

## A Sampler

Turbo Pascal  
Megabit RAMs  
UNIX  
PC-UX  
PC-9801F3  
NEC APC III  
IBM JX  
WordStar 2000

BY WILLIAM M. RAIKE

One of these days I'm going to get organized! Instead of working on my often-postponed text-editor project and the backlog of software I want to write, this month I checked out the new IBM JX personal computer from IBM Japan Ltd., went to the Asahi 1984 Personal Computer Show, listened to MicroPro's long-awaited announcement of its new WordStar 2000 package, and attended the International Conference on Fifth Generation Computer Systems in Tokyo. I also had the chance to sneak away for a long weekend to enjoy the colors of the autumn leaves in the mountains of north-central Japan between Toyama, on the Sea of Japan's coast, and Tateyama, at the base of the Japanese Alps. Didn't think about computers for three whole days!

### TURBO TRIBUTE

Before I tell you what's new, I want to join the rest of the throng paying compliments to Borland International. About a month ago I bought Borland's Turbo Pascal (the CP/M-86 version) for my Fujitsu FM-11BS. The language is a well-thought-out, fast, useful programming environment for developing Pascal software; the editor alone is worth the program's price (which is darned cheap).

Regular readers of BYTE Japan will recall that I do most of my own development work in C; as a result, I really haven't had much use for Pascal. But the Digital Research C compiler I've been using generates such large object code—a minimum of 14K bytes or so, but typically 20K bytes or more if you use formatted I/O (input/output) functions like `printf()`, etc.—and offers such scanty (i.e., nonexistent) debugging facilities that Turbo has turned out to be very handy for a couple of quick-and-dirty, one-of-a-kind projects. It became even handier after Borland sent me the English-language manual, although the Japanese-language manual isn't bad, which is rare for Japanese documentation.

I do have one recommendation to anyone who's considering buying Turbo Pascal or who already uses it or another Pascal system—pick up a copy of Brian W. Kernighan and P. J. Plauger's book, *Software Tools in Pascal*, and implement their "standard environment" for Pascal programs. It's not only a useful way to learn and get used to Turbo Pascal, but it also builds up a set of handy programming tools that give you some of the more useful features of a C language environment.

In future columns I'll have more to say about various compilers; one package that sounds appealing to me is a new version of Optimizing C-86, which supplies a fairly extensive library of Japanese-language I/O and string routines, in addition to other development-support features. I hope to be able to evaluate and report on it soon.

### MEGABIT RAMS

In the news this month are two important developments. The first is Toshiba's just-announced 1-megabit dynamic RAM (random-access read/write memory) chip, although the company hasn't yet set dates for delivering samples or for volume production of the chip. The new chip supposedly has an access time of only 70 nanoseconds. It can keep up with some of the newer microprocessors running at speeds in excess of 10 MHz. Power consumption isn't bad either: 270 milliwatts during operation and 15 milliwatts on standby, about the same as the old/new 256K-byte chips just now being shipped to manufacturers. The power consumption per byte of memory will decrease by a factor of almost four. In the alphabet-soup nomenclature of the microelectronics industry, the 1-megabit chip is a ULSI (ultra-large-scale integration) circuit using circuit lines only 1.2 microns wide; it packs the equivalent of over 2 million transistors into an area of less than a tenth of a square inch.

In software news, it looks as if the UNIX

(continued)

William M. Raïke, who holds a Ph.D. in applied mathematics from Northwestern University, has taught operations research and computer science in Austin, Texas, and Monterey, California. He holds a patent on a voice scrambler and was formerly an officer of Cryptext Corporation in the U.S. In 1980, he went to Japan looking for 64K-bit RAMs. He has been there ever since as a technical translator and a software developer.

## The IBM JX is a Japanese product for the Japanese.

operating system has finally gained a significant foothold in Japan. One of the avowed goals of the fifth-generation computer project here is to improve software productivity, which is much lower in Japan than in the U.S. Operating systems have been part of the problem. AT&T's Japanese arm is now adding Japanese-language (kanji character) capability to UNIX in an effort to create a new industry standard. This version of UNIX will be used as the main operating system in the embryonic government-sponsored software-development project that starts next year. The effect is bound to be beneficial, judging from the acceptance UNIX has achieved.

