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## COMPUTER GENERATIONS

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**By: Your Name**

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### First-Generation (1948-1951)

First-generation computers were very large (one machine could occupy an entire room). Information was given to the computer by **punching** holes into cards and then “feeding” these cards into the computer. Output could be printed or recorded on punched cards. First-generation machines had small **memory capacities** even though they were so large. The computers used thousands of vacuum tubes (elements that work like a light bulb). The *vacuum tubes* generated such a large degree of heat that the machines required special air-conditioning systems.

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### Second-Generation (1958-1964)

During this period vacuum tubes were replaced with tiny solid-state transistors. These computers produced less heat, worked more **quickly and reliably**, and had larger storage capacities than first-generation machines. Input and output could be recorded on magnetic tape as well as on punched cards.

### Third-Generation (1964-1970)

Third-generation computers introduced the *integrated circuit* (IC) to computing. ICs replaced transistors; they consist of thousands of small circuits impressed on a silicon chip that was, in 1965, only one quarter square inch in size. The use of ICs meant faster processing speeds, lower costs, and

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increased storage capacity. During this period, minicomputers were developed, which enabled **small businesses** to have computers. IBM and Digital Equipment Corporation developed important third-generation computers.

#### Fourth-Generation (1970-Present)

Large-scale integrated circuits were developed. These circuits compress increasing numbers of microelectronic components into less space. A single silicon chip could exceed the speeds and storage capacities of machines that used *hundreds of thousands* of ICs. Fourth-generation machines could operate 10,000 times faster than first-generation machines. The large-scale integrated circuit was used to develop the microcomputer.

#### Fifth-Generation

Some analysts believe that with the development of both artificial intelligence and supercomputers, we are beginning a new generation. *Artificial intelligence* (AI) has introduced new goals to computer technology. AI developers try to imitate important aspects of human thinking. Supercomputers, the **largest and fastest** computers available, are capable of performing hundreds of millions of calculations in a single second. Supercomputers used to be used by only a few major companies, government agencies, and universities. Today, they are more readily available and cheaper.

