An Overview of Computers

Chapter 1
Computer Hardware

The Big Picture

- A computer system contains:
  - hardware (equipment)
  - software (programs)
  - people (programmers and end-users)
A computer is a machine that can be programmed to

- accept data
- process it into useful information
- store it away for safekeeping and later use
Input Devices

- Accept external data or commands
- Send data or commands to the processor

Processing Unit

- Also known as the Central Processing Unit (CPU)
- Manipulates input data into information people want
- Executes computer instructions
Output Devices

- Show people the processed data in understandable terminology

Storage

- Primary storage (or memory) holds programs and data temporarily
- Secondary storage devices such as disks store data and programs
Your Personal Computer Hardware

Input: What Goes In

- Typing on a keyboard
- Pointing with a mouse
- Scanning with a wand reader or bar-code reader
- May be part of a terminal
The Processor and Memory: Data Manipulation

The Processor

- Consists of circuits that interpret and execute program instructions
- Communicates with the input, output, and storage devices
**Data**

- The raw material to be processed
- When processed, becomes:
- Information - organized, meaningful, and useful data

![Data Representation](image)

**Memory**

- Holds data after input and before processing
- Holds data after processing but before release to the output device
- Holds programs needed by the CPU

![Memory Chip](image)
Output: What Comes Out

- Data that has been processed into useful information
- Text, numbers, graphics, sounds from the computer, also film, voice, music

Secondary Storage

- Provides storage separate from memory
- Magnetic and optical disks
- Magnetic tape - usually cartridge format like a cassette
The Complete Hardware System

- Hardware devices are known as peripherals
  - All input, output, and storage devices
  - May be as close as the same cabinet or as far apart as separate countries

Networking

- Network - a computer system that uses communications equipment to connect computers and their resources.
Networking

- May involve phone-line connectivity through a modem
- Allows for services such as E-mail

The Internet

- Largest and most far-flung network system of them all, connecting users worldwide
- Composed of thousands of loosely organized component networks
Getting Connected

- User’s computer must connect to a computer called a server
- Server uses Transmission Control Protocol/Internet Protocol (TCP/IP) software

Supplier of server is an ISP - Internet service provider
Getting Around

- Made possible through a point-and-click browser program on the World Wide Web (WWW)
- An Internet subset of text, images, and sounds linked together
- WWW locations are web sites with main, or home pages

Classification of Computers

- Supercomputers
- Mainframes
- Personal Computers
- Laptops
- Personal Digital Assistants
Supercomputers

- Fastest and most expensive processors on the planet

Supercomputers

- Increasingly common in the mainstream (stock analysis, automobile design, movie effects, and sophisticated artwork)
- Used extensively by government researchers
Mainframes

- Used for processing vast amounts of data quickly
- Designed for multiple users
- Often known as a server

Personal Computers

- Low end processors and hardware
- Also known as microcomputers and home computers
- Found as workstations for engineering/financial and trade/graphic design
**Notebook Computers**

- Known in larger form as laptops
- Highly miniaturized with PC-worthy technology

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**Smaller Still: Personal Digital Assistants**

- Used to track appointments, other business information
- Also called **pen-based computers** because of pen-like input stylus
- Include functions like wireless e-mail and fax technology