

BYTE LINES

News and Speculation About Personal Computing

Conducted by Sol Libes

Software Copyright Law Enacted: Congress has passed the Computer Software Copyright Act of 1980. It protects the rights of individuals and companies who develop, sell, and lease computer programs. The law adds computer programs to the list of "writings" in which exclusive rights may be granted for "limited times," which generally is until 50 years after the author's death.

The law gives the author exclusive rights to copy the work and to transfer ownership rights, including sale and leasing arrangements. Piracy is punishable by fines, civil damages, or criminal penalties. Work does not have to be registered with the Copyright Office to be protected; it is protected once it is in "any tangible medium of expression."

Before the passage of this law, the copyright status of computer software was unclear.

First 68000 System Introduced: S-100-bus personal-computer users can now step up to the most powerful 16-bit micro-processor—the Motorola MC68000. Management Analysis & Control Inc, 3530 C Street NE, Auburn WA 98002, is the first manufacturer to announce a 68000-based personal-computer system. Its new processor card will sell for \$2095. (That's more than I paid for my entire S-100 cabinet and contents!) As yet, no software has been announced.

Shugart Offers 5-Megabyte Hard-Disk System For Under \$2000: If you're looking for a hard-disk system and

can do some minimal interfacing, you'll be interested in Shugart Associates' special deal, called the "Success Kit." The kit is really an evaluation offer for OEMs considering the design of a Shugart hard-disk drive into their computer systems; however, there are no restrictions on the offer, hence anyone can buy just one Success Kit. For \$1950 you can get an SA1002 8-inch, 5-megabyte Winchester-technology drive, an SA1400 intelligent controller, cables, and documentation. The controller provides backup on single- or double-sided floppy-disk drives. For more information, call (800) 824-7888; in California (800) 852-7777 (operator 12).

FCC Grants Apple and Heath Extensions: The FCC has granted Apple Computer Inc and Heath Company a 3-month extension on compliance with the January 1, 1981 deadline for RF (radio-frequency) radiation regulations. Each unit now carries a label warning that the equipment can interfere with radio and television reception and that the user is responsible for correcting it.

This is the second extension of the original July 1980 deadline given the companies by the FCC. Both contended that more time was needed to make the necessary product changes.

AT&T Plans Home-Video Data Base: AT&T has disclosed that it is about to begin a year-long test of an electronic telephone directory. The test will involve 700 color-video terminals in homes and businesses throughout Austin, Texas.

The terminals will be connected to telephone lines and used to access white- and Yellow-Pages listings. Users will also be able to store personal information.

A similar test involving eighty-three participants was conducted earlier in Albany, Texas; it involved black-and-white terminals. AT&T is conducting another test with the Knight-Ridder Newspaper group, in Coral Gables, Florida. That system includes news reports, home banking, and a home-shopping service.

If these tests are successful, it will be three to four years before the system is widely available.

Japanese Sales Of US-Made Personal Computers Drop Sharply: Feedback From Fujitsu, a Japanese computer-industry newsletter, reports that the sales of US-made personal computers in that country have dropped sharply. It says that until recently, Tandy/Radio Shack, Commodore, and Apple manufactured over 90% of the 6000 to 7000 personal computers sold monthly in Japan. However, their share of the market has fallen to 20% as Hitachi, NEC (Nippon Electric Company), and Sharp have moved into the manufacture and sale of personal computers.

Apple and Tandy have formed joint ventures with Japanese concerns in an attempt to combat these inroads on US sales. Commodore is reportedly studying a similar move.

Japanese Establishing Foothold In US Personal Computing: The Japanese presence is being felt in the American personal-comput-

er market. For example, all 142 Computerland stores will soon carry Japanese personal computers. Computerland is currently negotiating with Casio, NEC, Panasonic, and Hitachi. Several other distributors are flirting with Japanese personal computers. Apple, TI (Texas Instruments), and Atari appear to be the primary losers of valuable showroom space.