### THE PC-UX CONNECTION

There was more evidence of UNIX's growing popularity at the Asahi Personal Computer Show. Owners of the NEC PC-9800 series of personal computers can now buy the PC-UX, a

"Japanized" version of UNIX System III. It requires at least 384K bytes of memory and a 10-megabyte hard disk; therefore, the most likely buyers will be owners of the PC-9801F3, the latest version of the most popular 16-bit personal computer in Japan. The F3 has one 640K-byte 5¼-inch floppy-disk drive and one 5¼-inch, 10-megabyte hard disk in the main unit (instead of the dual floppy-disk drives of the F2), and comes with 256K bytes of memory. It uses an 8086 microprocessor running at 8 MHz. The price of the PC-UX is steep by Japanese standards: on top of roughly \$3150 for the PC-9801F3, the PC-UX operating system sells for about \$1300, including \$50 for the optional 30,000-word kanji dictionary files.

I've been asked several questions concerning compatibility between the PC-9801F3 (and the F2) and the nearly equivalent NEC APC III sold in the U.S. Apparently, the various NEC divisions on both sides of the Pacific don't communicate very well; I haven't yet found anyone who has been able to describe the machines' differences in detail. But the two are not the same. As far as I can tell, the biggest difference between them is that the ma-

chines now being sold in Japan use 640K-byte floppy-disk drives and the APC III uses 360K-byte drives. The different disk formats may inhibit the transfer of software between the two machines. The Japanese machines supposedly include the ability to read (but not write) disks in the IBM Personal Computer (PC) format. I haven't checked this out, but this ability might provide the means for achieving at least some compatibility between the U.S. and Japanese NEC computers.

Of course, the Japanese machines include extensive Japanese-language features not present in the APC, such as kanji ROM (read-only memory).

### PC ADOLESCENT?

As was inevitable, IBM Japan has introduced a new personal computer for the Japanese market. The new machine, called the JX (see photo 1), is not a copy of either the IBM PC or the PCjr, although it incorporates some of their better features and provides some software compatibility to them. The machine is a Japanese product for the Japanese; its price and capabilities reflect its target market. The JX is available in four versions, ranging from a stripped-down model with no disk drives and 64K bytes of memory for about \$675 to a 256K-byte model with two 720K-byte 3½-inch microfloppy-disk drives for about \$1525. A two-drive version with 128K bytes of memory costs about \$1350. You can add memory up to 512K bytes, and you get a choice of colors: white or dark gray. Not surprisingly, the central processing unit is an 8088 microprocessor running at only 4.77 MHz, the same speed as the IBM PC. A total of 256K bytes of ROM is standard. The ROM contains the BIOS (basic input/output system), BASIC, and kanji-character support for over 1000 characters (in addition to the standard alphanumeric and kana character sets), plus software for converting phonetic alphabets (either kana or roman letter) to the kanji equivalents at the operating-system level. An expansion unit and a 5¼-inch floppy-disk drive are avail-

(continued)

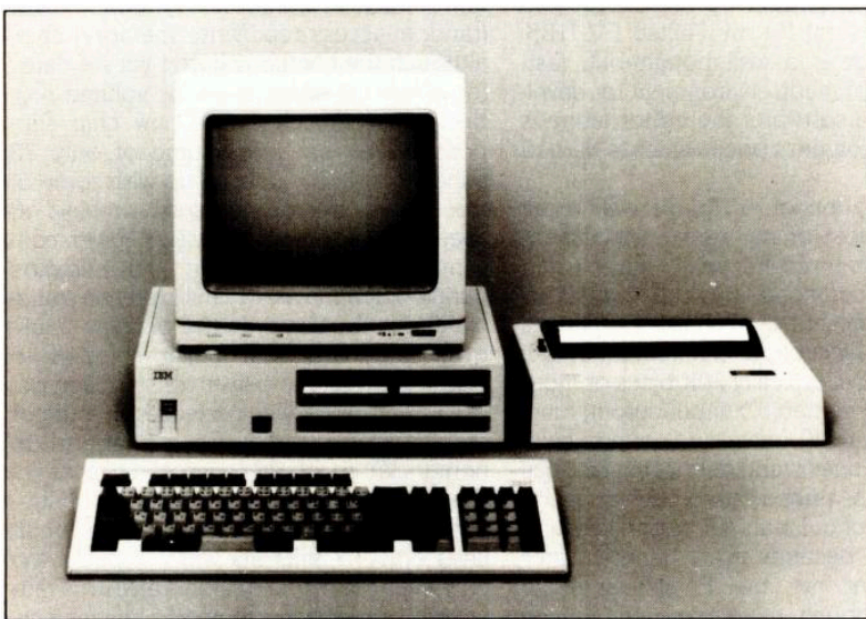


Photo 1: The IBM Japan Ltd.'s JX.

able, although relatively few users are likely to buy them because of the additional cost (approximately \$550). Unfortunately, the RS-232C interface is not standard; you can add one for about \$65.

