

My First Computer Is An IBM

By Lloyd R Borrett



"BUT WHY do you want a computer?" That's the first question I'm asked by people who see my IBM-PC. You see, I'm employed as a systems programmer, working on large 16- and 32-bit Data General minicomputers, and my workmates can't understand why I want my own computer. After all, I have access to time on computers ranging in size from Data General minicomputers to a large Control Data mainframe.

As for my friends, they find it hard to believe that, after working all week surrounded by computers, I can still bear to be within sight of one outside office hours.

The simplest answer is that access to corporate equipment isn't the same as having your own computer. But as a reader of *Your Computer*, you will already know this plus all the other reasons.

In fact, I hope to use my IBM-PC mostly for work. There are a number of tasks which are best carried out on a small computer, and there are also many programs that are not readily available on larger computers — for example, VisiCalc.

When the majority of people I know think about personal computers, they think about Tandys and Apples. However, these are 8-bit computers; my experience with minicomputers told me long ago that I would require at least a 16-bit personal computer.

I've watched carefully as announcements about 16-bit Z8000, M68000, 8086

and 8088-based computers were made. Clearly, it seemed two types of systems were being produced.

Those based on the Z8000 and M68000 chips are mostly multi-user, multi-tasking systems, similar to the low end of the current offerings from the established minicomputer manufacturers. As a result, they have more 'sophisticated' (read expensive) hardware and peripherals surrounding them.

The 8086 and 8088-based computers seem to be intended for use as single-user, multi-tasking systems. They are not as complex, and are priced within reach of more users.

The IBM-PC is based on the 8088 chip,

and has all the features I require at a price I can afford. Yes, I know the Sirius, Panasonic JB3000 and so on are also based on the 8088 chip, but to me the IBM-PC has a lot more going for it.

Mass Production!

IBM is currently producing 3000 personal computers a day, and there is already a complete range of hardware products available from other sources to extend the capabilities of the IBM-PC. While some of these products can be used on the other 8088-based computers, most can't.

To my knowledge, there is no 8088-based computer that is totally software-compatible with the IBM-PC. The large software houses in the United States have geared up to produce software for the IBM-PC, and each day more software is becoming available. Little of this equipment appears likely to be converted for use on computers such as the Sirius and JB3000.

IBM has announced a software package that allows the IBM-PC to communicate with a host computer supporting IBM's Systems Network Architecture (SNA) and emulate the IBM 3270 and 3101 terminals. A large number of the IBM-PCs sold in the United States have been bought by users of IBM mainframes, and even more will be paying careful consideration to the IBM-PC now that it can



communicate with their existing computers.

While other microcomputer manufacturers find it hard to sell their products to 'established' computer users, IBM doesn't. This will inevitably strengthen IBM's domination of the 16-bit personal computer market.

Since the Australian release of the IBM-PC is not expected for some time in 1983, there are at present no 'official' suppliers in Australia. However, there are at least four places at which a system can be purchased:

Cybernetics Research, 120 Lawson Street, Redfern, NSW 2016; phone (02) 698 8286.

Customized Technology, PO Box 461, Ashfield, NSW 2131; phone (02) 799 6373.

CompuThink Australia, 66 Albert Road, South Melbourne, Vic 3205; phone (03) 699 8555.

CPU Computer Centre, 279 Hunction Road, Clayfield, Qld 4011; phone (07) 57 8023.

When I first saw the IBM-PC, my immediate impression was that at last someone had got it right. Nearly all the personal computers I'd seen had been marred by awful keyboards, flickering screens, loudly clunking disk drives, poor documentation and/or brittle plastic cases. Not so the IBM-PC: its keyboard is the best I've used on any terminal, the disk drives are quiet, the system unit is housed in a solid case, and the screen doesn't flicker.

My system has 64 kilobytes of memory, the monochrome display/printer adapter, a disk adapter, two double-sided 13cm disks (total: 640 kilobytes), the IBM monochrome display, an Epson MX-100III printer

The Neat Touches

The system came packed in four boxes, each of which has an inventory checklist to ensure you know exactly what to find

inside plus a diagram showing how to unpack (and re-pack) the contents. These little touches are indicative of the planning that has gone into the product.

Three excellent manuals are supplied with the system: a guide to operations, a BASIC manual, and a DOS manual. By following the instructions, you should have no difficulty putting the system together, connecting the parts and getting it started. There is a section which shows how to use the supplied diagnostics cassette (or diskette) to track down any problems, and even a section on how to prepare the system to be moved and set up again.

IBM is using only 16K memory chips, which imposes a limit of 64K on the system board, and in each of IBM's add-on memory boards. This is extremely wasteful of space. Fortunately, there are a number of suppliers who can provide 256, 512 or even 1024K memory on single-board, by using 64K chips.

One of my main worries is how long it will be before IBM announces the availability of hard disks. I can already buy hard disks with capacities ranging from 5 to 20 megabytes, but these may not be compatible with products that IBM plans to announce. While many people are prepared to put up with non-standard patches in their systems in order to make use of the newest, greatest version of peripheral available, I'm not. Well, not yet.

The printer that IBM uses in the United States is actually an Epson MX-80. Given that I wanted to use 38cm paper and the bit image mode, the Epson MX-100 III seemed the logical choice. I'm surprised IBM doesn't use the Epson MX-80 F/T with the Grafrax option; for very little extra cost, this printer provides the friction-feed capability as well as tractor feed, the ability to use alternate type fonts, and the printing of screen images.

A common complaint reported in American magazines is that the IBM-PC

has too few expansion slots. There are five available, but even with my small configuration I'm left with only three. While the majority of users will never need more than five slots, IBM doesn't have an option for those who will require more. Fortunately, at least one other manufacturer has filled this void, by marketing an expansion chassis that features additional slots, and styling it to complement the IBM-PC.

