Spirited Graphics

Large-capacity memories make it possible for home computers to produce colourful and fast-moving images

One of the most striking features of home computers is their ability to produce graphics and moving displays, commonly known as animation. On most microcomputers, the user can plot individual points, draw lines and circles, and change the background and foreground colours.

For fast-action games and simulations, we need to be able to simulate movement. The easiest way of doing this is to produce a series of still pictures, one after the other. This must be done rapidly enough to give the illusion of movement. Television pictures are produced using a similar method.

Speed Of Action

Another way of creating the illusion of movement is to print a character, erase it, and print it again in a position that is slightly displaced from the original. To achieve a smooth flow of movement, the distance moved at each step should be minimal. Similarly, the time taken to produce the shape and to blank it out should be as short as possible.

Using BASIC to produce animation results in slow movement. One way to overcome this is to resort to Assembly language, an approach that requires a lot of practice, care and attention if you want flicker-free displays. Added to this, we have the extra problem of controlling the individual characters, as more and more are added to the screen scene.

Several computers, notably the Commodore 64, Sord M5, Texas Instruments TI99/4A, and the Atari range, overcome this problem by offering animation that utilises the same techniques that the coin-operated arcade machines employ. The technique is known as 'sprite graphics'.

Sprites are 'objects', or shapes, that can be moved independently of each other about the screen. This is done simply by changing the contents of a couple of memory locations, which specify the X and Y coordinates (the left-right and up-down positions). Typically, X can range from 0 to 255, and Y from 0 to 191. Some systems even permit you to specify the speed and direction of movement of each sprite, and the computer does the rest.

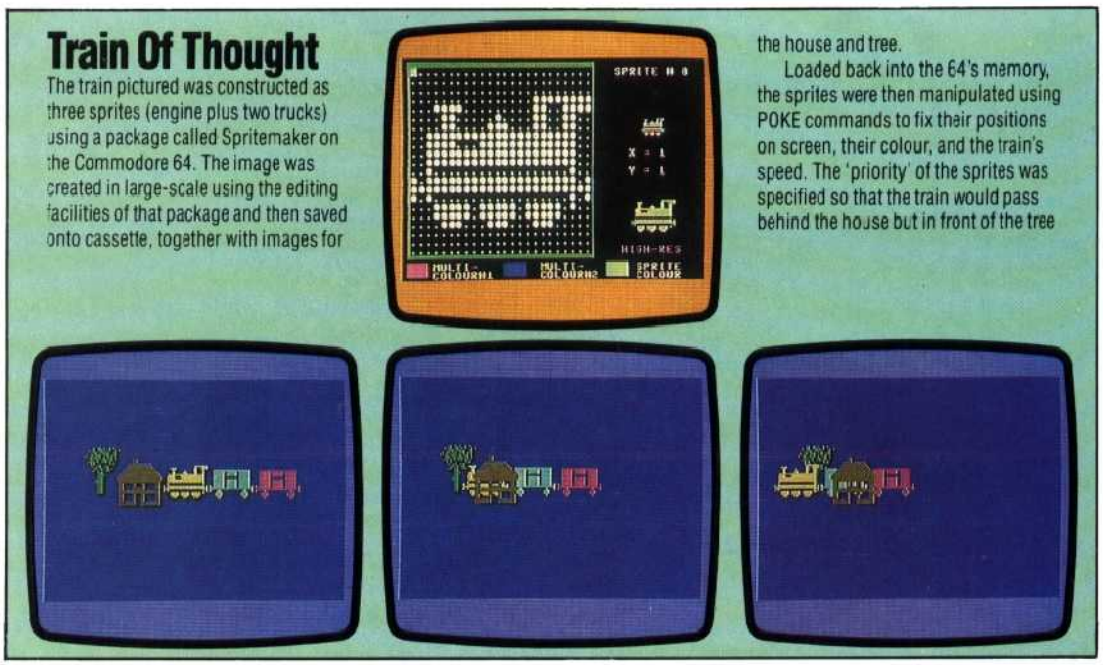
Sprites are normally implemented using special chips or hardware circuitry within the computer. It is possible to buy software for other computers to achieve a similar result, but this is generally less satisfactory.

The speed at which sprites can move varies,

Train Of Thought

The train pictured was constructed as three sprites (engine plus two trucks) using a package called Spritemaker on the Commodore 64. The image was created in large-scale using the editing facilities of that package and then saved onto cassette, together with images for the house and tree.

Loaded back into the 64's memory, the sprites were then manipulated using POKE commands to fix their positions on screen, their colour, and the train's speed. The 'priority' of the sprites was specified so that the train would pass behind the house but in front of the tree



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