

# Fundamentals of Computers and Computing

## CSE 1101

### (Input Devices)

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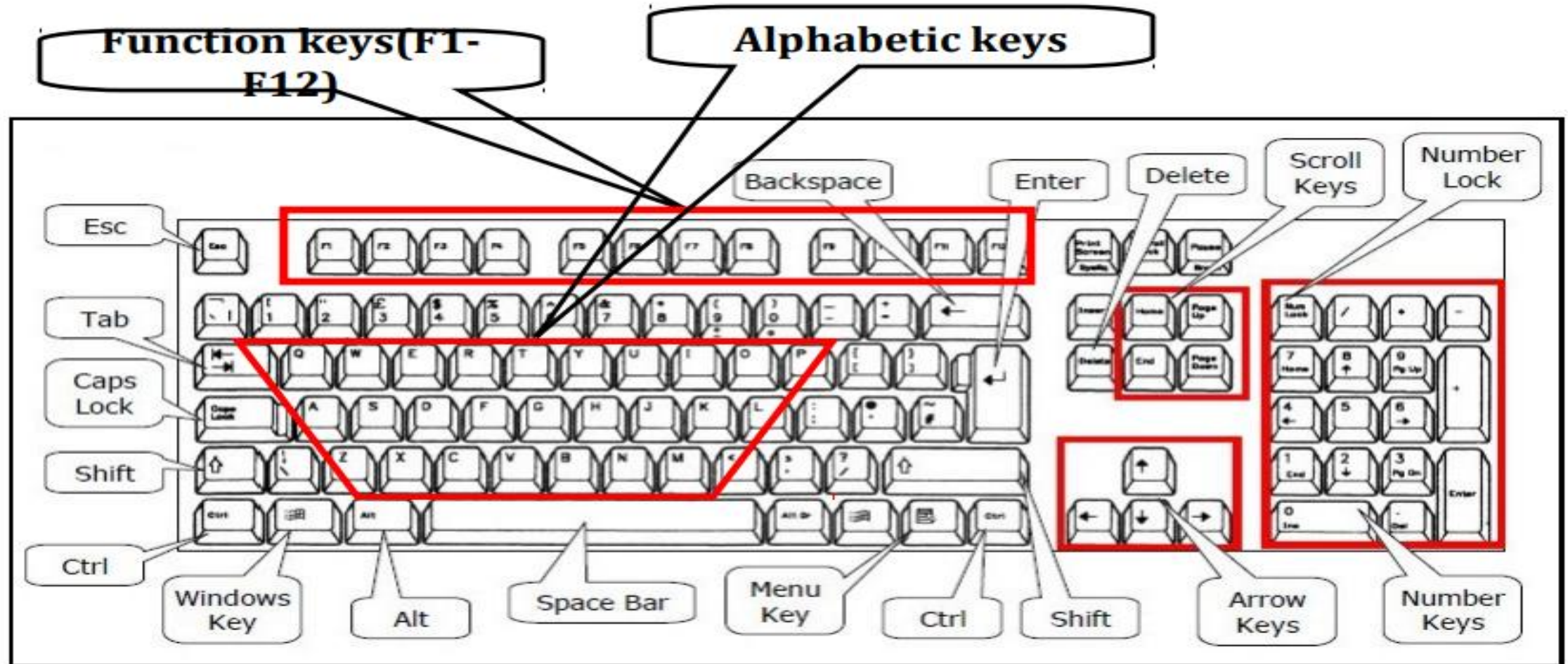
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# Keyboard

- The keyboard was one of the first peripherals to be used with computers, and it is still the primary input device for entering text and numbers.
- A standard keyboard includes about 100 keys; each key sends a different signal to the CPU.

# Keyboard Layout



# The Standard Keyboard Layout

- Keyboards come in many styles.
- Among IBM-compatible computers, the most common keyboard layout is the IBM Enhanced Keyboard.
- It has about 100 keys arranged in six groups-
  1. The Alphanumeric Keys
  2. The Modifier Keys
  3. The Numeric Keypad
  4. The Function Keys
  5. The Cursor-Movement Keys
  6. Special-Purpose Keys

# The Alphanumeric Keys

- Alphanumeric keys: alphanumeric keys composed of alphabetic keys and number keys with a few keys(TAB, CAPS LOCK, BACKSPACE, ENTER).
- The alphanumeric keys—the area of the keyboard that looks like a typewriter's keys—are arranged the same way on almost every keyboard. Sometimes this common arrangement is called the QWERTY layout because the first six keys on the top row of letters are Q, W, E, R, T, and Y.

