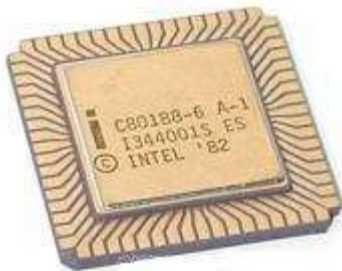
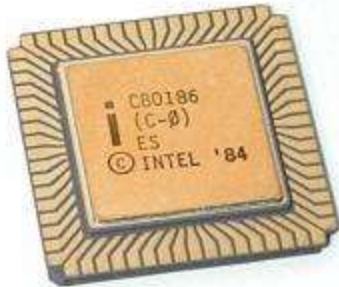


Intel 8088



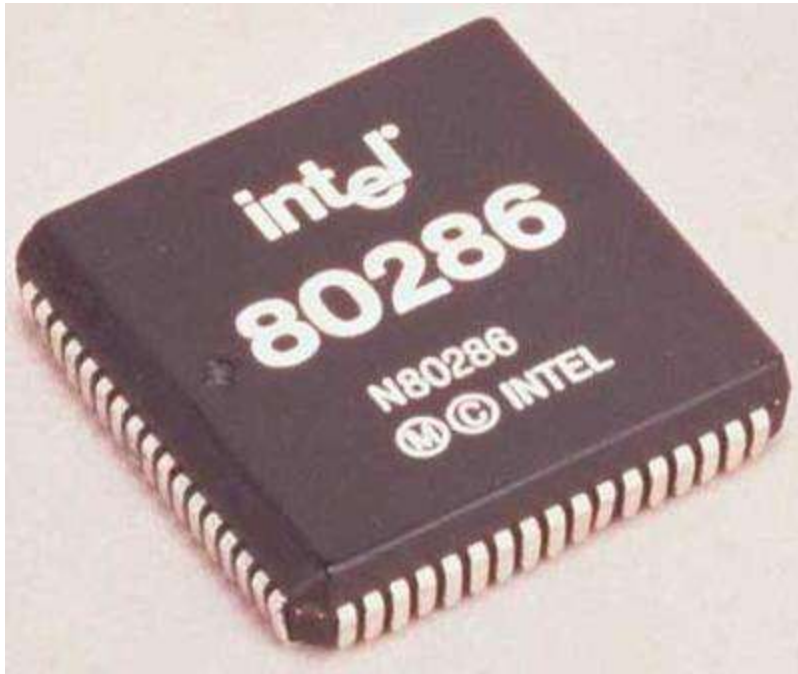
- Introduced in 1979.
- It was also 16-bit μ P.
- It was created as a cheaper version of Intel's 8086.
- It was a 16-bit processor with an 8-bit external bus.

Intel 80186 & 80188



- Introduced in 1982.
- They were 16-bit μ Ps.
- Clock speed was 6 MHz.
- 80188 was a cheaper version of 80186 with an 8-bit external data bus.

Intel 80286



- Introduced in 1982.
- It was 16-bit μ P.
- Its clock speed was 8 MHz.
- Its data bus is 16-bit and address bus is 24-bit.
- It could address 16 MB of memory.

Intel 80386

➤ Introduced in 1986.

➤ It was first 32-bit μ P.

➤ Its data bus is 32-bit and address bus is 32-bit.

➤ It could address 4 GB of memory.

➤ It had 2,75,000 transistors.

➤ Its clock speed varied from 16 MHz



Intel 80486

➤ Introduced in 1989.

➤ It was also 32-bit μ P.

➤ It had 1.2 million transistors.

➤ Its clock speed varied from 16 MHz to 100 MHz depending upon the various versions.

➤ 8 KB of cache memory was



Intel Pentium



- Introduced in 1993.
- It was also 32-bit μ P.
- It was originally named 80586.
- Its clock speed was 66 MHz.
- Its data bus is 32-bit and address bus is 32-bit.

Intel Pentium Pro



- Introduced in 1995.
- It was also 32-bit μ P.
- It had 21 million transistors.
- Cache memory:
 - 8 KB for instructions.
 - 8 KB for data.

