

CLASSIFYING AND EVALUATING COMPUTERS

Objectives:

Identify types of personal computers

Describe desktop computers

Compare laptops and tablets

Evaluate smartphones

Describe embedded computers

Describe servers and other large computers

PREPARING TO PURCHASE A COMPUTER

Computer usage typically falls into the following ranges:

- **Basic.** You plan to use the computer occasionally to perform tasks such as visiting web sites, exchanging e-mail, and creating word-processing documents.
- **Intermediate.** You plan to use the computer frequently to perform a variety of tasks, including playing games, watching videos, shopping online, and using productivity software for word processing, financial tracking, personal information management, graphic design and other work-oriented endeavors.
- **Advanced.** You plan to use the computer to perform tasks that require the maximum amounts available in processing speed, memory usage, or storage capacity, such as playing graphics-intensive games that demand a lot of processing power, watching high-definition movies online, or producing many large files, such as those containing photos or videos

PREPARING TO PURCHASE A COMPUTER

The amount RAM in your computer has a significant effect on performance. If you have plenty of RAM, the operating system can manage memory easily and provide RAM as the CPU and applications request it. If you do not have enough RAM, the operating system must move data in and out of RAM frequently, which slows performance. The operating system can even spend time swapping data between RAM and virtual memory than running software, a condition called **thrashing**. A computer with a thrashing operating system is sluggish or completely unresponsive.

EVALUATING SYSTEM COMPONENTS AND FEATURES

LESSON 6 Classifying and Evaluating Computers

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TABLE 6-1 Evaluating system components and features in a personal computer

COMPONENT OR FEATURE	DESCRIPTION	MEASURED IN	HOW TO EVALUATE
Processing capacity	Bit size of the CPU	bits	32-bit CPUs can work with up to 4 GB of RAM; 64-bit CPUs can work with an almost unlimited amount of RAM, which increases efficiency.
Processing speed	Clock speed of the CPU	gigahertz (GHz)	The higher the processing speed, the better the overall performance.
Memory capacity	Amount of RAM	gigabytes (GB)	Purchase as much RAM as you can afford and the CPU can handle.
Memory speed	Access speed	megahertz (MHz)	The higher the access speed, the more efficiently the CPU can process data.
Storage capacity	Amount of data the hard drive can store	gigabytes (GB) and terabytes (TB)	Double the amount of storage you estimate you need for software and data; full hard drives slow computer performance.
Storage speed	Access time	milliseconds (ms)	Affects how efficiently applications open.
	Read/write speed	revolutions per minute (RPM)	

PURCHASING A COMPUTER

When purchasing a personal computer, you can select from major types:

- Desktop computer

- Laptop

- Tablets

- Smartphones

DESKTOP COMPUTER

- A *desktop computer* is a computer that fits on or next to a desk, is designed to be stationary, and run on power from a wall outlet.
 - System unit, monitor, keyboard, and point devices are separate
 - The system unit is called the *tower*
 - Popular in offices, schools, and homes because of durability and cost



