



PowerPoint Presentation to Accompany ***GO! All In One***

Chapter 7

System Components, Input/Output Devices, and Storage Devices

Objectives

- **Recognize the Difference Between Human and Computer Representation of Input**
- **List the Elements of the System Unit**
- **Identify Components of the Motherboard**
- **Identify Connectors Located Outside the System Unit**

Objectives

- **Recognize Input Devices**
- **Describe Output Devices and How They Engage Your Senses**
- **Evaluate Methods for Storing Data**

Recognize the Difference Between Human and Computer Representation of Input

- **Bit**
 - Single circuit: Contains a current or does not
- **Binary digit**
 - 0 or 1
- **Binary number representation**
 - A string of 0s and 1s

Recognize the Difference Between Human and Computer Representation of Input

Common Keyboard Characters and Their Equivalent Binary Number Representation

Keyboard Character	Binary Number Representation
R	01010010
S	01010011
T	01010100
L	01001100
N	01001110
E	01000101

Recognize the Difference Between Human and Computer Representation of Input

- **Byte**
 - A group of eight bits used to represent one character of data

Current Units of Data Storage			
Unit	Abbreviation	Storage Amount	Text Equivalent
Byte	B	8 bits	1 character
Kilobyte	KB	1 thousand bytes	1 page
Megabyte	MB	1 million bytes	1,000 pages
Gigabyte	GB	1 billion bytes	1,000 books
Terabyte	TB	1 trillion bytes	1 million books

Recognize the Difference Between Human and Computer Representation of Input

Larger Units of Data Storage			
Unit	Abbreviation	Storage Amount	Text Equivalent
Petabyte	PB	1 quadrillion bytes	1 billion books
Exabyte	EB	1 quintillion bytes	7,500 libraries the size of the Library of Congress
Zettabyte	ZB	1 sextillion bytes	Not able to estimate
Yottabyte	YB	1 septillion bytes	Not able to estimate

Recognize the Difference Between Human and Computer Representation of Input

- **Character code**
 - Established procedure used to create bit patterns for letters, numbers, and symbols called characters
- **American Standard Code for Information Interchange (ASCII)**
 - Most widely used character code (8 bits)
 - Up to 256 characters
- **Unicode**
 - 16-bit character code
 - Up to 65,000 characters

Recognize the Difference Between Human and Computer Representation of Input

Sample of a Section of Extended ASCII Code

Character	ASCII Code	Character	ASCII Code	Character	ASCII Code
!	00100001	E	01000101	e	01100101
#	00100011	P	01010000	p	01110000
\$	00100100	A	01000001	a	01100001
space	00100000	Y	01011001	y	01111001

List the Elements of the System Unit

- **System unit**
 - Metal or plastic case providing a cool and clean environment for computer's main hardware
 - Tower case
 - Mini-tower case

List the Elements of the System Unit

- **Motherboard**

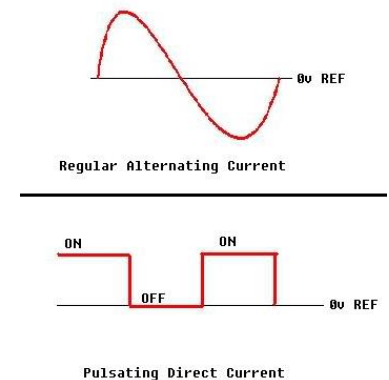
- Large circuit board located within the system unit, containing the CPU

