OPERATING PRINCIPLES

The role of the operating system, or OS, is to serve as an interface between the programs written for a machine and its hardware. We begin a series of articles in which we examine the operating systems of several popular home computers — the BBC Micro, Sinclair Spectrum, Commodore 64 and others.

An operating system is written in the machine language used by the particular microprocessor incorporated in the computer. Thus, the BBC operating system is written in 6502 machine code and the Spectrum OS in Z80 code.

An OS consists of a range of routines that cover a variety of machine functions. For example, it will contain a routine that scans the keyboard for keypresses, something that the user will not need to bother about when writing software for the machine. In fact, in a good operating system, the user should be able to access any feature of the machine's hardware without needing to know the exact position in the computer's memory or input/output map of the routine that controls the piece of hardware in question. This means that hardware alterations to the machine are more easily made, and, as long as the OS has been altered to suit the new hardware, any programs written on older versions of a machine will run just as well on new versions of it.

The BBC Micro's operating system, for example, is very well-planned. A program written in BBC BASIC on a standard machine will run perfectly well on a BBC Micro equipped with a second processor — even though this is a radical hardware alteration to the machine. The BBC OS has gone through various stages of development and refinement to arrive at its current state of sophistication. Version 0.1, the first to appear, has now largely disappeared from circulation. It was made up of four EPROM chips, but lacked versatility and, in particular, could not support disk drives. Version 1.0, however, was able to support disks. It consisted of two eight-Kbyte chips on a small circuit board that fitted inside the machine. Version 1.2, the current version, is found in most BBC Micros in use today. A variant of this version — 1.2(US) — is designed for machines on the American market.

You can find out what version your machine contains by typing the command *FX0 and then pressing Return. The version number of the OS will then be printed on the screen. The command *HELP will also return the OS version number, as well as listing to the screen the names of the ROM chips in the machine.
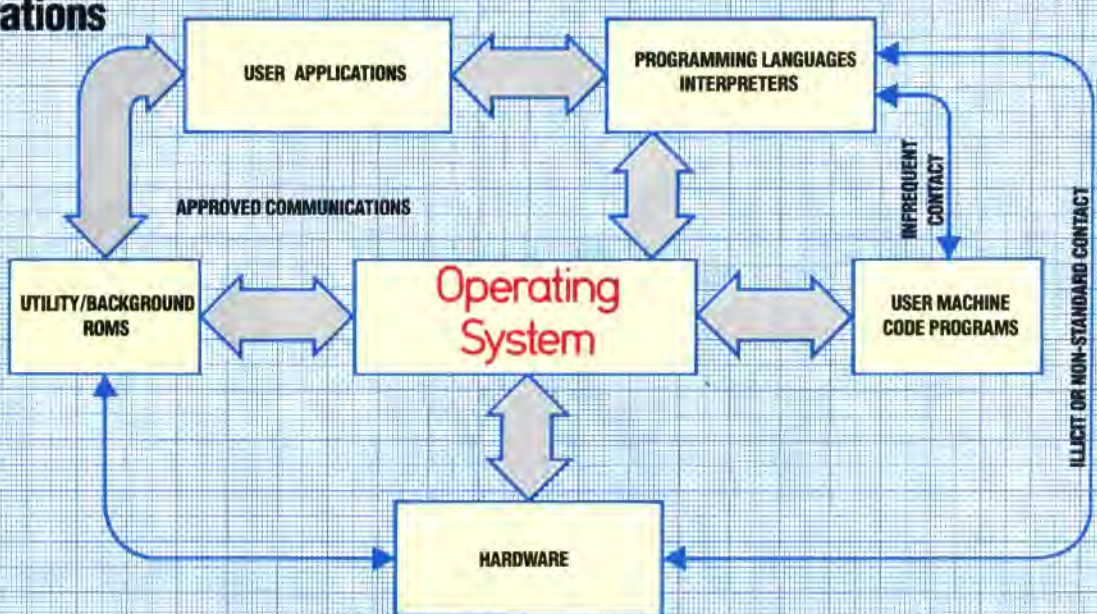
WHAT THE BBC OS DOES
The tasks the BBC operating system performs can be grouped into four main categories.

1. Input Routines: These routines accept information into the computer from what is called

Theatre Of Operations

The best operating system is the one you never see. To the user it should be a completely transparent interface between the application and the hardware, controlling the disk drives, spooling the output, driving the screen — making the system work. To the software and the hardware the OS should be a constant source of properly timed, correctly formatted input, and an ever-vigilant receptor of output in all forms. In return, system engineers expect that users and other engineers will avoid or discourage any system communications not routed through the OS

USER APPLICATIONS

PROGRAMMING LANGUAGES INTERPRETERS

APPROVED COMMUNICATIONS

UTILITY/BACKGROUND ROMS

Operating System

USER MACHINE CODE PROGRAMS

INFREQUENT CONTACT

ILLICIT OR NON-STANDARD CONTACT

HARDWARE

LIZ DIXON