

History in the Computing Curriculum

Appendix A6

1970 to 1979

- 1970: Winston Royce publishes "Managing the Development of Large Software Systems," which outlines the waterfall development method. (e)
- 1970: Shakey, developed at SRI International, is the first robot to use artificial intelligence to navigate. (e)
- 1970: UNIX is developed at Bell Labs by Dennis Ritchie and Kenneth Thomson. (e)
- 1970: RCA's MOS (metal-oxide semiconductor) technology promises cheaper and smaller ICs. (e)
- 1970: Xerox establishes the Palo Alto Research Center at Stanford University for computer research. (e)
- 1970: E.F. Codd describes the relational model. (e)
- 1970: IBM designer Gene Amdahl forms Amdahl Corp., makers of mainframes plug-compatible with IBM. The competition leads to a dramatic change in IBM prices. (a)
- 1970: Alan Shugart, inventor of the hard disk, develops the first floppy disk (8" diameter) at IBM. (p)
- 1970: The floppy diskette and the daisywheel printer make their debut. (e)
- 1970: Fourth-generation computers built with chips that use LSI (large-scale integration). Chips contain up to 15,000 circuits compared to 1,000 circuits in 1965. (t)
- 1971: The team of Ted Hoff, S. Mazor, and F. Fagin develops the Intel 4004 microprocessor -- a "computer on a chip." It could process about 60,000 instructions per second for a cost of about \$300. (a,e,t)
- 1971: Don Hoefler writes a series of articles for Electronic News called "Silicon Valley USA," using in print the name that had been adopted to describe the area. (e)
- 1971: Intel offers the first microprocessor, the 4004. (p)
- 1971: David Parnas describes the principle of information hiding. (e)
- 1971: Ray Tomlinson of Bolt Beranek and Newman sends the first network email message. (e)
- 1971: The first pocket calculator, the Poketronic, is produced. (a)
- 1971: Niklaus Wirth develops Pascal, a predecessor to Modula-2. (a,e)
- 1972: Hand-held calculators become popular, making the slide rule obsolete. (e)
- 1972: Intel's 8008, the first 8-bit microprocessor appears, but is soon replaced by the 8080. (a,e)
- 1972: Nolan Bushnell's Pong video game is so successful that he founds Atari. (a,e)
- 1972: Seymour Cray founds Cray Research and introduces the first successful commercial supercomputer, the Cray I. (a,p)
- 1972: Pacemakers with chips computed tomography debut. (a)
- 1972: ray Tomlinson creates an email program to send personal messages across the Arpanet. Electronic mail helps move the the Arpanet beyond its military use. (f)
- 1972: Telnet standard introduced. Telnet allows a user to log on to a remote computer. (f)
- 1972: Smalltalk is developed by Xerox PARC's Learning Research Group, based largely on the ideas of Alan Kay. (a,e)
- 1972: Dennis Ritchie develops C at Bell Labs, so named because its predecessor was named B. (e)

1972: Alain Colmerauer at the University of Marseille develops Prolog, which popularizes key logic programming concepts. (e)

1972: Analytic complexity theory develops the idea of NP-completeness, showing that a large class of computing problems, such as the "traveling salesman problem," may be computationally intractable. (e)

1972: Wang, VYDEC, and Lexitron all introduce word processing systems. (e)

1972: The Hewlett-Packard HP-35 calculator sells for \$395. (a)

1972: In Wimbledon, England, an experimental computerized axial tomography imager finds a brain tumor in a patient. (e)

1972: DEC's PDP 11/45 is introduced, its circuitry encased in chips. (e)

1972: Steve Wozniak builds a "blue box" tone generator to make free phone calls and sells them in the dorm at UC Berkeley. (e)

1973: Work begins on the Transmission Control Protocol at a Stanford University laboratory headed by Vinton Cerf. (e)

1973: Alan Kay develops a forerunner of the PC. His "office computer," based on Smalltalk, employs icons, graphics, and a mouse. (e)

1973: Winchester disk drives appear on the market. (a)

1973: File transfer protocol (FTP) developed. FTP allows for long-distance transferring of files from one computer to another. (f)

1973: The University College of London (England) and Royal Radar Establishment (Norway) become the first international connections to the Arpanet. (f)

1973: George Albrecht starts "People's Computer Company," the first computer newsletter and early user group. (a)

1973: IBM launches its System 370 mainframe computer. (a)

1973: Researchers at Xerox PARC develop an experimental PC called Alto that uses a mouse, Ethernet, and a graphical user interface. R. Metcalfe is credited with its development. (a,e)

1973: Through a technique called large-scale integration, 10,000 components are placed on a 1-sq-cm chip. (e)

1973: John Vincent Atanasoff is recognized as the creator of the modern computer when a federal judge invalidates Eckert and Mauchly's ENIAC patent. (e)

1973: Robert Metcalfe writes a memo on "Ether Acquisition," which describes the Ethernet as a modified Alohanet. (e)

1974: At Xerox PARC, Charles Simonyi writes the first WYSIWYG application, Bravo. (e)

1974: An article in Radio Electronics describes how to build a "personal minicomputer," the Mark-8. (e)

1974: In Stockholm, chess-playing computers engage in their first tournament. (e)

1974: Intel produces its 8080 chip.

