



ارائه شده توسط:

سایت ترجمه فا

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از نشریات معتبر

## Magnetic tape

magnetic tape drives for computers are similar to the tape drives in a stereo system. On computers they can be the open reel type typically used on mainframes or the cassette type typically used on microcomputers and workstations. In the stereo the tape stores music but in a computer the tape stores information as bits the major advantage of tapes compared to disks is cost. Tapes are much less expensive per byte than disks. The disadvantage of tapes is that they are accessed sequentially and therefore they are slower than disks. If you need some information near the beginning of a tape and the read/write head happens to be near the end.

You must rewind the tape sequentially passing over all the information in between the access method for magnetic tape versus disks is analogous to stereo cassettes versus audio compact discs. You can change selection on a compact disc much faster than on a cassette because of the access method. Because of their slow access . tapes are usually used for backup or archival storage . typical tape backup capacities are 10 to 100 G byte.

The mouse which is moved on a desk is a popular hand-held input device. As the mouse is moved on the desk it gives a small arrow on the computer screen showing the identical motion. You can move the mouse to point the arrow at command selections or objects on the screen .then make the selection by pressing a button on a mouse . a mouse is specially valuable for graphic input because the

arrow can be used to draw figures on the screen. Most of the figures in this book were produced using a mouse.

The bar code reader is another efficient input device . perhaps the most common bar code is the universal product code(UPC) on grocery store items (figure 1,13) each digit in the UPC symbol has seven vertical data elements. Each data element can be light or dark photocells inside the bar code reader detect the light and dark region and convert them to bits. Light elements are read as zeros and dark elements as ones. Figure 1,14 shows the correspondence between light and dark regions and bits for two digits from the right half of the UPC symbol in figure 1,13.

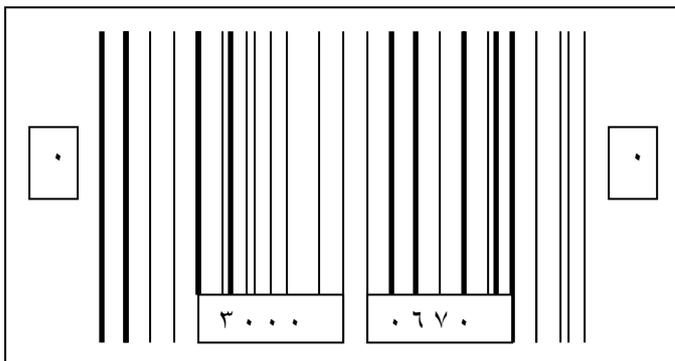


Figure 1,13

The UPC symbol from a package of cereal. The left digits identify the manufacturer. The right five digits its identify the product .The Quaker company code is 3 . . . . , and the 1 . . 7 Natural cereal code is . 6 7 . .

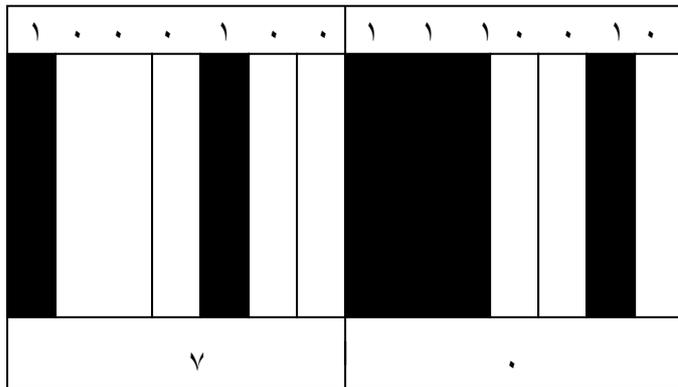


Figure 1.14

Part of the UPC symbol from the Quaker cereal box. Visually, groups of adjacent dark regions look like thick bars

Table 1.3 shows the UPC correspondence between decimal and binary values. The code is different for the characters on the left half and those on the right half. A dark bar is composed of from one to four adjacent dark region. Each decimal digit has two dark bars and two light spaces. The characters on the left half begin with a light space and end with a dark bar. And the characters on the right half begin with a light space. Each left characters has an odd number of ones and each right characters has an even number of ones.

Decimal value	Left chars.	Right chars.
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۰	•••۱۱۰۱	۱۱۱۰۰۱۰
۱	••۱۱۰۰۱	۱۱۰۰۱۱۰
۲	••۱۰۰۱۱	۱۱۰۱۱۰۰
۳	•۱۱۱۱۰۱	۱۰۰۰۰۱۰
۴	•۱۰۰۰۱۱	۱۰۱۱۱۰۰
۵	•۱۱۰۰۰۱	۱۰۰۱۱۱۰
۶	•۱۰۱۱۱۱	۱۰۱۰۰۰۰
۷	•۱۱۱۰۱۱	۱۰۰۰۱۰۰
۸	•۱۱۰۱۱۱	۱۰۰۱۰۰۰
۹	•••۱۰۱۱	۱۱۱۰۱۰۰

Table ۱,۳

Bit patterns for the decimal digits in the UPC symbol.

### Output Devices

Output devices transmit information from the memory of the computer to the outside world. Figure ۱,۱۰ shows the path that the data takes from main memory to an output device. On output data flows on the same bus used by the input devices.