I intend to add a colour/graphics adapter in order to provide access to the high-resolution graphics capability of the IBM-PC, and to extend the memory capacity to 512K, using half of this as a 'memory disk drive'. Two RS-232C ports will allow me to communicate with other computers, and a clock/calendar facility will ensure the system always knows the correct time.

It Gets Crowded...

If IBM-supplied boards were used, I'd require a total of 11 boards, and still not have the clock/calendar. Thankfully, there are other suppliers who are more innovative, and I can obtain all these functions on just two boards.

It's easy to find advertisements for all manner of multi-function boards for the IBM-PC in American magazines, but detailed product information is harder to come by. However, there are at least four American magazines devoted exclusively to the IBM-PC. I can recommend two: "PC, The Independent Guide to IBM Personal Computers" and "Personal Computer Age, the Definitive Journal for the IBM Personal Computer User".

There are a number of operating systems available for the IBM-PC. IBM's DOS (read MS-DOS or SB-86) is the operating system in use on 95 percent of the systems sold. The UCSD P-system and CP/M-86 are the other two front runners.

For those who require access to existing CP/M-80, there are already add-on

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cards available which include a Z80B processor and 64K memory. These cards enable the IBM to run standard CP/M-80 programs.

At present, it seems hard to believe anything other than IBM DOS will dominate the market, but this may change once MS-DOS Rev 2.0 and Concurrent CP/M-86 become readily available.

Concurrent CP/M-86 allows more than one program to be running at the same time. For instance, you could be printing the output of a VisiCalc model while working on another, break to look up a phone number in an on-line telephone directory, and then return to where you left off in the VisiCalc model.

MS-DOS 2.0 will allow printer spooling, but concentrates mostly on improving the user interface to the system. Thus, to some extent the goals of these two operating systems appear to be different. It will be interesting to see which one wins out.

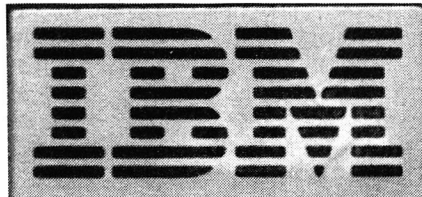
There are very few personal computers which don't provide support for a version of BASIC. The IBM-PC is no exception.

Every system comes with a 40K extended Microsoft BASIC in ROM (read only memory) which IBM is calling 'Cassette BASIC'. As well as the standard features associated with Microsoft BASIC, Cassette BASIC gives you the ability to plot points and draw lines in both the IBM medium- and high-resolution modes, use light pens, joysticks and make sounds through the internal speaker.

The two other levels of BASIC are supplied when DOS is purchased.

Disk BASIC requires at least 32K memory and one floppy-disk drive. It adds a large number of disk input and output options, the ability to store and redraw rectangular areas of graphic images, software support for two extra printers, communications support using a standard RS-232C port, and access to a date and time-of-day clock. Disk BASIC is called by typing 'BASIC' when the DOS prompt is displayed.

Advanced BASIC, which requires at least 48K memory and one floppy drive, adds event-trapping, an advanced music-playing command and some advanced graphics commands. It is called by typing 'BASICA' from the DOS prompt.



Surprising Power

While BASIC was the first programming language I learned, it has been quite a number of years since I'd made extensive use of it. At first, I was surprised by the power and flexibility of the language implemented. None of the versions of BASIC I'd used on a minicomputer had such an extensive range of statements and functions.

All three levels of BASIC force you to separate keywords with a space; this caused some initial problems, as I was used to a BASIC which inserted spaces for me. The versions of BASIC which allow these spaces to be left out entirely encourage the production of unreadable code.

BASIC was originally intended as a teaching language and, to assist the learner, most of the original implementations on minicomputers would check the syntax of each statement as it was input. It's a pity this feature hasn't made it to the IBM-PC, as it has obvious advantages, especially if the user is new to the language.

On IBM-PCs running the DOS operating system, there is support for Fortran 77, Pascal, Forth, COBOL, C, Compiled BASIC and Macro Assembler. At least 128K memory is required if these languages are to be used for program development.

The November 1982 issue of *Creative Computing* carried a full report on these languages, and the figures backed up my decision carry out program development in C. Unfortunately, I don't have a C compiler or the extra memory required, so for the time being I'm making do with BASIC.

After studying the BASIC manual, and running the sample programs, I finally sat down and attempted to program my IBM-PC. I decided to start by implementing the indexed telephone directory program that Les Bell developed for the 'BASIC for

Birdwatchers' tutorial in the July edition of *Your Computer*.

Although the dialect of BASIC used by both Les and the IBM were new to me, I didn't have too much trouble in getting the program up and running. Since then, many other programs have followed.

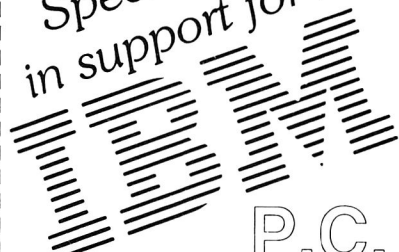
Thankfully, the error messages displayed when things go wrong are very comprehensive, and the BASIC Program Editor, common to all the versions of IBM BASIC, allows for changes to be made much quicker and easier than is possible on some computers.

While the IBM-PC doesn't have any earth-shattering innovations, it also lacks the design problems and flaws that seem to prevail in many other microcomputers. There is every reason to believe that the IBM-PC will become one of the most popular and best-supported microcomputers available. □



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