# The tab, CAPS LOCK, back space and enter keys

The **TAB** key moves you to predefined tab stops in many application programs (such as word processors).

The **BACKSPACE** key erases characters you have just typed. For example, in a word processing program you can press **BACKSPACE** to "back over" an incorrect character and delete it.



The **CAPS LOCK** key lets you "lock" the alphabet keys so they produce only capital letters.

The **ENTER** key lets you finalize data entry in many types of application programs. You also can use **ENTER** to choose commands and options in many programs and at various places in an operating system's interface.

# The Modifier Keys

- Modifier keys: The SHIFT, ALT(alternate) and CLTR(control) keys are called modifier keys as they modify the input of other keys.
- In other words, if a modifier key is held down while pressing another key, then the operation or action of the second key is changed in some way.
- For example if the key “c” is pressed it will simply type a letter “c”(small c). But if the key “c” is pressed with the modifier key “CLTR” it will copy something. Again if key “c” is pressed with the modifier key “SHIFT” then it will type a letter “C” (Capital C).

# The Modifier Keys

When pressed along with an alphanumeric key, **SHIFT** forces the computer to output a capital letter or symbol. **SHIFT** is also a modifier key in some programs; for example, you can press **SHIFT** along with cursor-movement keys to select text for editing.



The **CTRL** (CONTROL) key produces different results depending on the program you are using. In many Windows-based programs, **CTRL**-key combinations provide shortcuts for menu commands. For example, the combination **CTRL+N** enables you to open a new file.

The **ALT** (ALTERNATE) key operates like the **CTRL** key, but produces a different set of results. In Windows programs, **ALT**-key combinations enable you to navigate menus and dialog boxes without using the mouse.

**FIGURE 2A.3**



# The Numeric Keypad

- The numeric keypad is usually located on the right side of the keyboard. The numeric keypad looks like a calculator's keypad, with its 10 digits and mathematical operators ( +, -, \*, and/ ).
- The numeric keypad also features a NUM LOCK key, which forces the numeric keys to input numbers.
- When NUM LOCK is deactivated, the numeric keypad's keys perform cursor-movement control and other functions.

# The Numeric Keypad



# The Function Keys

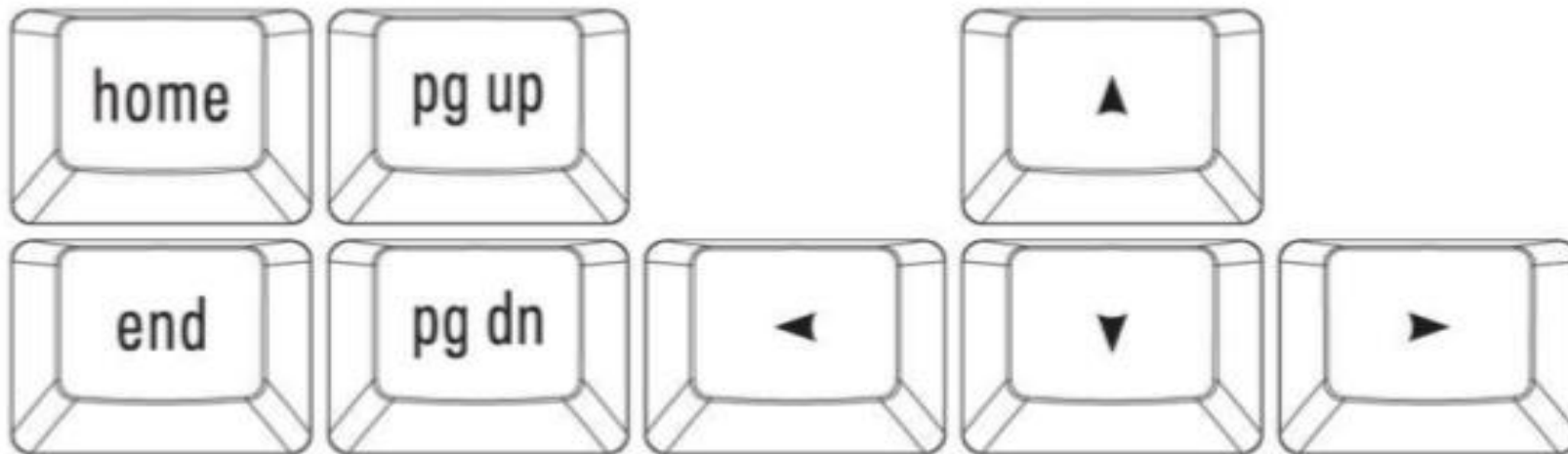
- Function keys: F1 to F12 these 12 keys are called function keys. They are used to perform special types of operation for the user. Most IBM compatible keyboards have 12 function keys.
- They allow you to input commands without typing long strings of characters or navigating menus or dialog boxes.
- Each function key's purpose depends on the program you are using.
- Though F1 through F12 have some default primary and secondary features, they can be used well in combination with keys like Ctrl and Alt.
- F1: open help window

# The Cursor Movement Keys

- Most standard keyboards also include a set of cursor-movement keys, which let you move around the screen without using a mouse.
- This mark, called the cursor or insertion point, appears on the screen as a blinking vertical line, a small box, or some other symbol to show your place in a document or command line.