Intel Pentium II

- Introduced in 1997.
- It was also 32-bit μ P.
- Its clock speed was 233 MHz to 500 MHz.
- Could execute 333 million instructions per second.



Intel Pentium II Xeon



- Introduced in 1998.
- It was also 32-bit μ P.
- It was designed for servers.
- Its clock speed was 400 MHz to 450 MHz.

Intel Pentium III



- Introduced in 1999.
- It was also 32-bit μ P.
- Its clock speed varied from 500 MHz to 1.4 GHz.
- It had 9.5 million transistors.

Intel Pentium IV



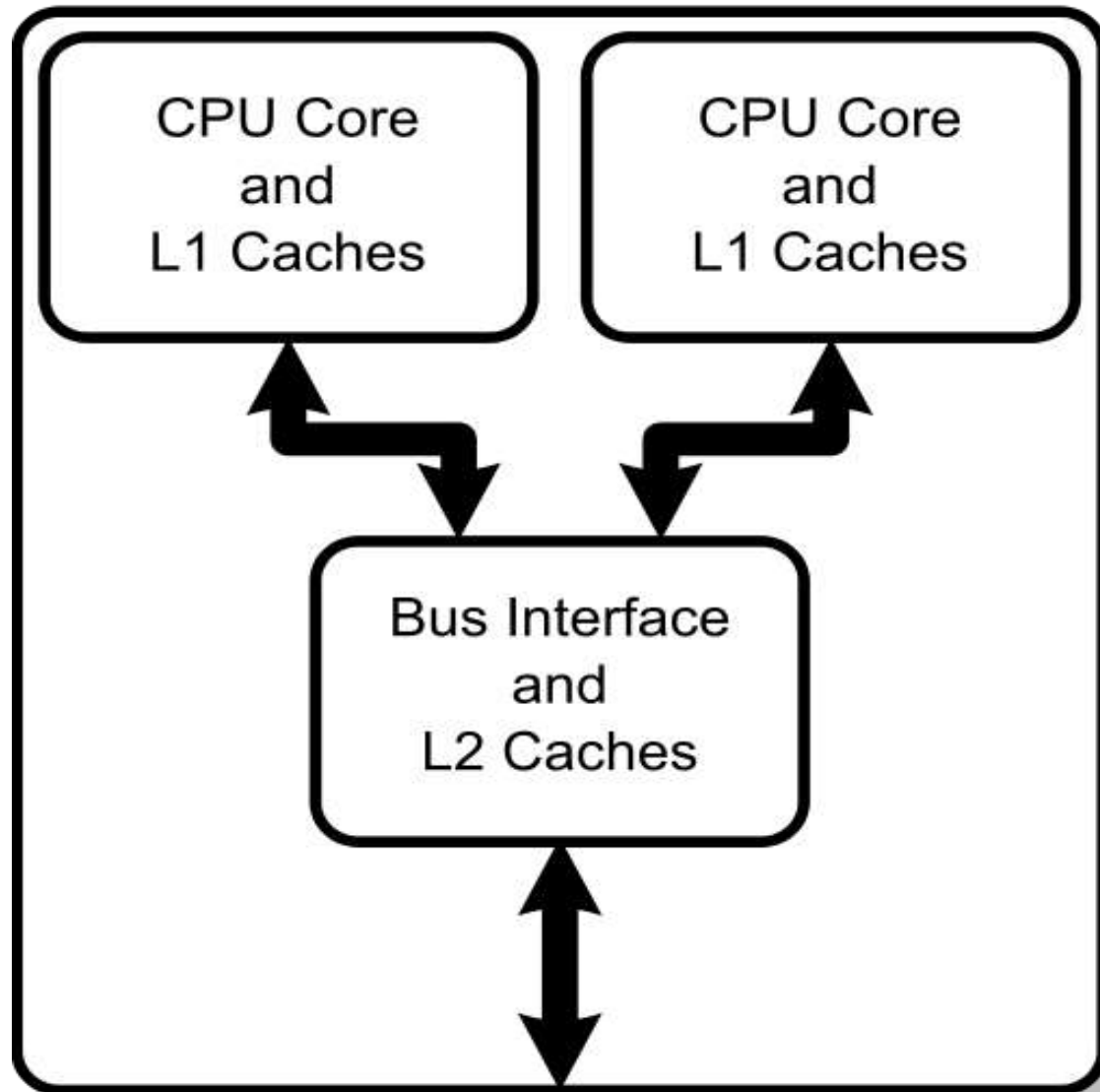
- Introduced in 2000.
- It was also 32-bit μ P.
- Its clock speed was from 1.3 GHz to 3.8 GHz.
- It had 42 million transistors.