1974: A 4-Kbit D-RAM chip becomes commercially available. (e)

1975: The first PC, an Altair 8800, available as a kit, appears on the cover of *Popular Electronics* in January. (e,p)

1975: Michael Jackson describes a method to treat a program's structure as a reflection of a problem's structure, a precursor to the Jackson System Development method. (e)

1975: DEC System 10 and the VAX project begins. (a)

1975: Bill Gates and Paul Allen develop the first microcomputer BASIC language. (a)

1975: Three key chips appear on the market. They are the Zilog Z80, the MOS 6205, and the Motorola 6800. (a)

1975: John Cocke works on the 801 project at IBM to develop a minicomputer with the yet-unnamed RISC architecture. The projects also appear at Berkeley and Stanford. (a,e)

1975: IBM introduces the laser printer. (e)

1975: The MITS Altair on the cover of *Popular Electronics* and creates the dawn of hobbyist desktop computing. It used the 8080 chip, had 256 bytes of RAM, and sold for \$498. (a,t)

1975: Frederick Brooks writes The Mythical Man-Month, which describes software development as "the mortal struggle of great beasts in the tar pits" and advises that adding more people to a late project only makes it later. (e)

1975: Robert Metcalfe of Xerox PARC (Palo Alto Research Center) develops the ethernet for the first local area network (LAN). (t)

1976: The Cray-1 from Cray Research is the first supercomputer with a vectorial architecture. It was rated at 138 MegaFLOPS. (a,e)

1976: Gary Kildall develops the CP/M operating system for 8-bit PCs. (a,e)

1976: Alan Kay and Adele Goldberg's Dynabook paper sets goals for personal computing. (a)

1976: The Smithsonian receives the last Keuffel & Esser slide rule. (a)

1976: Crowther and Woods create the first adventure game called "Adventure." (a)

1976: OnTyme, the first commercial email service, finds a limited market because the installed base of potential users is too small. (e)

1976: IBM develops the ink-jet printer. (e)

1976: Steve Jobs and Steve Wozniak design and build the Apple I, which consists mostly of a circuit board. (e,t)

1977: Steve Jobs, Steve Wozniak, and [?] Markkula incorporate Apple Computer on January 3. (e)

1977: Radio Shack produces the TRS80 home computer. (a,e)

1977: The Apple II is announced in the spring and establishes the benchmark for personal computers. It used the 6502 chip, had 16K, 16K ROM, and sold for \$1298 with display and peripherals. (a,e)

1977: The Commodore PET computer was produced using the 6502 chip, 4K RAM, 14K ROM and sold for \$595 with peripherals. (a,e)

1977: Several companies begin experimenting with fiber-optic cable. (e)

1977: Bill Gates and Paul Allen found Microsoft, setting up shop first in Albuquerque, New Mexico. (e)

1978: DEC introduces the VAX 11/780, a 32-bit computer that becomes popular for technical and scientific applications.

1978: Wordstar is introduced and goes on to become a widely used word processor with CP/M systems and later on DOS machines. (e)

1978: Tom DeMarco's Structured Analysis and System Specification popularizes structured analysis. (e)

1978: Ron Rivest, Adi Shamir, and Leonard Adelman propose the RSA cipher as a public-key cryptosystem for enciphering digital transmissions. (e)

1978: Intel's first 16-bit processor, the 8086, debuts. It is followed by the 8088 chip. (e)

1978: ACM's Curriculum'78 is widely used as a model for undergraduate programs. (a)

1979: Benoit Mandelbrot continues his research into fractals by generating a Mandelbrot set, derived from $z(n+1) = z(n)*z(n)-z(0)$. (e)

1979 [May]: The first electronic spreadsheet program, Don Bricklin's and Bob Franston's VisiCalc, is unveiled on May 11 and proves to be the "killer app" for early PCs. (e,t)

1979: Motorola introduces the 68000 chip, which will later support the Macintosh. (e)

1979: Xerox, DEC, and Intel announce Ethernet support. (a)

1979: NORAD generates 50 false alerts, including a simulated attack whose outputs accidentally triggered a live scramble. (a)

1979: Public information service companies CompuServe and The Source are founded. (a)

1979: Ada, a computer language named after Countess Ada Lovelace, is developed for use in the armed forces. (p)

1979: George Tate launches Ashton Tate and begins work on the dBase II database program. (a)

1979: Usenet, a public network in which participants exchange information and ideas by posting messages to group, newsgroups established. (f)

1979: Digital videodisks appear through the efforts of Sony and Philips. (e)

1979: Cellular telephones are tested in Japan and Chicago. (e)

1979: Pac Man and other early computerized video games appear. (p)