Terminals To Replace Phone Directories: The French government is preparing to launch a bold effort to give every telephone subscriber in France a mini-video terminal. Initially it will provide on-line telephone directories. The terminal will have a 7- to 8-inch diagonal screen with 24 lines of 40 characters each, solid-state keyboard, and a modem to send data at 75 bps (bits per second) and receive at 1200 bps. The PTT (Postal Telephone and Telegraph Authority) expects the terminal to cost \$75 to \$100. Over the next ten years, the PTT expects to procure more than 30 million terminals at a cost of \$3 billion, which it estimates is less than the cost of printed directories and directory-assistance operators.

More Hobby Robotics Activities: Add these developments to previously listed sources of robotics information.

The United States Robotics Society, Palo Alto, California, is resuming publication of its ROVOX newsletter. Membership is \$20 per year. The Computerworld Store, Van Nuys, California, has published the Robotics Catalog. Also, the International Institute of

Robots in Pelahatchie, Mississippi, has resumed publication of its quarterly newsletter.

Wristwatch-Sized Computer Proposed: Ten years ago, who would have conceived of the table-top computer or, better yet, the pocket computer? Yet they are realities today. Current dreams envision something much smaller: the November 1980 *Computer* carried a detailed proposal by Stephen Kearney for a computer to be worn on your wrist. Kearney has overcome the I/O (input/output) problem with a clearly thought out display and keyboard. The LCD (liquid-crystal display) is 27 characters by 8 lines (for a total of 216 characters), with uppercase, lowercase, and special characters, in a space 1 7/8 by 3 inches. The unit has a 9-key keyboard capable of upper- and lowercase alphanumeric and special characters. The keyboard measures 3/4 inch by 2 inches.

Which Computer Is The Fastest?: Datamation recently conducted a survey to determine which computers are the fastest in production. The measurement used was KOPS (thousands of operations per second). This was felt to be a better measure than MIPS (millions of instructions per second). The top three were: Cray-1 (800,000 KOPS), CDC Cyber 205 (800,000 KOPS), and CDC 7600 (10,000 KOPS). The fastest IBM computer was the IBM 1088 (2X) with 1160 KOPS.

The KOPS rating is determined by measuring how long it takes the computer to execute a prescribed mix of programs; the measurement ignores I/O and operating-system considerations. As such, KOPS measures only processor speed and not system speed.

Smart Wheelchair Shown: The Rehabilita-

tion Engineering Center of the Veterans Administration Hospital, Palo Alto, California, has demonstrated a prototype microprocessor-controlled wheelchair for severely incapacitated persons. Using autofocus ultrasonic-ranging detectors aimed at the head, a person can direct the wheelchair's movements by moving his head. Sensors are included to detect objects in the chair's path and to gauge distance to walls so that the chair can track a wall at a fixed distance. Cruise control is provided so that the user can relax until a change in velocity is wanted. The developers expect this unit to add only \$100 to \$200 to the cost of a standard wheelchair.

Flat-Panel Display Update: There are over 2 million video terminals in use. It's expected that yearly shipments will top the million-unit level by the mid-1980s. However, they have some big disadvantages. They're bulky, they waste a lot of desk space, consume too much power, annoy users with reflected light, and are damaged easily.

More than a dozen companies are developing flat-panel displays. Some are already in production. Most successful are the plasma displays. LCD and ELD (electroluminescent displays) are also being developed.

The Japanese are working on flat-panel displays. Fujitsu, Hitachi, Matsushita, and Seiko Denki have all produced plasma and LCD prototypes. Hycom Corporation, a US subsidiary of Sharp, has developed an ELD for the US Army in portable battlefield terminals. Exxon Corporation, through its Kyles and Electrophoretic Information Display divisions, is also developing flat displays. Kyles is already producing an 8-line LCD panel, and it is rumored that this will soon be expanded.

