

Chapter 1 and 2 intro to computers



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The primary four operations of a computer are input processing output and storage

Today's computers also typically perform communications functions

communication functions can include sending or retrieving data via the Internet, accessing information located in a shared company database, or exchanging email messages.

define computer A programmable, electronic device that accepts data input, performs processing operations on that data, and outputs and stores the results

define input The process of entering data into a computer; can also refer to the data itself.

define processing Performing operations on data that has been input into a computer to convert that input to output.

define output The process of presenting the results of processing; can also refer to the results themselves.

define storage The operation of saving data, programs, or output for future use.

define communication The transmission of data from one device to another.

define data Raw, unorganized facts.

define process To modify data.

define information Data that has been processed into a meaningful form.

A user inputs data into a computer, and then the computer processes it.

When data is modified, or processed, into a meaningful form, it becomes information

Any fact or set of facts can become computer data

The physical parts of a computer (the parts you can touch) are called hardware

the programs or instructions used to tell the computer hardware what to do and to allow people to use a computer to perform specific tasks. software

Computer users are also called end users

the people who use computers to perform tasks or obtain information are called Computer users

computer professionals who write the programs that computers use are called Programmers

Other computer professionals include Systems analysts Computer operations personnel Security specialists

a tiny computer embedded into a product designed to perform specific tasks or functions for that product. embedded computer

data, applications, and even resources stored on computers accessed over the Internet—in a "cloud" of computers—rather than on users' computers,

and you access only what you need when you need it is called cloud computing

very small device, typically pocket-sized, that has built-in computing or Internet capability. mobile device

a small computer designed to be used by one person at a time personal computer

Conventional personal computers that are designed to fit on or next to a desk are often referred to as desktop computers

small personal computers that are designed to be carried around easily. Portable computers

A device that must be connected to a network to perform processing or storage tasks is referred to as a dumb terminal

a thin client is also called a network computer

a device that is designed to be used with a company network thin client

define notebook computer (laptop computer) A portable computer that is about the size of a paper notebook that is comparable to a desktop computer in features and capabilities.

define netbook A portable computer about the size of a notebook that is designed to be used with a digital pen, a digital stylus, or touch input.

Network computers or other devices designed primarily for accessing the Internet and/or exchanging email are called Internet appliances

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a medium-sized computer used to host programs and data for a small network is a midrange server

a midrange server is sometimes called a minicomputer

One trend involving midrange servers, as well as the mainframe computers is called virtualization

is a powerful computer used in many large organizations that need to manage large amounts of centralized data is called a mainframe computer

the most powerful and most expensive type of computer available is a supercomputers

To reduce the cost, supercomputers are often built by connecting hundreds of smaller and less expensive computers into a supercomputing cluster

the supercomputing cluster acts as a single supercomputer.

a collection of computers and other devices that are connected to share hardware, software, and data, as well as to communicate electronically A network

define internet The largest and most well-known computer network, linking millions of computers all over the world

define Internet Service Provider (ISP) A business or other organization that provides internet access to others, usually for a fee.

define World Wide Web (Web or WWW) The collection of Web pages available through the Internet

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define Web pageA document located on a Web server.

what uniquely identifies a Web pageA uniform resource locator (URL)

English names used to identify computers on the internet are calledDomain Name

Numeric addresses used to identify computers on the internet areIP Address

define bitThe smallest unit of data that a binary computer can recognize.

define byteEight bits grouped together.

define fileA named collection of bytes that represent virtually any type of data

define system unitThe main case of a computer

All devices used with a computer need to be connected via a wired or wireless connection to themotherboard

External devices typically connect to the motherboard by plugging into a port

define Circuit boardA thin board containing computer chips and other electronic components

define computer chipA very small piece of silicon or other semiconducting material that contains the integrated circuits and transistors.

define motherboardThe main circuit board inside the system unit

define portA connector on the exterior of the system unit case that is used to connect an external hardware device

Portable computers almost always contain a rechargeable battery pack to power the computer when it is not connected to a power outlet

Portable computers also almost always contain an external power supply adapter that connects the computer to a power outlet to recharge the battery when needed.

make portable computers and mobile devices lighter. Nonremovable batteries

are difficult and expensive to replace if they fail. Nonremovable batteries

a computer chip that performs the calculations and comparisons needed for processing; it also controls the computer's operations. The central processing unit CPU

Most CPUs today are multi-core CPUs

CPUs that contain the processing components or cores of multiple independent processors in a single CPU. multi-core CPUs

measures of the number of instructions that can be processed per second.

The CPU clock speed

Multi core CPUs allow computers to work on more than one task simultaneously.

a special group of very fast memory circuitry located on or close to the CPU that is used to speed up processing by storing the data and instructions that may be needed next by the CPU in handy locations. Cache memory

chips located inside the system unit that the computer uses to store data and instructions while it is working with them. Memory

is used to store the essential parts of the operating system while the computer is running, as well as the programs and data that the computer is currently using. RAM or random access memory

high-speed memory built into the CPU that temporarily stores data during processingregister

consists of nonvolatile chips that permanently store data or programs. ROM or read-only memory

consists of nonvolatile memory chips that the user or computer can use for storageFlash memory

define Universal Serial Bus (USB)A versatile bus architecture widely used for connecting peripheral devices.

define FireWire (IEEE 1394)A high-speed bus standard used to connect devices—particularly multimedia devices like digital video cameras—to a computer.

an electronic path over which data can travel. A bus

the connectors located on the exterior of the system unit that are used to connect external hardware devices. Ports

Each port is attached to the appropriate bus on the motherboard

Each port is attached to the appropriate bus on the motherboard so that when a device is plugged into a port the device can communicate with the CPU and other computer components.