- **Power supply**

- Transforms current from AC to DC

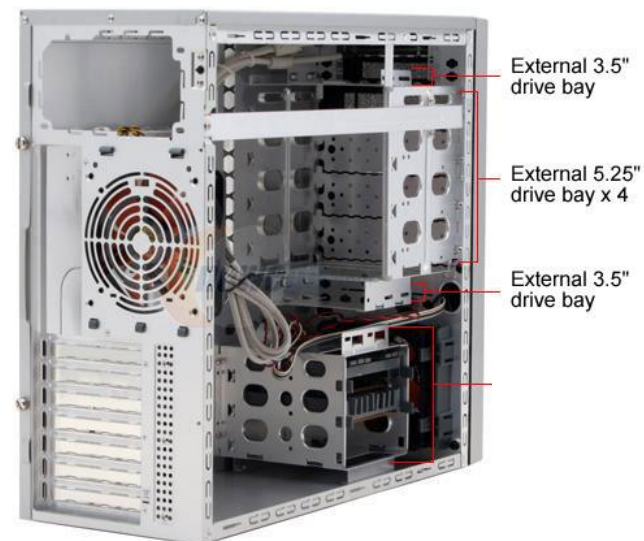
- **Internal speaker**

- Provides beeps heard when the computer starts up



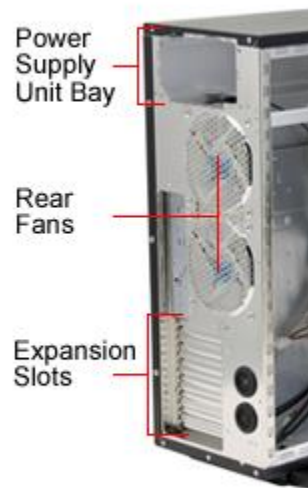
List the Elements of the System Unit

- **Drive bays**
 - Slots that accommodate your computer's storage devices such as the hard disk drive, CD drive, or DVD drive



List the Elements of the System Unit

- **Expansion slots**
 - Receptacles that accept additional circuit boards or expansion cards
- **Cooling fan**
 - Keeps system cool



List the Elements of the System Unit

- **Expansion cards**

- Also called expansion boards, adapter cards, or adapters
- Contain circuitry for peripheral devices not normally included as standard equipment

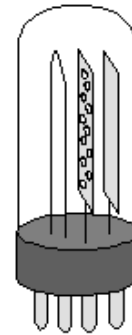
- VGA Card
- Sound Card
- Network Card
- ...



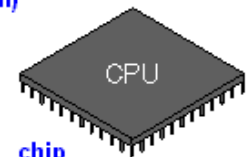
Identify Components of the Motherboard

- **Integrated circuit (IC)**
 - Components on motherboard, also called a chip (millions of transistors)
- **Transistors**
 - An electronic switch that controls the flow of electrical signals

tube
(one switch)



transistor
(one switch)



chip
(millions of transistors)



