**COMPUTER INPUT DEVICES**

Engineers have been especially creative in designing new ways to get information into computers. Some input methods are highly specialized and unusual, while common devices often undergo redesign to improve their capabilities or their ergonomics, the ways in which they affect people physically. Some common input devices include keyboards, mice, trackballs, and touch pads.

**Keyboard**

A keyboard can be an external device that is attached by means of a cable, or it can be attached to the CPU case itself as it is for laptop computers. Most keyboards today are QWERTY keyboards, which take their name from the first six keys at the left of the first row of letters. An alternative, the DVORAK keyboard, places the most commonly used keys close to the user’s fingertips and speeds typing.

Many keyboards have a separate numeric keypad, like that of a calculator, containing numbers and mathematical operators. All keyboards have modifier keys that enable the user to change the symbol or character that is entered when a given key is pressed. The Shift key, for example, makes a letter uppercase. Keyboards also have special cursor keys that enable the user to change the position on the screen of the cursor, a symbol that appears on the monitor to show where in a document the next change will appear. Most keyboards also have function keys, labeled F1, F2, F3, and so on. These keys allow the user to issue commands by pressing a single key.

**Mouse**

Graphical operating systems contain many elements that a user can choose by pointing at them. Such elements include buttons, tools, pull-down menus, and icons for file folders, programs, and document files. Often pointing to and clicking on one of these elements is more convenient than using the cursor or arrow keys on the keyboard. This pointing and clicking can be done by using a mouse. The mouse is the second most common input device, after the keyboard. A mouse operates by moving the cursor on the computer screen to correspond to movements made with the mouse.

**Trackball**

A trackball is like an upside-down mouse. A mouse is moved over a pad. A trackball remains stationary, and the user moves the ball with his or her fingers or palm. One or more buttons for choosing options are incorporated into the design of the trackball.

**Touch Pad and Touch Screen**

A touch pad feels less mechanical than a mouse or trackball because the user simply moves a finger on the pad. A touch pad has two parts. One part acts as a button, while the other emulates a mouse pad on which the user traces the location of the cursor with a finger. People with carpal tunnel syndrome find touch pads and trackballs easier to use than mice. Many portable computers have built-in trackballs or touch pads as input devices.

A touch screen allows the user to choose options by pressing the appropriate part of the screen. Touch screens are widely used in bank ATMs and in kiosks at retail outlets and in tourist areas.