Like the PCjr, the JX accepts software cartridges. In addition to the microfloppy-disk drives, the front of the system unit has two cartridge slots. If you plug in an English-mode cartridge costing about \$80 you will have a machine that behaves like a cross between a PCjr and a PC. Without the cartridge, but with the optional 5¼-inch disk drive, the JX is compatible with the Japanese-made IBM 5550 workstation. This is unlikely to be much of an advantage because of the 5550's comparatively poor performance (especially its slow Japanese text processing). In English mode, the JX operates under a version of PC-DOS that, according to IBM Japan, is software-compatible with the IBM PC. However, I won't swear to complete compatibility before I thoroughly check out the JX system. Without the English-mode cartridge, the JX operates under something called Nihongo DOS (Japanese-language DOS), which looks like PC-DOS but has full kanji capability.

The keyboard has a nice feel and conforms, sensibly, to the Japanese standard keyboard layout. Like the PCjr, the keyboard has cordless infrared coupling, which works fine unless there's another JX in the room. A keyboard cable is available and probably will be widely used; Japanese homes and work environments are small and often crowded, and many people will want to put the main unit under the table rather than under the monitor.

When you buy a computer in Japan, you buy the monitor separately. Usually there is a choice of several sizes, and most manufacturers sell both monochrome (either white or green) and color displays in both standard and high-resolution models. For example, I now use a high-resolution (400-line, or 640- by 400-dot) black-and-white display. Standard resolution is 200 lines, which means that if you

put 25 lines of text on the screen, each character can be 8 dots high. However, space between lines is desirable, so characters are typically only 7 dots high. A high-resolution 400-line display doubles the resolution, giving really crisp characters; a 200-line display is acceptable, but not ideal, for English-language applications. However, it really isn't adequate for any but the most casual Japanese-language processing tasks.

IBM offers three displays for the JX: 12-inch high-resolution monochrome, 12-inch low-resolution color, and 14-inch high-resolution color. The high-resolution displays offer 720- by 512-dot resolution, instead of the more common 640- by 400-dot resolution. The 14-inch display gives you either high resolution with 2 colors or low resolution with 16 colors—not both. And there's a catch: to take advantage of the high-resolution capability, you have to buy an "expanded display mode" cartridge that costs about \$150.

Curiously, the expansion slots (there are only two) accept PCjr cards but not the hundreds of standard IBM PC boards available in the U.S. As a result, I suspect that the JX has neither defined nor will it dominate the open-ended and expanding Japanese market like the IBM PC did in the U.S. Rather, the inclusion of joystick ports and an eight-octave sound generator/synthesizer suggests that IBM Japan is hedging its bets by pursuing a share of the easily saturated video-game sector.

Unlike the IBM PC at the time of its introduction in the U.S., the JX faces several strong competitors (NEC, Fujitsu, Sharp, and others) who are offering technologically more advanced products at competitive prices through excellent distribution networks. My prediction is that the JX will enjoy, at best, a modest and short-lived success—it's too little, too late.

#### **WORDSTAR 2000 IN JAPAN**

MicroPro recently released WordStar 2000, its candidate for the ultimate word-processing program. Kirk Hurford, managing director of MicroPro

---

## *I predict the JX will enjoy a modest and short-lived success.*

---

Japan, met several dozen Americans who make up the local IBM PC users group to explain the features of the new program (which isn't yet available in Japan). The number of questions from the audience showed that interest in the program is strong, although the audience was generally unsympathetic to Hurford's account of the troubled development of the new product as well as to his claim that the decision to copy-protect the new product was forced on the company as a matter of survival. For the moment, the key question is whether demand justifies another high-priced word processor. MicroPro obviously thinks it does.

MicroPro also claims to be working on a Japanese-language version of WordStar 2000. It will be interesting to compare it with some of the home-grown word processors. The company won't say anything about the Japanese price for either the English or the Japanese version of WordStar 2000; the current (English-only) version of WordStar sells in Japan for \$500. This price is much higher than that of many popular Japanese-language word processors. If MicroPro maintains the same pricing policy for the Japanese-language WordStar 2000, the program may have trouble competing here. Also, since the new program will initially run only on the IBM PC and compatibles, which don't offer Japanese-language capability and are not plentiful in Japan, it won't have any future here until a generic MS-DOS or CP/M-86 version is developed so that more people can use it.

#### **COMING UP**

Next month I'll describe Japan's progress in its efforts to develop a fifth-generation computer, and I'll look at some of the other national and international efforts in that direction. ■