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RealAudio

compressed audio format



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RealAudio, a compressed audio format created in 1995 by Progressive Networks (after 1997, [RealNetworks, Inc.](#)) that was popular in the 1990s and early 2000s but was supplanted by such formats as MP4.

The RealAudio format allows users to listen to [music](#) as it is being downloaded, a process known as streaming. RealAudio's small file sizes and the streaming capability make it a popular format for [Internet](#) radio stations. RealAudio was developed for use with [RealPlayer](#), one of the Internet's early media player successes.

RealNetworks established new [proprietary](#) file types, such as .rm and .ra, to go along with their RealPlayer technology, while the company's competitors developed their media players to play established file types,

such as .avi and .mpg. One of RealAudio's drawbacks was the reluctance of RealNetworks to provide information and computer code that could allow for third-party creations and alterations of the company's products. Although this stance softened somewhat, RealNetworks preferred to maintain [exclusive](#) control over all things related to RealPlayer and its media. The Helix [Community](#) was created by RealNetworks to attempt to reach out to their [open-source](#) community, but Helix's player could not play all RealAudio files. In 2003 RealNetworks purchased Rhapsody, an online music store, and renamed it RealRhapsody.

In December 2003 RealNetworks began a legal battle with the [Microsoft Corporation](#) over complaints that Microsoft was using its dominance of the [personal computer](#)

market to redirect customers to its Windows Media Player. In 2005 Microsoft settled by paying RealNetworks \$761 million.

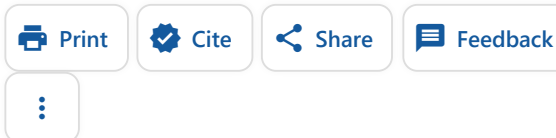
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Science & Tech

personal computer technology



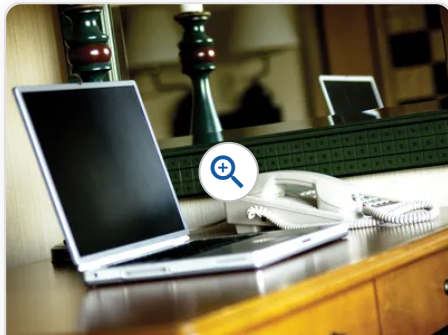
Also known as: PC

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laptop computer

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Personal computer (PC), a [digital computer](#) designed for use by only one person at a time. A typical personal computer assemblage consists of a [central processing unit](#) (CPU), which contains the computer's arithmetic, logic, and control circuitry on an [integrated circuit](#); two types of [computer memory](#), main [memory](#), such as digital [random-access memory](#) (RAM), and [auxiliary](#) memory, such as magnetic hard disks and special optical [compact discs](#), or read-only memory (ROM) discs ([CD-ROMs](#) and [DVD-ROMs](#)); and various [peripheral devices](#), including a display screen,

keyboard and mouse, and printer. *See also* [computer: History of computing](#).



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classes

From hobby computers to Apple

Computers small and inexpensive enough to be purchased by individuals for use in their homes first became [feasible](#) in the 1970s, when large-scale [integration](#) made it possible to construct a sufficiently powerful [microprocessor](#) on a single [semiconductor chip](#). A small firm named MITS made the first personal computer, the [Altair](#). This computer, which used [Intel Corporation](#)'s 8080 microprocessor, was developed in 1974. Though the Altair was popular among computer hobbyists, its commercial appeal was limited.



Steve Wozniak and Steve Jobs

Steve Wozniak (left) and Steve Jobs holding an Apple I circuit board, c. 1976.

The personal computer industry truly began in 1977, with the introduction of three preassembled mass-produced personal computers: the Apple Computer, Inc. (now [Apple Inc.](#)), [Apple II](#), the Tandy Radio Shack TRS-80, and the [Commodore Business Machines](#) Personal Electronic Transactor (PET). These machines used eight-bit microprocessors (which process information in groups of eight bits, or [binary digits](#), at a time) and possessed rather limited memory capacity—i.e., the ability to address a given quantity of data held in memory storage. But because personal computers were much less expensive than [mainframe](#) computers (the bigger computers typically [deployed](#) by large business, industry, and government organizations), they could be purchased by individuals, small and

medium-sized businesses, and primary and secondary schools.



