors at 0.8  $\mu\text{m}$
- Virtual Memory 64 TB
- 16 KB L1 cache memory





# Intel Pentium Pro

- Introduced in November 1, 1995
- Clock speed 150 – 200 MHz
- 5.5 million transistors at 0.5  $\mu\text{m}$
- 16 KB L1 cache memory
- 256 KB L2 cache memory
- Access up to 64GB of memory
- Primarily designed for servers
- Used in ASCI Red supercomputer



# Intel Pentium II

- Introduced on May 7, 1997
- Clock speed 233 - 450 MHz
- 7.5 million transistors at 0.35  $\mu\text{m}$
- Execute 333 MIPS
- L2 cache & processor were on one circuit



# Intel Pentium III

- Introduced on Feb 26, 1999
- Clock speed 0.45 – 1.4 GHz
- 9.5 million transistors at 0.25  $\mu\text{m}$
- L2 cache increased to 512 KB
- Used faster core than its predecessor



# Intel Pentium IV

- Introduced on November 20, 2000
- Clock speed 1.3 – 3.8 GHz
- 42 million transistors at 0.18  $\mu\text{m}$
- Widely popular processor
- Used in desktops, laptops & entry level servers as well



# Intel Atom

- Introduced on 2008
- 32 or 64 bit processor
- Single, Dual Core processor
- Clock speed 0.6 – 2.13 GHz
- 47 million transistors at 45 nm
- Also know as Centrino Atom
- Low power, small size processor
- Widely used in Portable Netbooks





# Intel Celeron

- 32 bit or 64 bit processor
- Introduced on April, 1998
- Single, Dual Core processor
- Clock speed 0.26 – 3.6 GHz
- 2MB L3 cache
- Used in budget range PC's





# Intel Xeon

- 32 bit or 64 bit processor
- In use from 1998
- Clock speed 0.4 – 4.4 GHz
- Up to 16 cores
- Up to 24MB L3 cache
- Very high end processor
- Used for non-consumer workstation, server



# Intel Pentium Dual Core

- 32 bit or 64 bit processor
- Introduced on 2006
- Dual Core processor
- Clock speed 1.3 – 2.6 GHz
- 228 million transistors at 90 nm
- Support for Simultaneous Multi-Threading



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# Intel Core 2 Series

- Pure 64 bit processor
- Introduced on July 27, 2006
- Multi core on a single chip
- Dual, Quad Core processor
- Clock speed 1.06 – 3.33 GHz
- 291 million transistors at 45 nm
- 64 KB of L1 cache per core
- 4 MB of L2 cache
- Core 2 Duo widely used in desktops, laptops
- Core 2 Quad used for business purposes





# Intel Core i3

- Introduced in January 7, 2010
- Clock Speed 1.2 – 3.7 GHz
- 4 MB L3 cache
- Dual Core processor
- 2 – 4 logical processors
- Supports Hyper threading
- Entry level processor in today's era
- Supports in-built security features



# Intel Core i5

- Introduced September 8, 2009
- Clock Speed 1.06 – 3.6 GHz
- Support for Hyper Threading
- Support for Turbo Boost
- Dual Core mobile processor
- Dual, Quad Core desktop processor
- 4 logical processors
- 4 – 8 MB L3 cache
- Mid to High end processor series
- Desktop versions comes with support for Overclocking





# Intel Core i7

- Introduced November 17, 2008
- Clock Speed 1.6 – 4.4 GHz
- Dual, Quad Core processor
- 4 – 8 logical processors
- 6 – 15 MB L3 cache
- High end processor Series
- Comes with support for Overclocking
- Widely used in Gaming Laptops



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# Modern Trends of Processor

- Intel was the first microprocessor producer
- Intel owns more than 83% microprocessor market share
- Intel supplies processors to Apple, Samsung, HP, Dell & others
- Intel Core i3, i5 Dual Core are most sold in India
- Gaming Geeks use i7 processors, along with a high power GPU for enhanced performance
- Processors with suffix “K” can be Overclocked for getting ultimate performance
- Servers, Workstations are deployed on Intel Xeon chips

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# Conclusion

- Growth is tremendous
- Speed of microprocessor is increasing day-by-day
- Architecture has been reduced to very small, 22 nm
- Microprocessor are also used in various devices like mobiles, watches, ATM, cameras
- Price reduced in recent years
- Much more in the upcoming years



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Thank You!