Tishk International University
Faculty of Applied Science
Department of Information Technology

Introduction to Information Technology I
IT 105

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Mc Graw Hill Education

Information Technology, the Internet, and You

Lecture 1

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Learning Objectives

1. Explain the parts of an information system: people, procedures, software, hardware, data, and the Internet.
2. Distinguish between system software and application software.
3. Differentiate between the three kinds of system software programs.
4. Define and compare general-purpose, specialized, and mobile applications.

Learning Objectives cont.

5. Identify the four types of computers and the five types of personal computers.
6. Describe the different types of computer hardware, including the system unit, input, output, storage, and communication devices.
7. Define data and describe document, worksheet, database, and presentation files.
8. Explain computer connectivity, the wireless revolution, the Internet, cloud computing, and IoT.

Information System

An **information system (IS)** is a combination of people, procedures, software, hardware, data, and the Internet.

Parts of an Information System

An information system has several parts:

1. People: are end users who use computers to make themselves more productive.
2. Procedures: specify rules or guidelines for computer operations.
3. Software/ Program: Consists of the step-by-step instructions that tell the computer how to do its work
4. Hardware: includes keyboard, mouse, display, system unit, tablets, smartphones, and other devices.
5. Data: consists of unprocessed facts, including text, numbers, images, and sounds.
6. The Internet: allows computers to connect to people and other computers.

Parts of an Information System

People
are end users who use computers to make themselves more productive.

Procedures
specify rules or guidelines for computer operations.

Software
provides step-by step instructions for computer hardware.

Parts of an Information System

Hardware
includes keyboard, mouse, display, system unit, tablets, smartphones, and other devices.

Data
consists of unprocessed facts, including text, numbers, images, and sounds.

Internet
allows computers to connect to people and other computers.

Concept check

1) Define an information system (IS)
2) List the parts of an information system.
3) What is a program?

People

- People or End Users are the most important part of an information system.

Software

- Software is another name for programs – in most cases these terms are interchangeable
- Software/Programs: are instructions that tell the computer how to process data into the form you want
- **There are two major kinds of software:**
  1) System Software (Software used by computers)
  2) Application Software (Software you use)

System Software

- System software enables the application software to interact with the computer hardware.
- System software is "background" software that helps the computer manage its own internal resources.
- System software is not a single program. Rather, it is a collection of programs, including the following:
  1) Operating Systems
  1) Utilities
  2) Device Drivers

System Software cont.

- Two best known Operating systems are:
  - Windows 10
  - Apple's Mac OS

Windows 10

macOS

System Software cont.

- The function of the Operating System:
  1) Coordinates computer resources
  2) Provides the user interface
  3) Runs applications

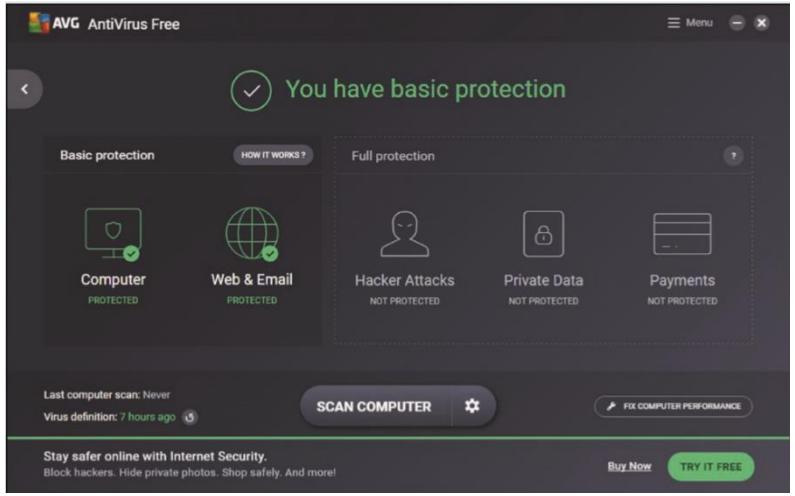
System Software cont.

Types of the Operating System

1) Embedded operating system
   - Used by Smartphones and tablets
     - Real-time operating systems (RTOS)
2) Standalone operating system
   - Used by desktops
3) Networking operating systems
   - Used to run networks

System Software Continued

- Utilities
  - Perform specific tasks related to managing computer resources
  - Antivirus Program
    - Protects from viruses
      - Can damage your software or hardware
      - Comprise the security and privacy of personal data



Application Software

- Application Software / End-user software: these are the types of programs you have to know to be considered computer competent

- Types of application software
  1. **General-Purpose applications**
     - Widely used programs
       - Browsers
       - Word Processor
  2. **Specialized applications**
     - More narrowly focused
       - graphics
  3. **Mobile Apps**
     - Designed for mobile devices
       - Social media apps

Concept check

1) Which part of an information system is the most important?
2) Describe the two major kinds of software.
3) List the two best known operating systems.
4) List the types of the operating system?
5) What are the functions of the operating system?
6) Define and compare general-purpose applications, specialized applications, and mobile apps.
7) List the types of the application software.

