HISTORY OF THE PROCESSOR

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MOORE'S LAW

- Named after Gordon Moore
- Transistors on integrated circuits doubles every two years
- The more transistors, the better
  - Data is stored and moved faster
  - More instructions are computed
  - Electronic products were cheaper
- Further, higher complexity needs more transistors, raising power consumption and heat.

32-BIT PROCESSOR

- Originated in 1985 with the 80386 by Intel
  - Had 275,000 Transistors in the original design
  - Executes code for earlier 16-bit processors
- Supported "large" applications
- 4GB of memory
- 64TB of logical address space
- 16MHz clock speed

EFFICIENCY: RISC

- Only part of available instruction sets was being utilized
- Time for processing instructions was decreasing
- Use of smaller instruction set allowed faster performance
- Longer code and more registers
- Popular in embedded systems

EFFIFICENCY: CONTINUED

- Instruction level parallelism
- Simultaneous execution
- Pipelining
- Supercalar process
- Out-of-order execution

64 BIT PROCESSORS

- Originated in 1961 with the 7030 Stretch Supercomputer
- Opteron processor: Introduced in April 2003
  - First processor to be used by home computers
  - First to use the AMD64 Instruction set (x86-64)
  - Ran 32-bit programs

MULTI CORE PROCESSORS

- Multi core processors have two or more processing units or cores
    - Higher performance at lower
    - Dual, quad, etc.
- Introduced by IBM in 2001: VLSI chip
    - Dual core (64-bit microprocessors)
- Other companies released their own cores
    - AMD, Intel

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