# CURSOR-MOVEMENT KEYS

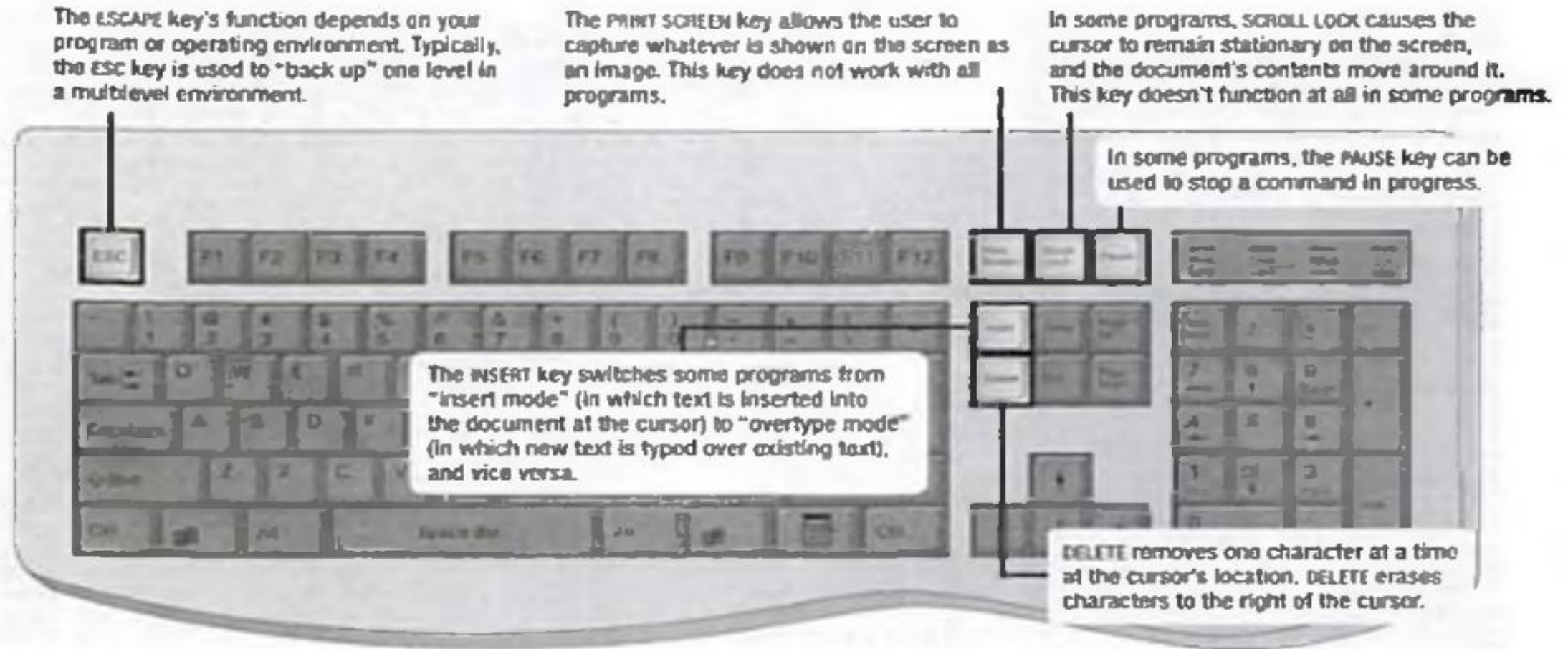
- Most standard keyboards also include a set of cursor-movement keys , which let you move around the screen without using a mouse .



