Computer Technology: Types of Computers

Standard 1: Technology Operations and Concepts

Students will be introduced to and be able to demonstrate a sound understanding of computer technology: what types of technology exist, how types of technology function, what component parts work with specific technologies.

How Computers Work – Computers are designed to accept data a user enters, process data according to program instructions, and then output the processed data in a useful form – as information.

- What is a Computer?
- A device that accepts input, processes data, stores data, and produces output, all according to a series of stored instructions.

How Computers Work

Basic Terminology

- **Input**
  - Data that is entered into a computer or other device
- **Data**
  - Raw, unorganized facts and figures (What you put into a computer). Results of the computer storing, 1 & 0s, bits and bytes.
- **Information**
  - The words, numbers, sounds, symbols, graphics, etc. produced by a computer. Data that has been processed to make it useful for a specific purpose. (What you can get out of a computer)
- **Output**
  - Information that results from the computer processing. **For example**, what is communicated, printed, shown on the monitor or transmitted electronically.

How Computers Work

Basic Terminology

- **Processing**
  - The reading of 0's and 1's and determining (by software) what action to take. Manipulation of the data by the computer to create information
- **Memory**
  - Area of the computer that **temporarily** holds data waiting to be processed, stored, or output.
- **Storage**
  - Area of the computer that holds data on a **permanent** basis when it is not immediately needed for processing.

Information Processing Cycle – using a computer to convert data into useful information

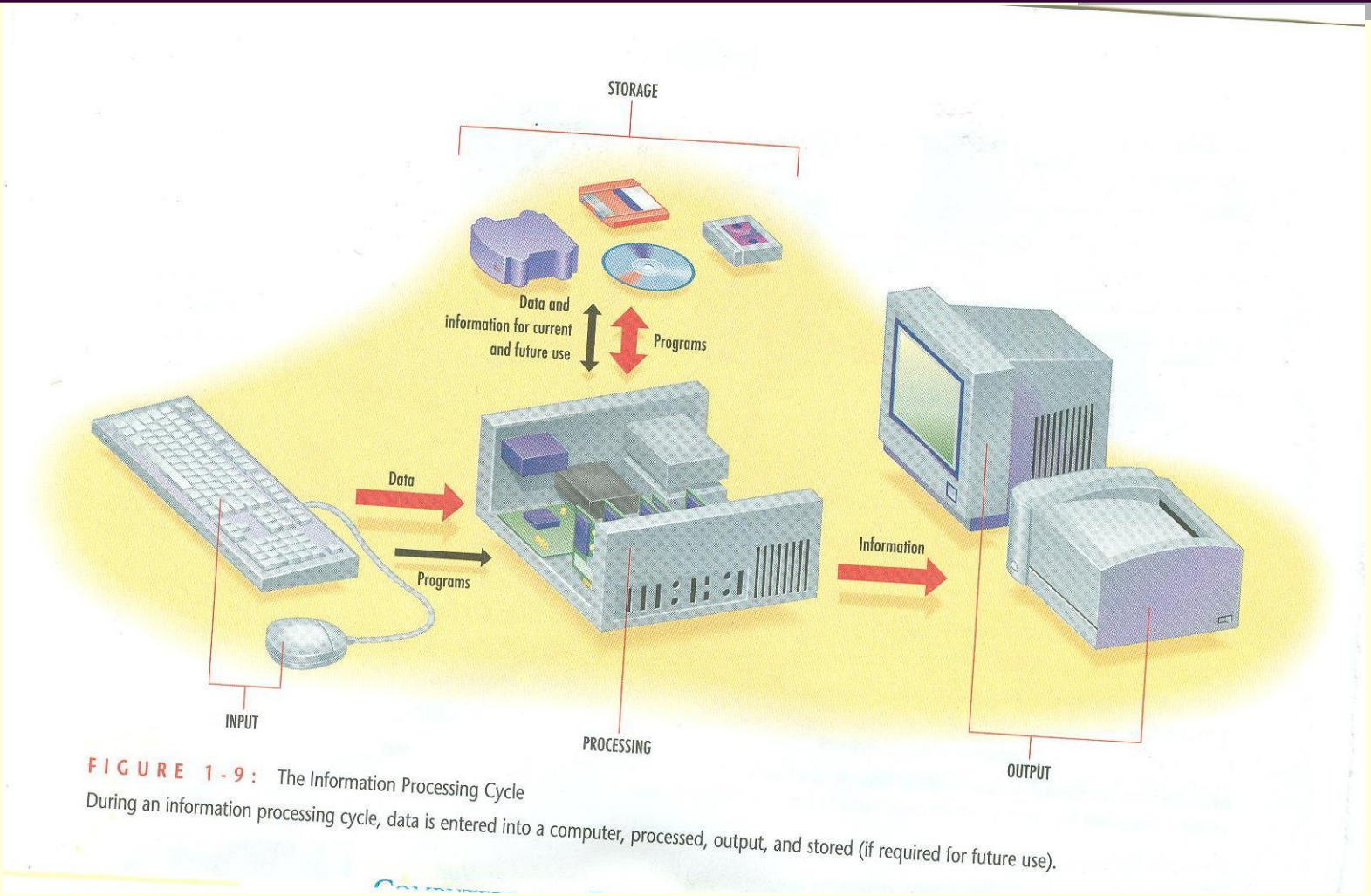


FIGURE 1-9: The Information Processing Cycle
During an information processing cycle, data is entered into a computer, processed, output, and stored (if required for future use).