There is no doubt that by

the end of the decade flat-panel displays will dominate the terminal- and television-display markets. They will offer low power consumption, high daylight visibility, and the shock resistance necessary to make the true portable computer and intelligent terminal a reality.

Can A Computer Have Worms? Several years ago rumor had it that an enterprising computer hacker had gained access to a DOD computer from a remote terminal. Once inside, he entered a program that re-wrote its data into all of the computer's memory, destroying the computer's software and data base. In other words, the program was like the shapeless monster from the classic science-fiction thriller, *The Blob*.

Now, from Xerox's Palo Alto (California) Research Center, comes the "Worm." The Worm is a series of programs that wiggles through a computer network at will, copying itself into inactive systems in the network. The Worm coordinates the operation of all the computer systems in the network. It delegates tasks to unused machines and coordinates the operation of machines in the network. Any complex computations are handled by harnessing multiple processors.

The Worm is still in the experimental stage. As such, it may be the precursor of much more powerful autonomous programs that, like the *Blob*, could take over and control entire networks.

Computer Contest To Aid The Handicapped:

The National Science Foundation, Johns Hopkins University, and Radio Shack have announced a nationwide competition for computer aids for the physically or mentally handicapped. (See "National Search to Aid the Handicapped Through Personal Computers," page 316.) The grand prize is

\$10,000, with runner-up prizes of equipment and money. There are several incentives to encourage participation, including separate entry categories for students, amateurs, and professionals. For more information, contact Personal Computers for the Handicapped, Johns Hopkins University, POB 670, Laurel MD 20810.

Robot Destroys Itself: An experimental robot at the University of Florida went out of control, destroying itself before a graduate student could press its cutoff button. The robot's arm was driven into its supporting body, ripping its shoulder off.

Xerox Introduces First Ethernet System: Xerox has been talking about Ethernet for two years, and I have reported on its progress many times. Finally, it has introduced the first system hardware. Called the Xerox System 8000, it allows users to create, file, print, and distribute documents and data to any and all users on the system. It allows many types of office equipment to be linked into an integrated local system via coaxial cable, and the system can be tied in to other external networks.

Without a doubt, many manufacturers will introduce hardware and software interfaces for the Ethernet system. IBM, Wang, Exxon, AT&T, and M/A-COM are working on their own local network systems.

IBM Opens Retail Stores: Philadelphia and Baltimore are the sites of IBM's two new storefront sales outlets. Several more are planned.

The stores carry typewriters, copiers, word processors, small-business computers, and supplies. IBM is following in the footsteps of

DEC, even though DEC closed two of its retail outlets and has put a halt to its retail expansion.

In a related development, Hewlett-Packard has entered into an agreement to sell its HP-1000L small-business computer through ABC Computers Inc's 350 retail outlets.

Programmer Fined For Copying Software: A Mobile County, Alabama, circuit court has fined a programmer \$50,000 for copying his former employer's software and using it in a competing business he started. A jury decided that a theft had occurred, even though nothing material was taken. The prosecution maintained that the former employee could not have recreated the identical programs in such a short period of time. The defense said he had done so. The programmer plans to appeal.

Personal Computing On Corporate Machines: Federal auditors discovered over 200 government employees at the Sandia Nuclear Weapons Research Center in Albuquerque, New Mexico, using the facility's Control Data Corporation systems for personal use. Sources report that 456 unauthorized files were located, including several hundred games such as *Star Trek* and *Adventure*, as well as poetry, jokes, personal letters, a beer-can collection catalog, and bowling-team rosters. One employee was caught helping local gamblers run a bookmaking operation.

Does Computer Crime Pay? It certainly does... according to Paul Nolan, supervisory special agent in the FBI's White Collar Crime Section. He estimates that non-computer-aided embezzlement averages \$23,000 per occurrence, while computer-aided embezzle-

ment averages \$430,000. By the way, bank robbers average only \$3000.

