Input and Output

Lecture 3

Dr. Hala Najwan Sabeh

EMAIL hala.najwan@tiu.edu.iq

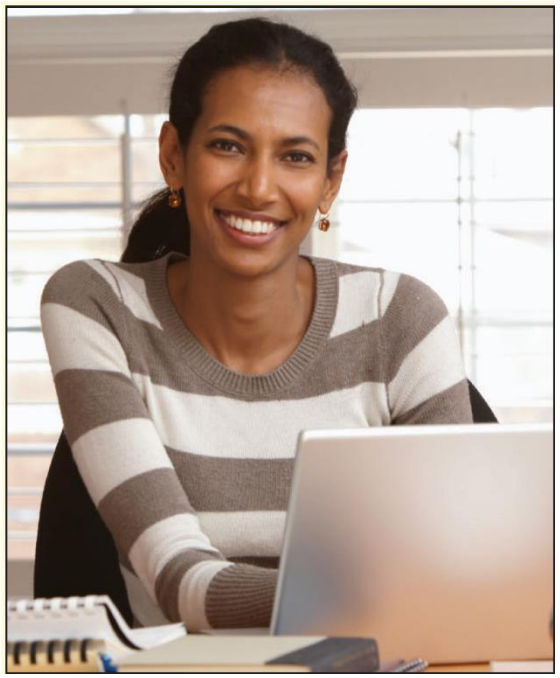
Input and Output

Learning Outcomes

1. Define input.
2. Describe keyboard entry, including types and features of keyboards.
3. Identify different pointing devices, including game controllers and styluses.
4. Describe scanning devices.

Introduction

- Have you ever wondered how information gets into your computer and comes out in a form you can use?
  - Input devices convert what we understand into what the system unit can process
  - Output devices convert what the system unit has processed into a form that we can understand



What is Input?

- Input represent any data or instructions entered into a computer
- Input devices translate data into a form that the system unit can process
- Some hardware input devices include:
  1) Keyboards
  2) Mice
  3) Pointing
  4) Scanning
  5) Image capturing
  6) Audio-input

Keyboard Entry

- Keyboards
  - Traditional keyboards

  - Laptop keyboards

  - Virtual keyboard

  - Thumb keyboard

Keyboard Entry

- **Common types of Keyboards**
  1) Traditional keyboard
  2) Laptop keyboard
  3) Virtual keyboard
  4) Thumb keyboard

Keyboard Entry

- **Common types of Keyboards**

  1) Traditional keyboard: full sized, solid, physical rectangular keyboards that include function, navigational, and numeric keys. Traditional keyboards provide function keys, navigation keys, and a numeric keypad. Some keys, such as the Caps Lock key, are toggle keys. Toggle keys turn a feature on or off. Others, such as the Ctrl key, are combination keys, which perform an action when held down in combination with another key.

Keyboard Entry

- **Common types of Keyboards**

  1) Traditional keyboard

Figure 6-1 Traditional keyboard

Keyboard Entry

- **Common types of Keyboards**

  2) Laptop keyboard: these keyboards are smaller than traditional keyboards and are widely used on laptop computers.

Keyboard Entry

- **Common types of Keyboards**

  3) Virtual keyboard: these keyboards are used primarily with mobile devices and tablets. Unlike other keyboards, virtual keyboards do not have a physical keyboard. Rather, the keys are typically displayed on a screen and selected by touching their image on the screen.

Keyboard Entry

- **Common types of Keyboards**

  4) Thumb keyboard: these keyboards are used on smartphones and other small mobile devices. Designed primarily for communicating via texting and connecting to the web, these keyboards are very small.

  Example: Some Nokia phones

Concept check

1) What is input?
2) List the six hardware input devices.
3) What are input devices? What are output devices?
4) List and compare the four common types of Keyboards.
5) List the four common types of Keyboards, then explain one type in detail.
5) What are toggle keys? What are combination keys?

Pointing Devices

Pointing Devices accepting pointing gestures and converting them into machine-readable input

- **The following is a list of widely used pointing devices:**
  1) Mouse
  2) Touch screen
  3) Game controller
  4) Stylus

Pointing Devices

- A mouse controls a pointer that is displayed on the monitor. The mouse pointer usually appears in the shape of an arrow.
- Mouse can have one, two, or more buttons, which are used to select command options and to control the mouse pointer on the monitor.
- Some mice have a wheel button that can be rotated to scroll through information that is displayed on the monitor.

Mouse Types

- Mouse types:
  1) **Optical mouse**
  2) **Wireless mouse**
  3) **Touch pads** (Controls pointer by moving and tapping your fingers on the surface of the pad)

- The Optical Mouse is the most widely used type.

Touch Screen

- A touch screen allows users to select actions or commands by touching the screen with a finger or penlike device.
- Multi-touch screen can be touched with more than one finger, which allows for interactions such as rotating graphical objects on the screen with your hand or zooming in and out by pinching and stretching your fingers.

Stylus

A stylus is a penlike device typically used with tablets and mobile devices. A stylus uses pressure to draw images on a screen. Often, a stylus interacts with the computer through handwriting recognition software. Handwriting recognition software translates handwritten notes into a form that the system unit can process

- Stylus is a pen-like device
  - Used on tablets and mobile devices
  - Uses handwriting recognition software

Gaming Controllers

- Game controllers are devices that provide input to computer games.
- **The four most popular and specialized game controllers are:**
  1) Joysticks
  2) Gaming mice
  3) Gamepads
  4) Motion-sensing devices

Gaming Controllers

Provide input to computer games

- Joysticks use pressure and direction of the stick

- Gaming mice are similar to a mouse but high precision

- Game pads use both hands

- Motion sensing device control games by user movement

Concept check

1) What is a pointing device?
2) List the four pointing devices, then explain one type in detail.
3) Define Touch pads.
4) Compare between a touch-screen and a multitouch-screen?
5) What is a stylus?
6) Describe the four most popular and specialized game controllers.
7) List the four most popular and specialized game controllers, then explain one type in detail.

Scanning Devices

Scanners convert scanned data into a form the system unit can process

- **There are four basic types of optical scanners:**
  1) Flatbed scanners
  2) Document scanners
  3) Portable scanners
  4) 3D scanners

Scanning Devices

1) Flatbed scanners: is much like a copy machine. The image to be scanned is placed on a glass surface, and the scanner records the image.

Scanning Devices

2) Document scanners: is similar to a flatbed scanner except that it can quickly scan multipage documents. It automatically feeds one page of a document at a time through a scanning surface.

Scanning Devices

3) Portable scanners: typically, a handheld device that slides across the image, making direct contact.

Scanning Devices

4) 3D scanners use lasers, cameras, or robotic arms to record the shape of an object. Like 2D scanners, most 3D scanners cannot recognize light, dark, and colored areas.

Concept check

1) What is a scanner?
2) Describe the four basic types of optical scanners.
3) List the four basic types of optical scanners, then explain one type in detail.