

Discovering Computers 2003
Concepts for a Digital World
Web and XP Enhanced

Chapter 5 Objectives

Describe two types of input	Explain how voice recognition works
List characteristics of a keyboard	Understand how to input data into a handheld computer
Identify various types of keyboards	Identify uses of a digital camera
Identify various types of pointing devices	Describe various techniques used for video input
Explain how a mouse works	Describe uses of PC video cameras and Web cams
Describe different mouse types	Explain how scanners and other reading devices work
	Identify alternative input devices for physically challenged users

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What Is Input?

DATA
Bradley Kinkade 42 hours \$12.50 per hour

What is **input**?

- Data**
 - Unprocessed facts, figures, and symbols
- Instructions**
 - Programs
 - Commands
 - User responses

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What are Input Devices?

What is an **input device**?

- Any hardware component used to enter data, programs, commands, and user responses into a computer

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The Keyboard

How is the keyboard divided?

- Typing area
- Numeric keypad
- Function keys

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The Keyboard

What is a **portable keyboard**?

- Full-sized keyboard you conveniently can attach and remove from a handheld computer


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The Keyboard

What is an **ergonomic keyboard**?

- Designed to minimize strain on hands and wrists
- Ergonomics incorporates comfort, efficiency, and safety into design of items in workplace






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p. 5.6 Fig. 5.8

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The Keyboard

What are alternative forms for commands?

- Many programs allow you to use button, menu, or function key to obtain same result

Command	Button	Menu	Function Key(s)
Copy		Edit Copy	SHIFT+F2
Open		File Open	CTRL+F12
Print		File Print	CTRL+SHIFT+F12

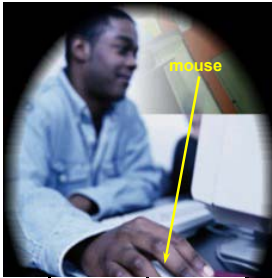

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Mouse

What is a **mouse**?

- Pointing device that fits under palm of hand
- Controls movement of pointer, also called **mouse pointer**, on screen
- Pointer on screen takes several shapes

I-beam block arrow pointing hand

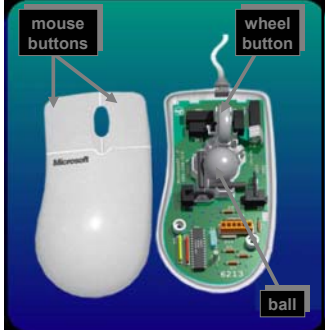
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Mouse

How does a **mechanical mouse** work?

- Rubber or metal ball is on its underside
- Movement of mouse translates into signals computer understands



mouse pad


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p. 5.7 Fig. 5.9

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Mouse

How does an **optical mouse** work?

- Senses light to detect mouse's movement
- More precise than mechanical mouse
- Connect using a cable or wireless




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Other Pointing Devices

What are common mouse operations?

- Point
- Click
- Right-click
- Double-click
- Drag
- Right-drag
- Rotate wheel
- Press wheel

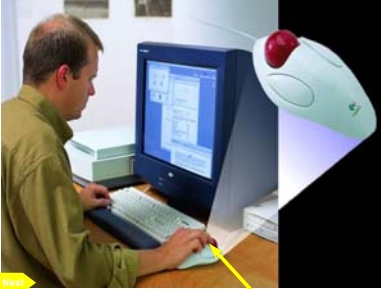


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Other Pointing Devices

What is a **trackball**?



- Stationary pointing device with a ball on its top
- To move pointer, rotate ball with thumb, fingers, or palm of hand

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p. 5.10 Fig. 5-13


trackball

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Other Pointing Devices

What is a **touchpad**?

- ❖ Small, flat, rectangular pointing device sensitive to pressure and motion



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p. 5.10 Fig. 5-14


touchpad

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Other Pointing Devices

What is a **pointing stick**?

- Pointing device shaped like pencil eraser positioned between keys on keyboard



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p. 5.11 Fig. 5-15

pointing stick

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Other Pointing Devices

What are a **joystick** and a **wheel**?