Hardware – Types of Computers

There are four types of computers:

1) Supercomputers (Most powerful computers)
2) Mainframe computers (Process large amounts of data)
3) Midrange computers (Servers)
4) Personal computers (PCs)

Supercomputer

Hardware – Types of Computers

1) Supercomputers: are the most powerful type of computer. These machines are special, high-capacity computers used by very large organizations. Supercomputers are typically used to process massive amounts of data. For example, they are used to analyze and predict worldwide weather patterns.

Supercomputer

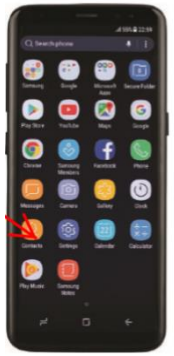
Hardware – Types of Computers

2) Mainframe computers: are capable of great processing speed and data storage.
3) Midrange computers, also referred to as servers, are computers with processing capabilities less powerful than a mainframe computer yet more powerful than a personal computer. Originally used by medium-size companies or departments of large companies to support their processing needs.
4) Personal computers, also known as PCs, are the least powerful, yet the most widely used and fastest-growing type of computer.

Personal Computer Types

There are five types of personal computers:

1. Desktop
2. Laptop (Notebook)
3. Tablet
4. Smartphones
5. Wearables



Personal Computer Types

There are five types of personal computers:

1. Desktop is small enough to fit on top of a desk yet too big to carry around
2. Laptop are portable, lightweight and bit into most briefcases
3. Tablet – iPad for example, are smaller, lighter and less powerful than laptops and use a virtual keyboard.
4. Smartphones is the most common handheld computer. Smartphones are cell phones with wireless connections to the Internet and processing capabilities
5. Wearables – such as the Apple Watch

Personal Computer Hardware

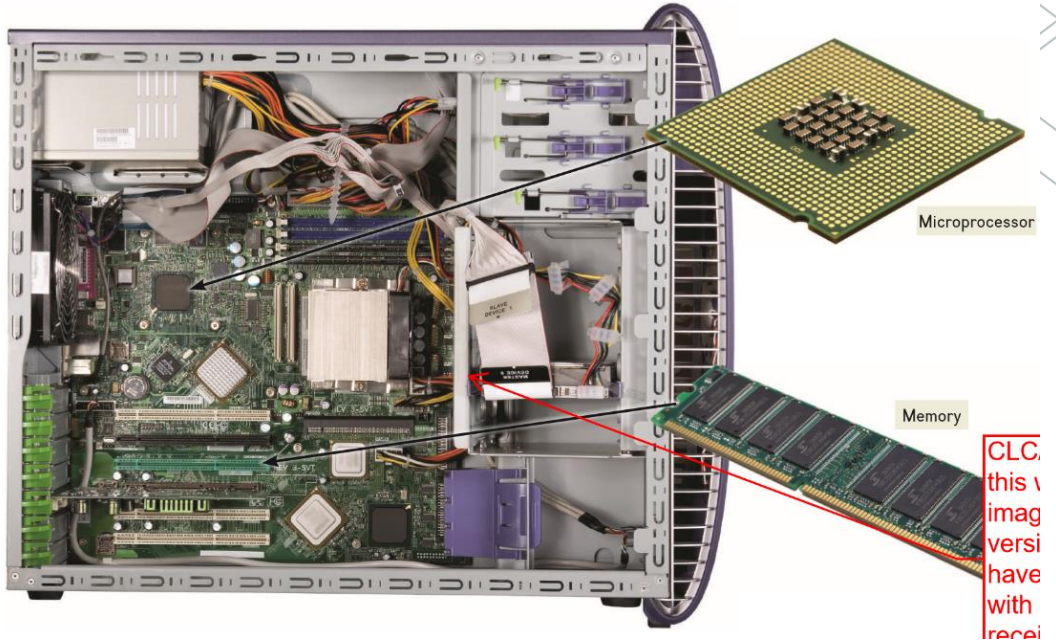
Hardware for a personal computer system consists of a variety of different devices. This physical equipment falls into four basic categories: system unit, input/output devices, secondary storage, and communication.

Four basic categories of personal computer Hardware (physical equipment):

1) **System Unit**
2) **Input/Output**
3) **Secondary Storage**
4) **Communications**

System Unit

- System Unit is the houses most of the electronic components
- **Two important components of System Unit:**
  1) Microprocessor
  2) Memory



System Unit

1) Microprocessor - controls and manipulates data to produce information.
2) Memory is a holding area for data, instructions, and information

System Unit

- One type of Memory, random-access memory (RAM).
- RAM or random-access memory is one type of memory that:
  1. Holds data currently being processed
  2. Holds the processed information before it is output
  3. Is Temporary storage, contents are lost when power is off

Input/Output Devices

- Input devices translate data and programs that humans can understand into a form that the computer can process.
  - The most common input devices are the keyboard and mouse.
- Output devices translate the processed information from the computer into a form that humans can understand.
  - The most common output device is a monitor.

