

The System Unit

Chapter 5

Competencies (1 of 2)

- Describe the four basic types of system units.
- Describe system boards, including sockets, slots, and bus lines.
- Discuss microprocessors, including microprocessor chips and specialty processors.
- Discuss memory including RAM, ROM, and flash memory.

Competencies (2 of 2)

- Discuss expansion slots and cards.
- Describe bus lines, bus widths, and expansion buses.
- Describe ports, including standard and specialized ports.
- Discuss power supply for desktop, notebook, tablet, and handheld computers .
- Discuss how a computer can represent numbers and encode characters electronically.

Introduction

- Speed, capacity, and flexibility determine the power of microcomputers.
- Knowledge of a computer's power allows you to make good buying decisions and to determine if your current system will run new applications.
- Competent end users need to understand the basic principles of how microcomputers are put together.

System Unit Types

- Desktops
 - Tower Unit, All-in-one
- Notebooks
 - Laptops
 - Netbooks
- Tablets
- Handhelds

Making IT Work for You ~ Keeping Your Computer Cool

- Computer components generate a significant amount of heat
- Can damage your system
- Notebooks present a special challenge

System Board

- Main board or motherboard
- Controls communications
- Components connect to the system board
- Data path
- Traffic monitor

System Board Components (Page 1 of 2)

- Sockets
 - Connection point for chips
- Chips
 - Tiny circuit boards etched onto squares of silicon
 - Silicon chip, semiconductor, or integrated circuit
 - Mounted on carrier packages

System Board Components (Page 2 of 2)

- Slots
 - Provide a connection point for specialized cards or circuit boards
- Bus lines
 - Provide pathways that support communication among the various electronic components

Microprocessor

- Central Processing Unit (CPU)
 - Contained on the microprocessor chip
 - Brains of the computer
- Two Basic Components
 - Control unit
 - Arithmetic-logic unit (ALU)

Microprocessor Chips (Page 1 of 2)

- Chip capacities expressed in word size
- Word
 - The number of bits that can be processed at one time
 - 64-bit standard
- Clock Speed
 - Processing speed
 - The number of times the CPU fetches and processes data or instructions in a second

Microprocessor Chips (Page 2 of 2)

– Multi-Core Chip

- Two separate and independent CPUs
- Parallel Processing
- Windows 8 and Mac OS X

Specialty Processors

- Coprocessors
 - Designed to improve specific computing operations
 - Graphics coprocessors / Graphics Processing Unit (GPU)

Expansion Slots and Cards

- Advanced graphics cards
- Sound cards
- Network interface cards (NIC)
- Wireless network cards
- Plug and Play

Bus Lines

- Also known as a bus
- Connect parts of the CPU to each other
- Pathway for bits
- Bus width
 - Number of bits that can travel at once
- Two basic categories
 - System buses
 - Expansion buses

Expansion Buses

- Connects the CPU to other components on the system board, including expansion slots
- Universal Serial Bus (USB)
 - Connects external USB devices onto the USB bus
- FireWire
 - Audio and video equipment
- PCI Express (PCIe)
 - Single dedicated path for each connected device

Cables

- Used to connect external devices to the system unit via the ports
- One end of the cable is attached to the device and the other end has a connector that is attached to a matching connector on the port

Making IT Work for You ~ TV Tuners

- Using Windows Media System as a DVR
- Install TV Tuner

Power Supply

- Computers require direct current (DC)
- DC power provided by converting alternating current (AC) from wall outlets or batteries
- Desktop computers use power supply units
- Notebooks and handhelds use AC adapters

Electronic Data and Instructions

- Digital electronic signals
 - Recognized by computers
- Analog signals
 - Created by voices
- Conversion must take place from analog to digital before processing can occur

Numeric Representation

- Binary System only two digits called bits
 - On = 1; positive charge
 - Off = 0; no charge
- Byte = 8 bits grouped together
- Hexadecimal system

Character Encoding

- Character encoding standards
- ASCII
 - American Standard Code for Information Interchange
 - Microcomputers
- EBCDIC
 - Extended Binary coded Decimal Interchange Code
 - Mainframe
- Unicode
 - Uses 16 bits
 - Recognized by virtually all computer systems

Careers In IT

- Computer technicians repair and install computer components and systems
- Employers look for:
 - Certification
 - Communication skills
- Continued education is required
- Computer technicians can expect to earn an annual salary of \$31K to \$46K

A Look to the Future

- Wearable computers
- Send and receive email while jogging
- Maintain your personal schedule book
- Remember the names of people at a party

Open-Ended Questions (Page 1 of 3)

- Describe the four basic types of microcomputers and microcomputer system units.
- Describe system boards including sockets, chips, carrier packages, slots, and bus lines.
- Discuss microprocessor components, chips, and specialty processors.

Open-Ended Questions (Page 2 of 3)

- Define computer memory including RAM, ROM, and flash memory.
- Define expansion slots, cards, Plug and Play, PC cards, PCMCIA slots, and Express-Card slots.
- Describe bus lines including bus width, system bus, and expansion bus.

Open-Ended Questions (Page 3 of 3)

- Define ports including standard and specialized ports. Give examples of each.
- Describe power supply including power supply units and AC adapters.
- Discuss electronic data and instructions.