Of these computers, the TRS-80 dominated the market. The TRS-80 [microcomputer](#) came with four kilobytes of memory, a Z80 microprocessor, a [BASIC](#) programming language, and cassettes for data storage. To cut costs, the [machine](#) was built without the ability to type lowercase letters. Thanks to Tandy's chain of Radio Shack stores and the breakthrough price (\$399 fully assembled and tested), the machine was successful enough to persuade the company to introduce a more powerful computer two years later, the TRS-80 Model II, which could reasonably be marketed as a small-business computer.

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The Apple II received a great boost in popularity when it became the host machine for VisiCalc, the first electronic [spreadsheet](#) (computerized accounting program). Other types of application [software](#) soon developed for personal computers.

IBM PC



IBM Personal Computer

The IBM Personal Computer (PC) was introduced in 1981. Microsoft suppli...(more)

[IBM Corporation](#), the world's dominant computer maker, did not enter the new market until 1981, when it introduced the IBM Personal Computer, or IBM PC. The IBM PC was significantly faster than [rival](#) machines, had about 10 times their memory capacity, and was backed by IBM's large sales organization. The

IBM PC was also the host machine for 1-2-3, an extremely popular spreadsheet introduced by the Lotus Development Corporation in 1982. The IBM PC became the world's most popular personal computer, and both its microprocessor, the [Intel 8088](#), and its [operating system](#), which was adapted from [Microsoft Corporation's MS-DOS](#) system, became industry standards. Rival machines that used Intel microprocessors and MS-DOS became known as "IBM compatibles" if they tried to compete with IBM on the basis of additional computing power or memory and "IBM clones" if they competed simply on the basis of low price.

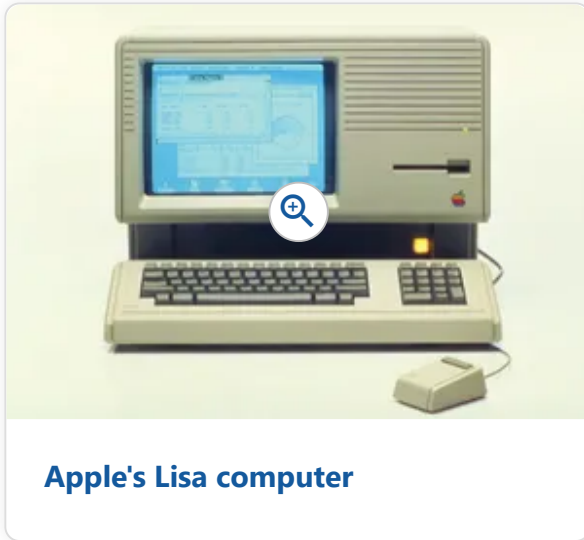


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GUI



In 1983 Apple introduced [Lisa](#), a personal computer with a [graphical user interface](#) (GUI) to perform routine operations. A GUI is a display format that allows the user to select commands, call up files, start programs, and do other routine tasks by using a device called a [mouse](#) to point to pictorial symbols (icons) or lists of menu choices on the screen. This type of format had certain advantages over interfaces in which the user typed text- or character-based commands on a keyboard to perform routine tasks. A GUI's windows, pull-down menus, [dialog](#) boxes, and other

controlling mechanisms could be used in new programs and applications in a standardized way, so that common tasks were always performed in the same manner. The Lisa's GUI became the basis of Apple's [Macintosh](#) personal computer, which was introduced in 1984 and proved extremely successful. The Macintosh was particularly useful for [desktop publishing](#) because it could lay out text and graphics on the display screen as they would appear on the printed page.



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The Macintosh's graphical interface style was widely adapted by other manufacturers of personal computers and PC software. In 1985 the Microsoft Corporation introduced [Microsoft Windows](#), a graphical user interface that gave MS-DOS-based computers

many of the same capabilities of the Macintosh. Windows became the dominant operating environment for personal computers.