Secondary Storage

- **Secondary storage holds data and programs even if power is off**

1) **Hard disk**
2) **Solid-state storage**
   - No moving parts
   - More reliable
   - Requires less power
3) **Optical disc**
   - CDs, DVDs, Blu-ray discs

Communications

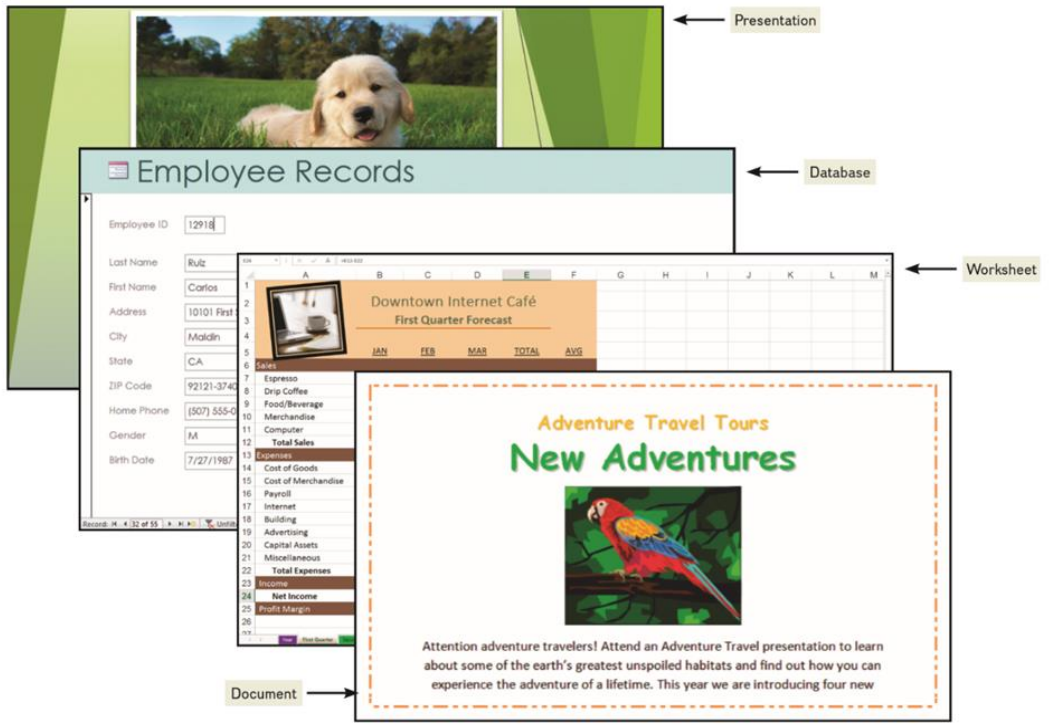
- Communication devices: provide the ability for personal computers to communicate
- Modems: is a widely used communication device that modifies audio, video, and other types of data into a form that can be transmitted across the Internet.

Concept check

1) What are the four types of computers?
2) Describe the five types of personal computers.
3) List the five types of personal computers.
4) Describe the four basic categories of personal computer hardware.
5) List the four basic categories of personal computer hardware.

Data

- Data is raw, unprocessed facts, including text, numbers, images, and sounds.
- Processed data becomes information.
- Digital data is stored electronically in files
- **Four common types of files:**
  1) Document
  2) Worksheet
  3) Database
  4) Presentation



Files

1. **Document files**, created by word processors (Word) to save documents such as memos, term papers, and letters.
2. **Worksheet files**, created by electronic spreadsheets (Excel) to analyze things like budgets and to predict sales.

Files

3. **Database files**, typically created by database management programs to contain highly structured and organized data. For example, an employee database file might contain all the workers' names, Social Security numbers, job titles, and other related pieces of information.
4. **Presentation files**, created by presentation software to save presentation materials. For example, a file might contain audience handouts, speaker notes, and electronic slides.

Connectivity and the Mobile Internet

- **Connectivity**: is the capability of your personal computer to share information with other computers.
- **Network**: is a communications system connecting two or more computers.
- The largest network in the world is the **Internet**. It is like a giant highway that connects you to millions of other people and organizations located throughout the world.
- The **web** provides a multimedia interface to the numerous resources available on the Internet.

Forces of Technology

- Three things driving the forces of technology
  1. **Cloud computing**: uses the Internet and the web to shift many computer activities from a user's computer to computers on the Internet. Rather than relying solely on their computer, users can now use the Internet to connect to the cloud and access more powerful computers, software, and storage.
  2. **Wireless technology**
     - Changing the way we communicate
       - Tablets, smartphones, wearable devices
  3. **The Internet of Things (IoT)**
     - Continuing development of the Internet
     - Allowing all types of devices to communicate

Careers in IT

- Webmaster
  - Develops and maintains websites and web resources
- Software Engineer
  - Analyzes users' needs and creates application software
- Computer Support Specialist
  - Provides technical support to customers and other users
- Technical Writer
  - Prepares instruction manuals, technical reports, and other scientific or technical documents
- Network Administrator
  - Creates and maintains computer networks

Concept check

1) Define data, then list the four common types of files.
2) Define connectivity and networks.
3) What is cloud computing?