# Special-Purpose Keys

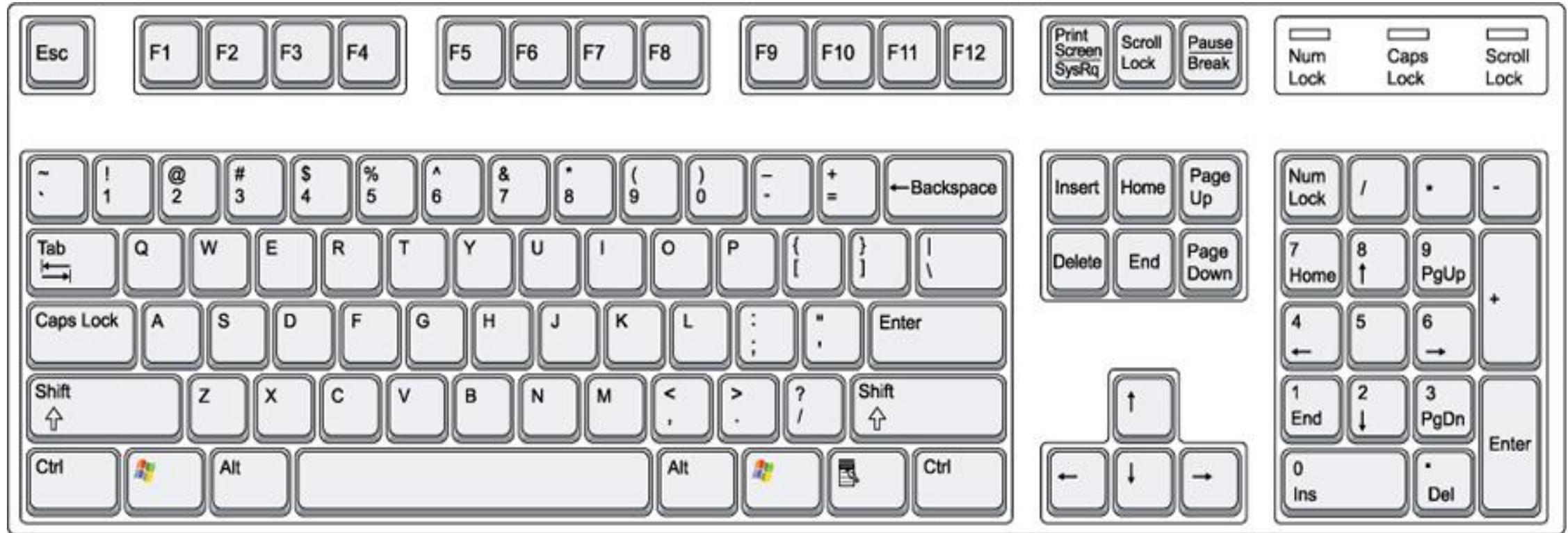
- Special purpose keys: IBM compatible keyboards include eight special purpose keys, each of which performs a unique function. These keys are ESC, PRINT SCREEN, SCROLL LOCK, PAUSE, INSERT, DELETE, WINDOWS KEY(start key), MENU KEY(shortcut key)