Volume Production For 64 K-Bit Memories: Within two months, suppliers will start shipping the new 64 K-bit programmable memories to manufacturers and distributors. Prices will be in the \$25 to \$30 range; they'll drop under \$20 in July. Fifteen suppliers have announced devices, although some of the specification sheets are tentative.

It's not yet clear when personal-computer manufacturers will start using the 64 K-bit chips in place of 16 K-bit circuits. Many will stick with the 16 K-bit device until the 64 K units show a significant price drop.

Intel has let it be known that its 64 K-bit memories will use redundant bits for increased yield, the same technique used by IBM and Western Electric in their in-house circuits. Intel uses a "ROM-fuse" technique (an internal programmable read-only-memory) to decode addresses and replace one or more defective cells.

Ada Status Report: It is estimated that the DOD (Department of Defense) uses over 500 general-purpose computer languages and that \$3 billion is spent each year for software development, whose control is a nightmare. That's what led the DOD to subsidize the Ada language project. The department wants Ada to be its only language.

In 1975, a DOD group undertook the task of evaluating twenty-three existing languages to find a standard language. None were found suitable. In mid-1978, the group invited specification recommendations from around the world and sponsored a competition among seventeen organizations. The Green language (later dubbed Ada),

developed by Cii Honeywell Bull (a French subsidiary of Honeywell), emerged the winner. Initial specifications were released in mid-1979 and refined and completed by mid-1980.

A fully functional Ada compiler for the entire language is expected to be available next year. Many private and educational institutions are currently developing Ada compilers, including Carnegie-Mellon University and the University of Karlsruhe, West Germany. Other schools studying various aspects of Ada include Stanford, Harvard, MIT, and the Universities of Texas, Massachusetts, Southern California, Pennsylvania, York (England), Tokyo, London, and the Technical University of Denmark.

The DOD has requested that the Ada compiler run on the DEC (Digital Equipment Corporation) VAX11/780 and produce code for the VAX, the DEC PDP-11, and the military AN/GYK-12.

A number of institutions already have "Little Ada" compilers running, and it's likely that we'll see a "Tiny Ada" implementation for 8080/Z80 systems by year's end.

Ohio Scientific Sold: Ohio Scientific Inc (OSI), one of the early pioneers in personal-computing systems, has been purchased for an undisclosed sum by M/A-COM Inc of Burlington, Massachusetts. M/A-COM manufactures business communications equipment. OSI had sales of \$14.8 million for the 10-month period ending October 1980. Mike Cheiky, OSI founder, will remain as vice-president of development. In all likelihood OSI will move away from personal computing and into the small-business market.

Random Rumors: Apple is rumored to be frantically working on a 16-bit computer system using the

Motorola 68000.... Sony and Canon are about to introduce computers using the Motorola 6809 8-bit micro-processor.... Radio Shack may introduce a disk system for the TRS-80 Color Computer system.... According to insiders, Texas Instruments will soon have a low-cost system and a Viewdata-type terminal. TI is concerned over Radio Shack's growing domination of the consumer communications market.... Experts predict that Radio Shack will have 40,000 people hooked up to data bases through their equipment by year end....

The Apple III appears to be designed to accept one of the new 5 1/4-inch Winchester hard disks in place of its 5 1/4-inch floppy-disk drives.... Informed sources say that Zilog is at last shipping fully functional Z8000s. Reportedly, the first four versions had some op codes that did not execute correctly.... Sony and Matsushita are expected to introduce portable microcomputer products that fit into your briefcase. They are intended for electronic mail and database access applications. (See "The Panasonic and Quasar Hand-Held Computers," by Gregg Williams and Rick Meyer January 1981 BYTE, page 34.) ...Expect a CP/M-like operating system for Atari's 800 personal computer.... Okidata will unveil a 35 cps overlapping dot-matrix printer for under \$1000 at the National Computer Convention in May....

MAIL: I receive a large number of letters each month as a result of this column. If you write to me and wish a response, please include a self-addressed, stamped envelope

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