

Machine Tools

These commands are representative of the facilities that any good extension to BASIC will include



DISK

Various DISK utility commands will be offered for formatting new disks, copying and deleting individual files, and making complete back-up copies of a whole disk



DRAW

In addition to commands for drawing straight lines in high resolution graphics, there may well be a facility to DRAW from point to point, which is an easier way to build up images



PAINT

PAINT provides a means of filling up a defined area on the screen with any chosen colour. On some machines the cursor is positioned in the middle of the shape, and the computer then fills up the area by painting outwards from the centre until it encounters a solid line



CIRCLE

The purpose of graphics commands such as CIRCLE is obvious, but some will allow part circles (arcs) and ellipses to be drawn



MUSIC

Though the sound functions vary greatly from machine to machine, a MUSIC command usually signifies the ability to play a sequence of notes, which have been previously defined in a string



DIR

The directory on a disk keeps an up-to-date list of the names, types and sizes of all files. A DIR command will usually let you view the directory on screen, without losing the program currently in RAM



JOY

Accessing the joysticks on many computers is a difficult task involving use of PEEK and POKE. JOYstick commands will place the position of the joystick directly into BASIC variables

(1) A comprehensive set of programming aids, including functions that give extra control over program listing, de-bugging and security aids (protection against unauthorised copying of your programs).

(2) Additional string handling and text manipulation commands.

(3) Extra arithmetic operators and numeric conversion commands.

(4) Simplified disk handling commands.

(5) High resolution graphics commands that allow text to be mixed with point plotting and shape drawing. This includes a facility to colour in outlines.

(6) Low resolution graphics and screen handling commands that can duplicate assigned graphic areas and manipulate the screen area with ease. This also enables the contents of any screen to be saved on disk, tape or printer.

(7) Easy to use sprite creator and editor.

(8) Structured programming using procedure commands such as PROC, CALL and EXEC; plus loop and condition testing routines, like REPEAT... UNTIL, LOOP...EXIT, IF...END LOOP and IF...THEN...ELSE, which generally eliminate the need for GOTOs and GOSUBs.

(9) Sound creation routines that allow the full range of the 64's sound capabilities to be accessed using simple sound shaping and playing commands.

(10) Simple light pen, joystick and paddle commands.

It is very unusual for an extension to include such a complete range of additional routines. Most packages supply utilities and commands for one specific programming area. For example, the Super Expander cartridge from Commodore for the Vic-20 provides a simple range of high resolution graphics and music commands only. The most popular extensions are those that include aids in program construction. These generally provide single key entry commands and various automatic routines that simplify line numbering, editing and de-bugging in the direct mode.

It is commonplace for utilities and extensions to allow the built-in capabilities of a computer to be accessed more easily. Routines that add significantly to a home computer's capabilities are harder to find, but ingenious packages are becoming available. For example, the many advantages of sprite graphics for fast action arcade-type games have inspired some enterprising companies to write sprite-creating utilities for computers that don't have this feature.

The BASIC utilities, tool kits and extensions we have outlined make up a small fraction of the improvements and aids available. Although the present tendency among manufacturers is towards providing comprehensive and advanced versions of BASIC, there will always be a need for software aids to help make programming a creative pleasure rather than a heavy chore.