An Overview of Computers
Chapter 1
Computer Hardware

The Big Picture
• A computer system contains:
  • hardware (equipment)
  • software (programs)
  • people (programmers and end-users)

Hardware: The Basic Components of a Computer

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)
• Executes computer instructions
• Manipulates input data into information people want
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

### 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

### Output: What Comes Out

- Data that has been processed into useful information

### Secondary Storage

- Provides storage separate from memory
- Magnetic and optical disks

### Networking

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

### 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**

- 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

**Getting Connected**

- 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
- 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

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