

Computers Are Your Future

Chapter 7

Input/Output and Storage

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What You Will Learn About

- The purpose of special keys and the most frequently used pointing devices
- The characteristics of a monitor's quality and the various types of monitors
- The two major types of printers
- The difference between memory and storage

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What You Will Learn About

- The categories of storage devices
- The performance characteristics of hard drives
- How data is stored on both hard and floppy disks
- The various optical storage media available for personal computers

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Input

Input is any data entered into the computer's memory.



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Input Devices: Giving Commands

Keyboard



Mouse



Other Pointing Devices



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Keyboard



The keyboard allows the computer user to enter words, numbers, punctuation, symbols, and special function commands into the computer's memory.

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Types of Keyboards

- **Enhanced or Extended keyboard** – Typically 101 keys laid out in the QWERTY fashion; connected to the computer by a cable
- **Ergonomic keyboard** – Designed to help prevent repetitive motion injuries or damage to nerve tissues in the wrist and hand

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The Mouse

The mouse is the most widely used pointing device.

- A mouse is palm-sized.
- As the mouse is moved, its movements are mirrored by the on-screen pointer.



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Types of Mice

- **Optical mouse** – Uses a light on the underside of the mouse to detect movement.
- **Cordless mouse** – Uses infrared or radio frequency signals to connect to the computer.


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Other Types of Pointing Devices


Pointing Stick




Touch Screen



Touch Pad




Pen



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Audio Input: Speech Recognition

- **Speech recognition** is a type of input in which the computer recognizes words spoken into a microphone.
- Special software and a microphone are required.
- Latest technology uses continuous speech recognition, where the user does not have to pause between words.




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Other Types of Input Devices

Scanners

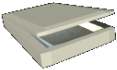
Barcode reader



Fax Machines



Flatbed



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Monitors



CRT



LCD

- A monitor is a peripheral device that displays computer output on a screen.
- Screen output is referred to as **soft copy**.
- Types of monitors:
 - Cathode-Ray Tube (CRT)
 - Liquid Crystal Display (LCD or flat-panel)

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Cathode-Ray Tube (CRT)

- Resemble televisions
- Use picture tube technology
- Less expensive than a LCD monitor
- Take up more desk space and use more energy than LCD monitors



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Liquid Crystal Display (LCD)

- Used for notebook computers, PDAs, cellular phones, and personal computers
- More expensive than a CRT monitor
- Take up less desk space and use less energy than CRT monitors



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Monitor Specifications

- > **Screen size** – The diagonal measurement of the screen surface in inches (15, 17, 19, 21)
- > **Resolution** – The size and sharpness of the image is determined by the number of horizontal and vertical dots (pixels) that the screen can display
- > Example resolutions: (800 x 600, 1024 x 768)
- > **Refresh rate** – The speed at which the screen is redrawn (refreshed). It's measured in Hertz (Hz) (60Hz, 75Hz)

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Printers

A printer is a peripheral device that produces a physical copy or **hard copy** of the computer's output.



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Types of Printers


Inkjet



- > **Inkjet printer**, also called a bubble-jet, makes characters by spraying tiny dots of ink onto paper.
- > Good quality printouts.
- > Cost of printer is inexpensive, but ink can be expensive.

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Types of Printers




Laser

- **Laser printer** works like a photocopier.
- Quality determined by dots per inch (dpi) produced. Higher quality than ink-jet.
- Color printers available.
- Faster than ink-jet.
- Toner can be rather expensive.

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Secondary Storage



Hard Drive – storage

- **Storage**, also known as **secondary storage** or **auxiliary storage**, refers to the various media on which a computer system can store data.
- Storage devices hold programs and data in units called **files**.

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Why Is Storage Necessary?

- Storage devices:
 - Retain data when the computer is turned off
 - Are cheaper than memory
 - Play an important role during startup
 - Are needed for printing. Documents are temporarily stored on the hard drive while waiting for the printer to become available.

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Hard Disks

- Hard disks are high-speed, high-capacity storage devices.
- They contain metal disks called **platters**.
- They contain two or more stacked platters with **read/write heads** for each side.
- Hard disks can be divided into **partitions** to enable computers to work with more than one operating system.

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Factors Affecting a Hard Disk's Performance


- **Seek time** – How quickly the read/write head moves to the correct sector and begins transferring information. It is measured in milliseconds (ms).
- **Rotational Delay** – speed of rotation is measured in revolutions per minute

Example: 250GB Serial ATA Hard Drive (7200 RPM) w/DataBurst Cache™

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CD Discs and Drives

- CD-ROM stands for Compact Disc-Read Only Memory.
- CD-ROM drives can not write data to discs.
- Most new PCs come with CD/DVD combo drives




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|---|---|
| <p>CD-R "Recordable"</p> <ul style="list-style-type: none"> ➤ Discs can be read and written to. ➤ Discs can only be written to "once." ➤ CD-R drives are capable of reading and writing data. | <p>CD-RW "Rewritable"</p> <ul style="list-style-type: none"> ➤ Discs can be read and written to. ➤ Discs are erasable. ➤ Discs can be written to many times. ➤ CD-RW drives are capable of reading, writing, and erasing data. |
|---|---|

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DVD Discs and Drives

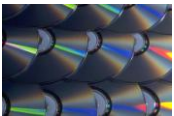
- DVD stands for Digital Video Disc or Digital Versatile Disc
- DVD technology is similar to CD-ROM technology.
- DVDs are capable of storing up to 17GB of data.
- Most common storage format for movies.



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DVD-RW and DVD+RW Discs

- DVD-R and DVD+R drives have the ability to read/write data.
- DVD-RW and DVD+RW drives allow you to write, erase, and read from a disc many times.



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Protecting Data on Discs

- Do not expose discs to excessive heat.
- Do not touch underside of discs.
- Do not write on the label side of discs with a hard instrument.
- Do not stack discs.
- Store discs in original boxes.



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Solid State Storage Devices

- Solid state storage devices use nonvolatile memory chips to retain data.
- They do not have moving parts.
- They are small, lightweight, reliable, and portable.

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Solid State Storage Devices

Smart Card



Memory Stick



Flash Memory



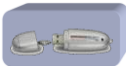
Compact Flash Memory



PC Card



Micro Drive



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