**Evolution of Microprocessors**

**Size of the microprocessor –** 4 bit

| **Name** | **Year of Invention** | **Clock speed** | **Number of transistors** | **Inst. per sec** |
| --- | --- | --- | --- | --- |
| INTEL 4004/4040 | 1971 by Ted Hoff and Stanley Mazor | 740 kHz | 2300 | 60,000 |

**Size of**the **microprocessor –** 8 bit

| **Name** | **Year of Invention** | **Clock speed** | **Number of transistors** | **Inst. per sec** |
| --- | --- | --- | --- | --- |
| 8008 | 1972 | 500 kHz | 3500 | 50,000 |
| 8080 | 1974 | 2 MHz | 6000 | 10 times faster than 8008 |
| 8085 | 1976 (16-bit address bus) | 3 MHz | 6500 | 769230 |

**Size of the microprocessor –** 16 bit

| **Name** | **Year of Invention** | **Clock speed** | **Number of transistors** | **Inst. per sec** |
| --- | --- | --- | --- | --- |
| 8086 | 1978 (multiply and divide instruction, 16-bit data bus and 20-bit address bus) | 4.77 MHz, 8 MHz, 10 MHz | 29000 | 2.5 Million |
| 8088 | 1979 (cheaper version of 8086 and 8-bit external bus) |  |  | 2.5 Million |
| 80186/80188 | 1982 (80188 cheaper version of 80186, and additional components like interrupt controller, clock generator, local bus controller, counters) | 6 MHz |  |  |
| 80286 | 1982 (data bus 16bit and address bus 24 bit) | 8 MHz | 134000 | 4 Million |

**Size of the microprocessor –** 32 bit

| **Name** | **Year of Invention** | **Clock speed** | **Number of transistors** | **Inst. per sec** |
| --- | --- | --- | --- | --- |
| INTEL 80386 | 1986 (other versions 80386DX, 80386SX, 80386SL , and data bus 32-bit address bus 32 bit) | 16 MHz – 33 MHz | 275000 |  |
| INTEL 80486 | 1986 (other versions 80486DX, 80486SX, 80486DX2, 80486DX4) | 16 MHz – 100 MHz | 1.2 Million transistors | 8 KB of cache memory |
| PENTIUM | 1993 | 66 MHz |  | Cache memory 8 bit for instructions 8 bit for data |

**Size of the microprocessor –** 64 bit

| **Name** | **Year of Invention** | **Clock speed** | **Number of transistors** | **Inst. per sec** |
| --- | --- | --- | --- | --- |
| INTEL core 2 | 2006 (other versions core2 duo, core2 quad, core2 extreme) | 1.2 GHz to 3 GHz | 291 Million transistors | 64 KB of L1 cache per core 4 MB of L2 cache |
| i3, i5, i7 | 2007, 2009, 2010 | 2.2GHz – 3.3GHz, 2.4GHz – 3.6GHz, 2.93GHz – 3.33GHz |  |  |

Exp -2

What is 8085

Figure

All compenents explan