DESKTOP COMPUTER

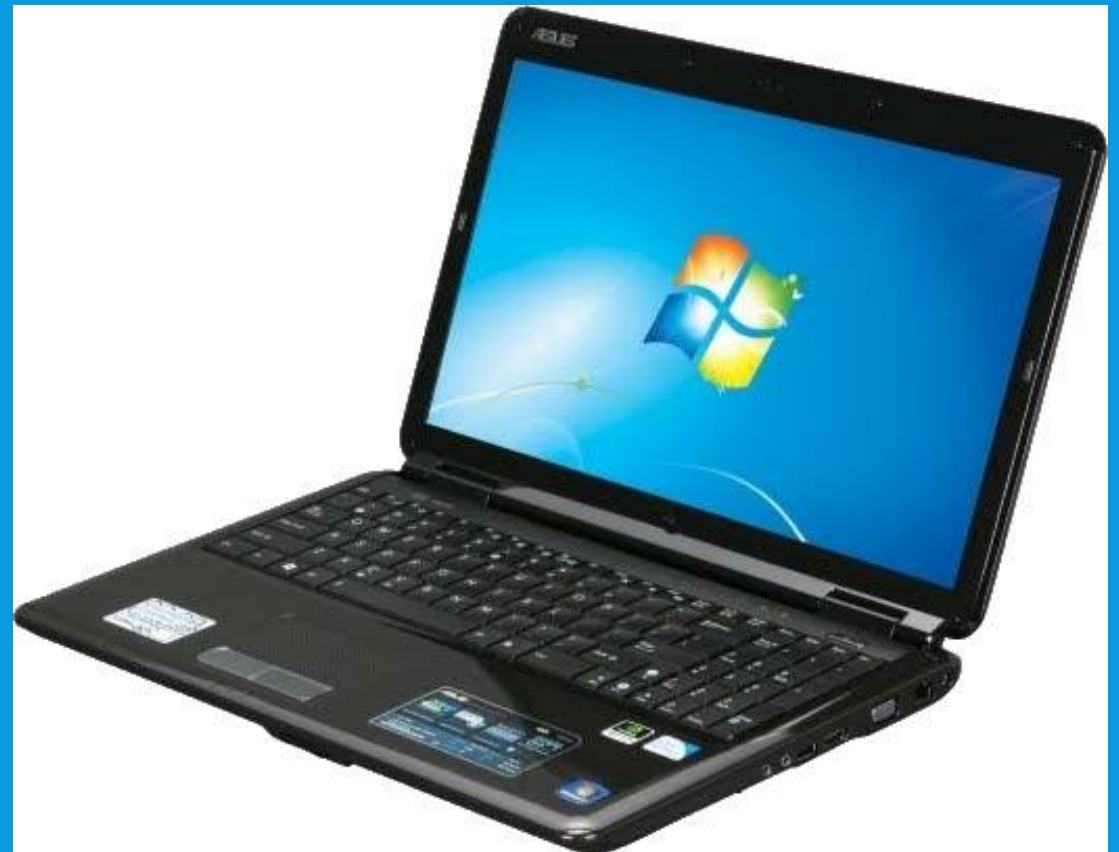
Traditional desktop computers can also perform more quickly and reliably than all-in-one desktops. Because all-in-one desktops have a limited amount of space for system components, they must use components that are small and generate little heat, which are usually less powerful than traditional desktop components.

All-in-one desktops are more compact than traditional desktop computers, can be moved more easily, often include touch screens, and have a sleek, attractive style.

In summary, if you are looking for a powerful, inexpensive desktop computer you can upgrade easily, consider a traditional desktop computer. If you are willing to pay slightly more for style and compactness, and plan to do average types of computing tasks, consider an all-in-one computer.

LAPTOP

- A lightweight mobile computer about the size of a paper notebook that includes the system components, keyboard, pointing device, and display screen in a single unit
 - Sometimes called a *notebook*
 - Use a battery as a power source
 - Easy to carry and move
 - Use less energy
 - Can use without cables for power or peripheral



TABLETS

- A one-piece handheld computer that typically includes a touchscreen.
 - Use a slate design
 - Are rigid
 - Do not fold
- Some tablets are called Convertible tablets because they include a swivel screen or removable keyboard so you can use the computer as a laptop or tablet.



SMARTPHONE

- A cell phone that includes many features of a computer, allowing it to run general-purpose computing applications.
 - Connect wirelessly to the Internet
 - Include built-in cameras, music players, and global positioning systems (GPS)
 - Lets you send and receive phone calls, e-mail messages, and text messages
 - The main advantage smartphone offer over other mobile computing devices is communication.



COMPARING TABLETS AND LAPTOPS

- **Input Devices**

- A laptop provides a physical keyboard and pointing device, whereas a tablet using a slate design has a virtual keyboard and touchscreen.

- **Battery Life**

- You can be on the move with a mobile computer only as long as your battery holds out. Because tablet hardware requires less power than laptops, tablets can run on battery power much longer than laptops can.

- **Storage Capacity**

- Tablets use solid-state drives to store data up to 64 GB, while most laptops have mechanical hard drives that can store hundreds of gigabytes.

- **Performance**

- Most tablets use low-power dual-core processors, so their performance lags behind that of laptops which can use quad-core processors. Tablets typically have 1-2 GB of RAM, whereas laptops often much more.

- **Physical Factors**

- Tablets are smaller and weigh less than laptops because they have less hardware which might affect how you use the computer.

- **Computer Usage**

- Because of their physical keyboards, storage capacities and processors, laptops are well-suited to productivity tasks.
- Because of their size, weight, and battery life, tablets are ideal for consumption tasks, such as watching videos, visiting Web sites, checking email, and playing games.