The key element of the CPU is the transistor

transistor—a device made of semiconductor material that controls the flow of electrons inside a chip. transistor

the section of a CPU core that performs arithmetic involving integers and logical operations. The arithmetic/logic unit (ALU)

Arithmetic requiring decimals is usually performed by the floating point unit (FPU).

To synchronize all of a computer's operations what is used a system clock

what is a system clock a small quartz crystal located on the motherboard

Whenever the CPU processes a single basic instruction, it is referred to as a machine cycle.

The part of a CPU core that attempts to retrieve data and instructions before they are needed for processing to avoid delays Prefetch unit

The part of a CPU core that translates instructions into a form that can be processed by the ALU and FPU Decode unit

The section of a CPU core that allows the core to communicate with other CPU components Bus interface unit

With the exception of computers

designed to use only network storage devices, virtually all personal computers come with a hard drive

used to store most programs and data. hard drive

contain one or more metal hard disks or platters that are coated with a magnetizable substance. Magnetic hard drives

a hard drive that uses flash memory technology instead of spinning hard disk platters and magnetic technology. solid-state drive (SSD, also called flash memory hard drives)

Hard drives can be internal or external

The total time that it takes for a hard drive to read or write data is called the disk access time

the disk access time requires what 3 things seek time rotational delay data movement time

The read/write heads move to the cylinder that contains (or will contain) the desired data. Seek time

The hard disks rotate into the proper position so that the read/write heads are located over the part of the cylinder to be used. Rotational delay

The data moves, such as reading the data from the hard disk and transferring it to memory, or transfers from memory and is stored on the hard disk.

Data movement time

stores copies of data or programs that are located on the hard drive and that might be needed soon in memory chips to avoid having to retrieve the data or programs from the hard drive when they are requested. A disk cache

essentially a combination flash memory/magnetic hardHybrid hard drives

thin circular discs made out of polycarbonate substrate that are topped with layers of other materials and coatings used to store data and protect the disc. Optical discs

Optical discs are designed to be read by optical drives,

a chip-based storage medium that represents data using electrical charges.

Flash memory

flash memory chips embedded into products. Embedded flash memory

One of the most common types of flash memory media is flash memory card

small, rectangular card containing one or more flash memory chips, a controller chip, other electrical components, and metal contacts to connect the card to the device or reader with which it is being used. flash memory card

) consist of flash memory media integrated into a self-contained unit that connects to a computer or other device via a standard USB port and is powered via the USB port. USB flash drives

using a storage device that is not connected directly to the user's computer; instead, the device is accessed through a local network or through the Internet. Remote storage

Remote storage devices accessed via the Internet are often referred to as online storage or cloud storage

A high-performance storage system connected individually to a network to provide storage for computers on that network A network of hard drives or other storage devices that provide storage for another network

A network of hard drives or other storage devices that provide storage for another network Storage area network (SAN)

a credit card-sized piece of plastic that contains computer circuitry and components—typically a processor, memory, and storage. A smart card

A method of storing data on two or more hard drives that work together. RAID (redundant array of independent disks)

Storage media consisting of plastic tape coated with a magnetizable substance. Magnetic tape

For large computer systems, instead of finding a single hard drive installed within the system unit, you are most likely to find a large storage system (sometimes called a storage server).

Most storage servers are based on magnetic hard disks

Most computers today are designed to be used with a keyboard

a device containing keys used to enter characters on the screen

used to select and manipulate objects, to input certain types of data, such as handwritten data, and to issue commands to the computer. Pointing devices

most common pointing device for a desktop computer. The mouse

An input device that moves an on-screen pointer used to select and manipulate objects and to issue commands to the computer. Pointing device

A pointing device similar to an upside-down mouse with the ball mechanism on top. Trackball

A penlike device used by writing, drawing, or tapping on the screen. Stylus (digital pen)

allow the user to touch the screen with his or her finger as a pointing device to select commands or otherwise provide input to the computer associated with the touch screen. Touch screens

a rectangular pad across which a fingertip or thumb slides to move the on-screen pointer; tapping the touch pad typically performs clicks and other mouse actions. touch pad

captures an image of an object in digital form, and then transfers that data to a computer. scanner

The quality of scanned images is indicated by optical resolution

optical resolution is usually measured in the number of pixels per inch (ppi).

an optical code that represents data with bars of varying widths or heights.

barcode

is a technology that can store, read, and transmit data located in RFID tags.

Radio frequency identification (RFID)

contain tiny chips and radio antennas; they can be attached to objects, such as products, price tags, shipping labels, ID cards, assets, and more. RFID

tags

The data in RFID tags is read by RFID readers.

used to read biometric data about a person so that the individual's identity can be verified based on a particular unique physiological

characteristic Biometric reader

Most computers today use the thinner and lighter flat-panel displays

smallest colorable area on a display device. Pixel

Flat-panel technologies include what 4 things Liquid crystal display (LCD)

Light emitting diode (LED) Organic light emitting diode (OLED) Plasma display

the most energy efficient flat panel technology is Organic light emitting diode

Common Display Interfaces include what 4 things HDMI DVI VGA Display Port

printers produce a hard copy

is a permanent copy of output on paper. a hard copy

A printer that uses molten plastic during a series of passes to build a 3D version of the desired output. 3D printer

A printer used to print barcodes. Barcode printer

A permanent copy of an output on paper. Hard copy

An output device that forms images by spraying tiny drops of liquid ink from one or more ink cartridges onto paper. Ink-jet printer

An output device that forms images with toner powder (essentially ink powder). Laser printer

An output device that can copy, scan, fax, and print documents.

Multifunction device (MFD)

The typical measurement of print speed. Pages per minute (ppm)

A small, lightweight printer that can be used on the go, such as with a notebook or a mobile device. Portable printer

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