Intel Dual Core introduced in 2006.

- It is 32-bit or 64-bit μ P.



Dual CPU Core Chip



64-bit Microprocessors

Intel Core 2



Intel Core i3



Intel Core i5

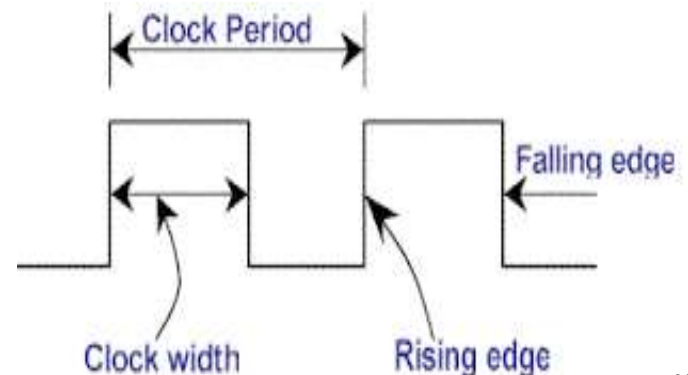


INTEL CORE i7



Basic Terms

- **Bit**: A digit of the binary number { 0 or 1 }
- **Nibble**: 4 bit **Byte**: 8 bit **word**: 16 bit
- **Double word**: 32 bit
- **Data**: binary number/code operated by an instruction
- **Address**: Identification number for memory locations
- **Clock**: square wave used to synchronize various devices in μP
- **Memory Capacity** = 2^n ,
 n->no. of address lines



BUS CONCEPT

- **BUS**: Group of conducting lines that carries data , address & control signals.

CLASSIFICATION OF BUSES:

1.DATA BUS: group of conducting lines that carries data.

2. ADDRESS BUS: group of conducting lines that carries address.

3.CONTROL BUS: group of conducting lines that carries control signals {RD, WR etc}

CPU BUS: group of conducting lines that directly connected to μP

SYSTEM BUS: group of conducting lines that carries data , address & control signals in a μP system

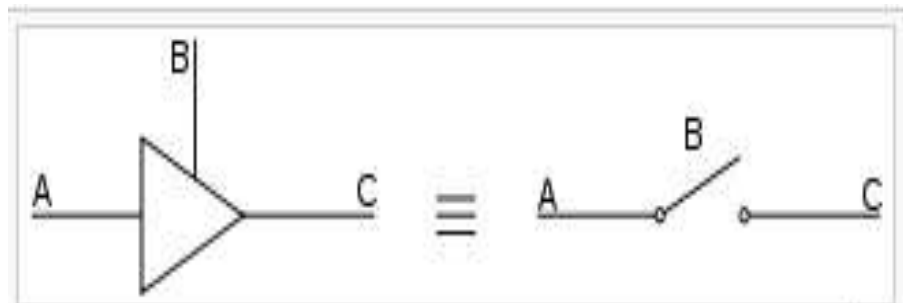
TRISTATE LOGIC

3 logic levels are:

- High State (logic 1)
- Low state (logic 0)
- High Impedance state

High Impedance: output is not being driven to any **defined** logic level by the output circuit.

INPUT		OUTPUT
A	B	C
0	1	0
1	1	1
X	0	Z(high impedance)



A tristate buffer can be thought of as a switch. If B is on, the switch is closed. If B is off, the switch is open.

Basic Microprocessors System