# Special-Purpose Keys



**FIGURE 2A.6**

# Standard Keyboard

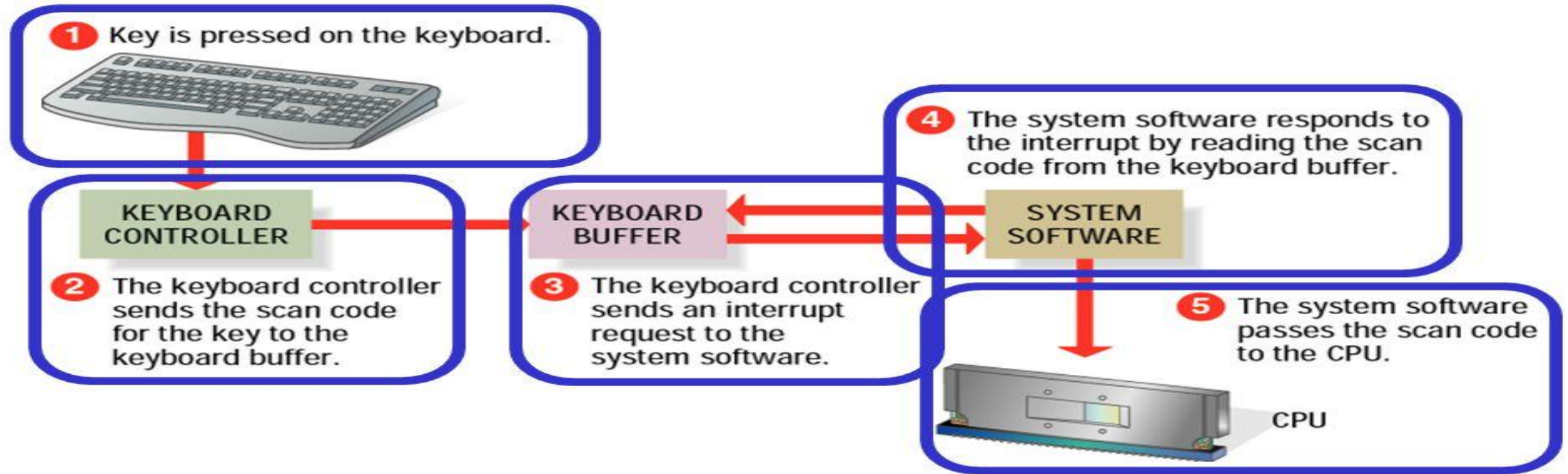




# How the Computer Accepts Input from Keyboard

- When a key is pressed, a tiny chip called the keyboard controller notes that a key has been pressed. Then the keyboard controller places a code into the keyboard buffer to indicate which key is pressed (keyboard buffer is a part or memory of keyboard controller ).
- Then the keyboard controller sends a signal to the computer's system software to tell that something has happened at the keyboard. When the system software receives the signal, then it reads the memory location in the keyboard buffer that contains the code of the pressed key. Then the system software passes the code to the CPU.
- The keyboard buffer can store many keystrokes at one time. It is necessary as the user may press multiple keys before the CPU read a key from keyboard buffer.

# How the Computer Accepts Input from the Keyboard



# The Mouse

- A mouse is an input device that you can move around on a flat surface (usually on a desk or keyboard tray) and controls the pointer.
- The pointer (also called the mouse pointer) is an on-screen object, usually an arrow, that is used to select text; access menus; and interact with programs, files, or data that appear on the screen.



Figure: First mouse

# Mechanical mouse

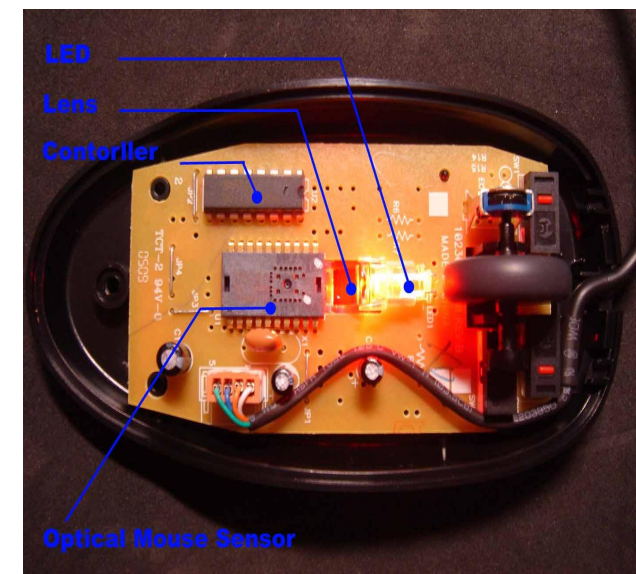
- A **mechanical mouse** is a computer mouse that contains a metal or rubber ball on its under side. When the ball is rolled in any direction, sensors inside the **mouse** detect this motion and move the onscreen **mouse** pointer in the same direction.



Mechanical Mouse

# Optical mouse

- An optical mouse is a computer mouse which uses a light source. This type of mouse emits a beam of light from its underside; it uses the light's reflection to judge the distance, direction, and speed of its travel.



# The benefits of using mouse

- the mouse lets you position the cursor anywhere on the screen quickly without using the cursor-movement keys.
- instead of forcing you to type or issue commands from the keyboard, the mouse and mouse-based operating systems let you choose commands from easy- to-use menus and dialog boxes.
- Moves the cursor faster than the arrow keys of the keyboard

# Using the Mouse

- » Pointing
- » Clicking
- » Double-clicking
- » Dragging
- » Right-clicking
- Mouse Button Configurations

# Different types of Mouse

- Trackball



- Trackpad





# Devices for the Hand

- Pens
- Touch Screens
- Game Controllers



# Optical Input Devices

- **Bar Code Readers:** Bar Code Reader is a device used for reading bar coded data (data in the form of light and dark lines). Bar coded data is generally used in labelling goods, numbering the books, etc. It may be a handheld scanner or may be embedded in a stationary scanner.
- **Image Scanners:** Image scanners (also called scanners) convert any printed image into electronic form by shining light onto the image and sensing the intensity of the light's reflection at every point.



# Audiovisual Input Devices

- **Microphones:** Microphone is an input device to input sound that is then stored in a digital form. The microphone is used for various applications such as adding sound to a multimedia presentation or for mixing music.
- **Video Input:** Webcam, Digital camera etc. take video as input and work as input device.