- Disk drives
- Magnetic tape drives
- Screens
- Printers

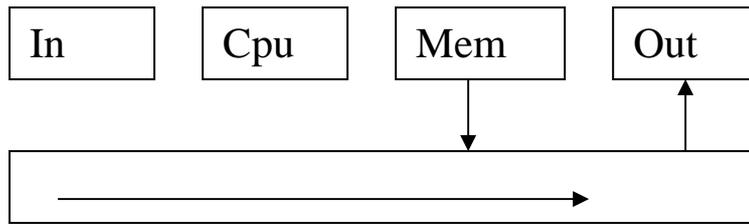


Figure 1.10

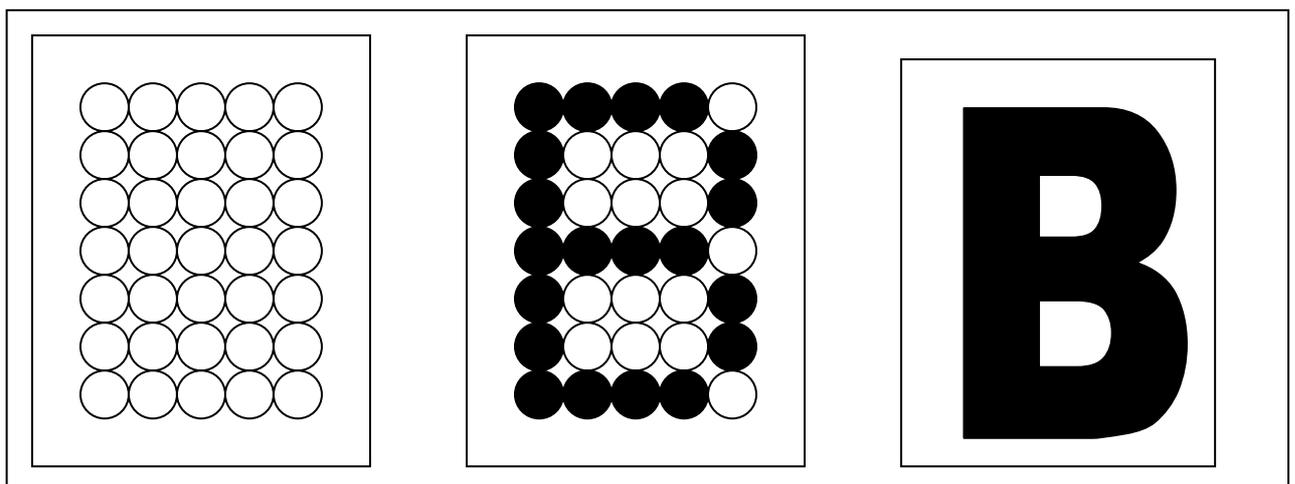
The data path for output. Information flows from main memory on the bus to the output device.

Notice that disk and tape drives can serve as both input and output devices. That is similar to a stereo cassette. Which can both record and play back music. When disks and tapes are used for input the process is called reading .when they are used for output the process is called writing.

The screen is a visual display similar to the picture screen of a television set. It can be either a cathode ray tube(CRT) or a flat panel. The picture tube in a television set is a CRT . flat panel screens are found mostly in portable microcomputers. A monitor is a CRT packaged separately from the keyboard and the CPU. A terminal is a monitor together with a key board. It is not a self contained. General-purpose microcomputer .although it may resemble one. Terminals communicate with work- station and mainframes and are useless without them. Microcomputers on the other hand are self-contained and can process information without being connected to larger machines.

microcomputers can also behave like terminals and communicate with other machines. In the early days of computing a standard terminal screen held 24 lines of text with a maximum of 80 characters in a line. Since the advent of graphical user interfaces screen size is no longer specified as a fixed number of text because windows and dialog boxes can be of various sizes. However the terminal emulator programs on microcomputers commonly conform to the old standard of 24 lines and 80 characters in the window that represents the terminal.

Individual characters on a screen are actually composed of a rectangular grid of dots. Each dot is called a pixel which stands for picture element. In a black-and-white screen a pixel can be either bright or dark. The pattern of bright pixels in the rectangular grid forms an image of the character. Figure 1.16 shows a grid of pixels with



(a)  $A \times V$  pixel grid. (b) An image of a 'B' in (c) an image of

a 5\*7 pixel grid. a 'B' in a 9\*13  
pixel grid

Figure 1.16

Picture elements (pixels) on a rectangular grid. the pixels in(b) have the same diameter as the ones in(c).

Five columns and seven rows that form an image of the character B. higher-quality screens have more pixels in the rectangular grid to form a smoother image of the character. See how much clearer the image of the B is in the field of 9\*13 pixels.

Printers range widely in performance and cost. Ink jet printers operate on the same basis as the pixels in a screen. As the print head moves across the paper small jets of ink are sprayed onto the paper at just the right moment to form the desired image. A computer program controls the timing of the release of the ink. As with the screen the greater the number of dots for an individual character the higher the quality of print. Many printers have several modes of operation ranging from lower quality but faster to higher quality but slower. Typical speeds range from 50 to 300 character per second.

The page printer is a high-quality output device. Most page printers use a laser beam to form the image on the page. page printers also use pixels for their imaging systems but the pixels are spaced closely enough to be unnoticeable. a typical desktop laser printer has 600 pixels per inch which is 600\*600=360,000 pixels per square inch.

Commercial typesetting machines have 1,200 to 2,400 pixels per inch.



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