Mice, the computer guide dogs

The mouse is an extension of the finger in pointing things out to the computer, says S.Ananthanarayanan.

The mouse was an important step in making the computer closer to accepting and obeying 'human' instructions.

The early years

The early computers were the classic 'computing engines' with little pretensions to being 'friendly' or 'human-like'. With the first computers, communications was only with punched cards. The user input data to the computer by inserting cards with holes at certain places and the computer returned its output by punching holes in cards, in turn. The meaning of the holes then had to be read by using a separate machine.

Typewriter console

It was a leap forward when the punched card was eliminated and one could type directly into the computer. This was with the help of a special typewriter, which directly translated the input into the 'punched card' language of the computer. The computer also responded by working the typewriter, which printed the output in intelligible symbols. In those early times, when the typewriter keys and the carriage return moved apparently by themselves, one felt in the presence of a living thing!

The Video display

The typewriter console soon evolved to the regular computer keyboard and video screen, where text could be typed in and read and where the output could be seen. Particular parts of the matter on the screen could be identified by moving a 'cursor', with the help of the keys. Inserting a letter where the cursor stood, editing and marking 'blocks' of text became possible. Some of us may remember the days of 'Wordstar', where all communication with the computer was via the keyboard. Even modern word-processing programs retain the old commands,

This editing capability of the keyboard was more than only input of characters. When the arrow keys are worked to move the cursor, what we are doing is to add or subtract to the position, up or down or right or left, of the part of the screen that the computer should address. The part of the screen identified, in turn, refers to a portion in the computer's memory. Using the arrow keys thus becomes a way of interacting with the word-processor program that is running on the computer.
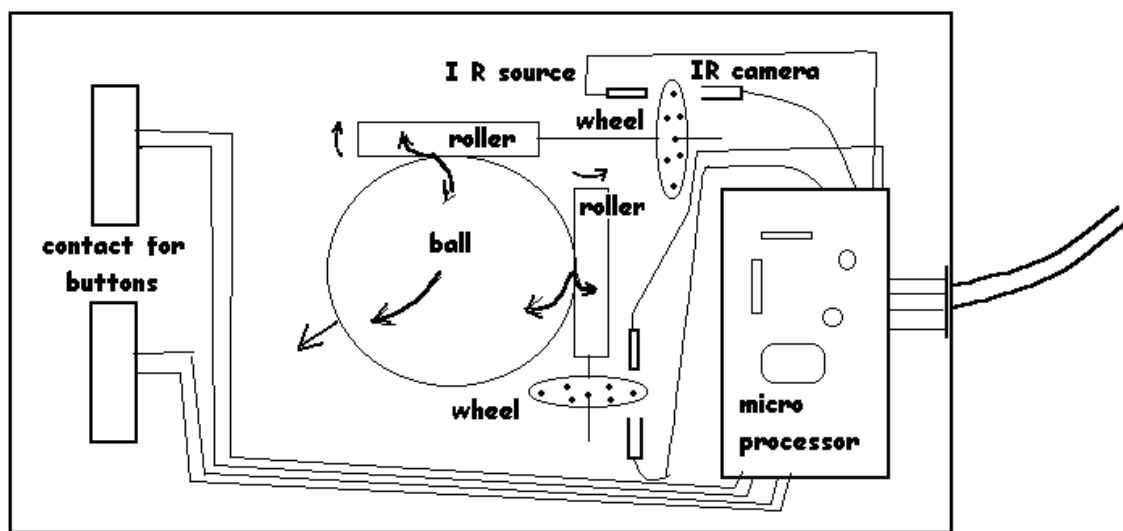
The need for a pointer

The display on the screen, more so when 'graphics' could be displayed, made it tempting to move the cursor without the help of keys. An early method was with a contact moved over a

plate divided into squares. The position of contact on the plate was conveyed to the computer, to indicate the position on the screen.

The modern mouse was an improvement, with the device conveying 'change' data to the operating system, rather than an actual position having to be pinpointed.

The mouse

The main component is a rubber ball, which rolls when the mouse is moved on a smooth surface. There are two flat cylindrical rollers, at right angles, in contact with the ball. The ball movements are then translated into rolling of the cylinders.

The rolling cylinders, in turn, spin a perforated wheel, through the path of a beam of infra red light. When the wheels spin faster or longer, the beam of light is split into pulses that reflect the sense of the rolling of the cylinder. There is an infrared sensor on the other side of the wheel and this converts the pulses into information about how the mouse was moved.

This information goes to the computer, to move the cursor left, right, up, down, or even to say whether the mouse was 'clicked'.

When a mouse is used to create curly lines on the screen, even drawings, it is a high degree of abstraction that is converting one kind of input into a completely different kind of output!