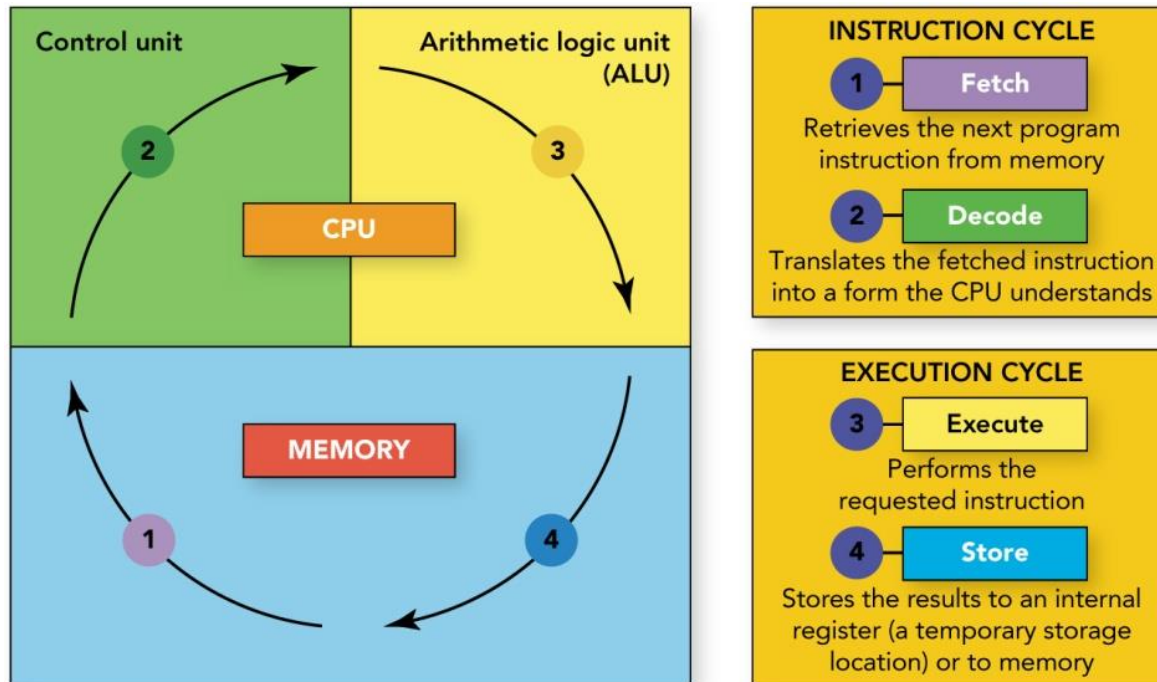
Identify Components of the Motherboard

- **Central processing unit (CPU)**
 - Complex integrated circuit that performs different functions
- **Embedded processors**
 - Processors programmed to perform only the intended task for a specific device
- **Heat sink**
 - A heat-scattering component that protects the CPU



Identify Components of the Motherboard

FOUR STEPS OF THE MACHINE CYCLE



Identify Components of the Motherboard

- **Registers**

- Temporary storage areas located within a microprocessor

- **Pipelining**

- A technique that feeds a new instruction into the CPU at every step of the processing cycle

Identify Components of the Motherboard

- **Parallel processing**
 - More than one processor executes two or more portions of a program simultaneously

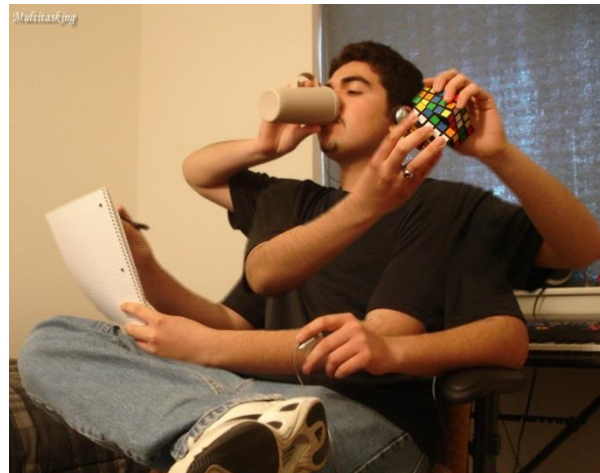


Identify Components of the Motherboard

Motherboard

- **Multitasking**

- A process by which the CPU gives the illusion of performing instructions from multiple programs at once, but actually the CPU is rapidly switching between the programs and instructions



Identify Components of the Motherboard

- **Multi-core processors**

- correct the slowdown that occurs in the processing cycle
- when the CPU is held up by waiting for instructions and data from slower-running RAM or a hard disk
- while one core is busy executing an instruction, another can handle incoming streams of data or instructions.
- The idea is that “two hands are better than one.”

Identify Components of the Motherboard

Evolution of Intel Microprocessors

Year	Chip	Bus Width	Clock Speed	Transistors
1971	4004	4 bits	108 KHz	2,300
1993	Pentium	32 bits	Up to 66 MHz	3.1 million
2000	Pentium 4	32 bits	Up to 2 GHz	42 million
2006	Core Duo	32 bits	Up to 2 GHz	151 million
2007	Core 2 Quad	64 bits	Up to 2.4 GHz	582 million
2008	Core 2 Extreme, Quad Processor	64 bits	3.2 GHz	820 million
2010	Core i7 Extreme Edition	64 bits	3.3 GHz	732 Million