EVALUATING A SMARTPHONE

- Input Devices – The physical keyboards provided with some smartphones are small designed for typing short phrases used in Internet search text and electronic messages.
- Battery life – Battery usage on smartphones varies significantly depending on your activities. (look for call time and talk time)
- Storage capacity – Similar to tablets, smartphones use solid-state drives to store data, with capacities of 16 – 64 GB.
- Performance – Smartphones pack a lot of processing power into small space, with most models boasting multicore processors and 2 BG of RAM that can handle most smartphone tasks with efficiency.
- Physical factors – Smartphones are designed to be carried for long periods, so they are lightweight, about 4-6oz.
- Price – Prices for smartphones have been falling recently, with an average price around \$300.00
- Computer usage – If you use a computer only to access the Internet and communicate with others, a smartphone might be the only computing device you need. Software for smartphones is limited by screen size and RAM.

The main advantage smartphones offer over other mobile computing devices is communication. The smartphone was design for making and receiving voice calls

OTHER MOBILE DEVICES

- E-book readers
 - Used to download and read electronic versions of printed books, magazines, and newspapers. They have touch screens, smaller than tablets, and include a hard drive with up to 4 GB of storage. They use electronic paper displays, which consume less power and provide higher contrast in bright lighting than LCDs.
- Portable media players
 - A mobile device that can store digital media such as songs, videos, and photos, typically on a small hard drive. Portable media players are also called MP3 players, a term that refers to the Mp3 file format used for many digital audio files.
- Handheld game device
 - A mobile device designed for a single video game player to use at one time. They can connect to the Internet and to other game devices so that the user can play against others who are using their game device at the same time.

EMBEDDED COMPUTERS

- An embedded computer is a processor built into a household appliance or other device such as an ATM, navigation system, refrigerator, television, or other consumer electronics. The appeal and strength of an embedded computer are that it adds computing power to a device without needing intervention from a user.
- The embedded operating system evolved into a mobile operating system as developers added features that allowed the operating system to perform more tasks.

SERVERS



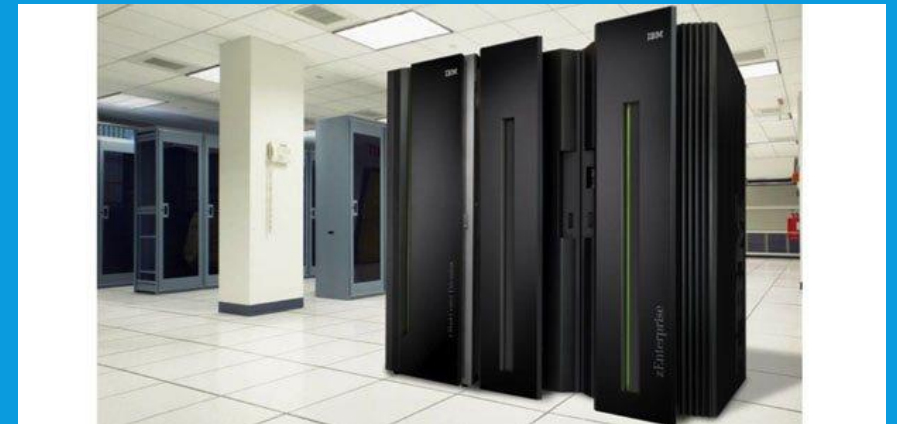
Servers are computers that provide network services such as e-mail to client computers

- Servers are dedicated to handling data with minimal user interaction.
- They do not include optical storage drives, speakers, high-end graphics displays, or other peripherals.
- Usually dedicated to a single type of tasks
 - **Web server** – handles the exchange of information across the internet
 - **Enterprise server**- provide company employees access to special software used to run the company's business
 - **File server** – used to share files and programs among employees in a small company
- Servers have to have what is called scalability in order to increase their processing capacity to handle additional data as the number of users increases.

MAINFRAMES

A mainframe is a powerful computer designed for processing huge amounts of data for hundreds or thousands of users at the same time.

- Larger and more expensive than servers
- Typically located in climate –controlled secure data centers
- Typical task include processing payroll and billing, handling large credit card transactions, gathering and tabulating census information, and scheduling airline flights.



SUPER COMPUTERS

A supercomputer is also a very powerful computer distinguished by its processing capacity, especially its speed of calculation. To be classified as a supercomputer, a computer must be one of the fastest computers in the world. Super computer have processors with a million or more cores. Supercomputer are use primarily for scientific applications that need to perform complex calculations very rapidly.