Types of Computers

1. Personal Computer (PC)

- Self-contained computer capable of input, processing, output, and storage.
- Must have at least one input device, one storage device, one output device, a processor and memory.
- Three major groups of PCs are desktop computers, portable computers, and mobile devices/handheld computers.

2. Desktop Computer

- PC that fits on a desk and runs on power from an electrical wall outlet.
- The CPU can be housed in either a vertical or a horizontal case.
- Has separate components (keyboard, mouse, etc.) that are each plugged into the computer.
- May be used in the home, home office, library or corporate setting.

Portable Computer: 3. Laptop, Netbook

- A personal computer that is small enough to be moved around easily
- **Laptop Computer** – portable computer that is small enough to be placed on a lap or carried by its user from place to place.
  - Also referred to as notebook
- **Netbook** – smaller and has less power than a full-size notebook, main purpose being e-mail and Internet access.

Portable Computers:
4. **Tablets**

- A Tablet is a one-piece mobile computer. They typically have a touchscreen with few physical buttons but an on-screen, virtual keyboard is commonly used.
- device.
- Though generally self-contained, a tablet computer may be connected to a physical keyboard or other input

- **Examples:**
  - **Slates** – Tablets without dedicated keyboards like the iPad and Android Tablets
  - **Mini Tablet** – smaller and lighter than standard tablets. Generally 6 – 7 inches. Kindle Fire, Galaxy Tab
  - **Phablet** – Cross between a phone and a regular tablet. LG Optimus Vu, Samsung Galaxy Note, and Dell Streak
  - **Dedicated keyboards** – These tablets blur the line between slate tablets and laptops
  - **Convertibles** – a slate tablet top-half with a permanently attached keyboard bottom-half. (Panasonic Toughbook, Inspiron Duo)
  - **Hybrids** – Hybrid tablets have a standard tablet base with a detachable keyboard that resembles a laptop keyboard.
  - **Booklets** - Booklets are dual-touchscreen tablet computers

5. Mobile Devices/Handheld

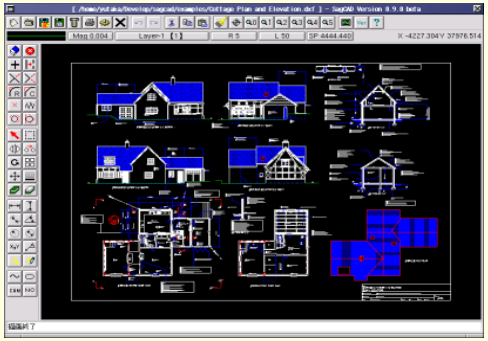
- Personal computer small enough to fit into a person's hand, also called handheld, pocket PC or Palmtop.
- Many can be synchronized with a personal computer as a backup.

Examples:

- Mobile internet device
- Personal Digital Assistant (PDA)
- IPod – MP3 Players
- Smartphone / Tablet – Mobile Phone
- Tablet Computer
- Portable Media Player
- Handheld Game Con
- Calculator
- Handheld game console
- Portable media player
- Digital still camera (DSC)
- Digital video camera (DVC or digital camcorder)
- Mobile phone
- Pager
- Personal navigation device (PND)

6. Workstations

- High-performance single-user computer with advanced input, output and storage components that can be networked with other workstations.
- Resemble desktop personal computers but provide users with more processing power and greater capability.
- Used for complex applications that require considerable computing power and high-quality graphics resolution
  - Such as computer-aided design (CAD), computer-assisted manufacturing (CAM), desktop publishing and software development.
- Can also be an ordinary personal computer attached to a LAN (local area network).



7. Mainframe Computers

- Capable of accommodating hundreds of network users performing different computing tasks.
- Government agencies, banks, universities and insurance companies use them to handle millions of transactions each day.
- Usually the size of a large cabinet.

8. Supercomputers

- Fastest, most powerful, and most expensive type of computer designed for multiple users.
- Many are capable of performing trillions of calculations in a single second.
  - Typical uses
    - Weather forecasting
    - Comparing DNA sequences
    - Creating artificially intelligent robots
    - Performing financial analyses.

9. Special Purpose Computers

• Computers are, in fact, all around you. Microprocessor chips are found in many electronic devices (in your iPod, in your DVD player, in your microwave, in your car, in your phone). These are special-purpose computers that run programs to control equipment and optimize its performance

Examples:

- Household appliances
- Automobiles
- Car keys
- Tools
- Test instruments
- Toys
- Light switches/dimmers
- Electrical circuit breakers
- Smoke alarms

10. Computers in your home

- What type of computer(s) do you have at your home. If you don’t have any answer none. (Not including special purpose, like tools, car keys, etc.)
  - **Example – at my house we have**:
    - 2 desktops, 2 laptops, 3 or 4 iPods, 1 iPad, 2 smartphones, 1 Kindle Fire, 2 Nintendo DSs, 1 Xbox 360, 1 Xbox. I think that is all.

A few more questions

- 11. Do you have internet access at home?
- 12. Do you have Wi-Fi access at home?
- 13. Do you have a printer at home?

Resource

Fuller, Floyd; Larson, Brian. Computers Understanding Technology. St. Paul: Paradigm Publishing, Inc. 2011.

Gordon, Jon; Lankisch, Karen; Muir, Nancy; Seguin, Denise; Verno, Anita. Our Digital World. St. Paul: Paradigm Publishing, Inc. 2011.