- Joystick is vertical lever mounted on a base
- Wheel is steering-wheel type input device
- Pedal simulates car brakes and accelerator



joystick

wheel

pedal


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Other Pointing Devices

What is a **light pen**?

- Handheld input device that contains light source or can detect light
- ✦ Press light pen against screen and then press button on pen



light pen


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Other Pointing Devices

What is a **touch screen**?

- ❖ Touch areas of screen with finger
- ❖ Often used with kiosks



touch screen

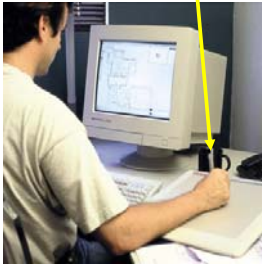
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p. 5.12 Fig. 5-18

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Other Pointing Devices

What is a stylus?

- Looks like a ballpoint pen, but uses pressure to write text and draw lines
- Used with graphics tablets and handheld computers




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Other Pointing Devices

What is an electronic signature?

- Pen and graphics tablet used with special software for handwriting recognition
- Legal as ink signature
- Also called e-signature




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Other Pointing Devices

What is handwriting recognition software?

- Translates handwritten letters and symbols into characters that the computer can understand



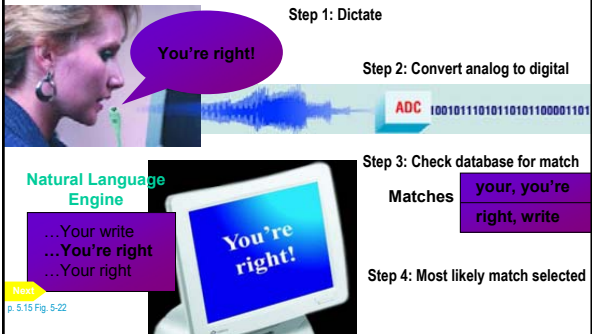
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Voice Input

How does voice recognition work?

- Dictate
- Convert analog to digital
- Check database for match
- Most likely match selected



Natural Language Engine

Matches: your, you're right, write


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p. 5.15 Fig. 5-22

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Voice Input

What is a MIDI?

- External device, such as electronic piano keyboard, to input music and sound effects



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Input Devices for Handheld Computers

How is a data entered into a handheld device?



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Digital Cameras

What is a **digital camera**?

- Allows you to take digital pictures
- Images viewable immediately on camera
 - ⊕ Download to computer
 - ⊕ Post pictures to Web



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Digital Cameras

How does a digital camera work?

- 1: Take picture
- 2: Image focuses on CCD
- 3: CCD generates analog signal that represents image
- 4: Analog signal converts to digital signal
- 5: Digital signal processor (DSP) adjusts quality
- 6: Transfer image to computer
- 7: View and manipulate image



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Digital Cameras

What is **resolution**?

- Sharpness and clarity of image
- Higher the resolution, the better the image quality, but the more expensive the camera
- Pixel (**p**icture **e**lement) is single point in electronic image
 - ⊕ Greater the number of pixels, the better the image quality

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Video Input

What is **video input**?

- Process of entering full-motion recording into computer
- Also called **video capture**
 - ⊕ Video capture card is expansion card that converts analog video signal into digital signal that computer understands
 - ⊕ Video compression



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Video Input

What is a **PC video camera**?

- Digital video camera that allows home user to record, edit, and capture video and still images, and to make video telephone calls on Internet
- Also called **PC camera**



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Video Input

What is a **Web cam**?

- Video camera whose output displays on a Web page
- Also called a **cam**
 - ⊕ **Streaming cam** shows moving images by sending continual stream of pictures



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Video Input

What is videoconferencing?

- Two or more geographically separated people who use network on the Internet to transmit audio and video data

Whiteboard is another window on screen that can display notes and drawings simultaneously on all participants' screens



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Scanners and Reading Devices


What is a scanner?

- Device that captures data directly from source document

Source document

OCR

flatbed scanner




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Scanners and Reading Devices

How does a flatbed scanner work?

- Place document face down
- Bright light scans document
- Image reflected into mirrors
- Light converted to analog electrical and then to digital signal
- Digital information sent to computer
- Print or save document



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p. 525 Fig. 5-33

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Scanners and Reading Devices

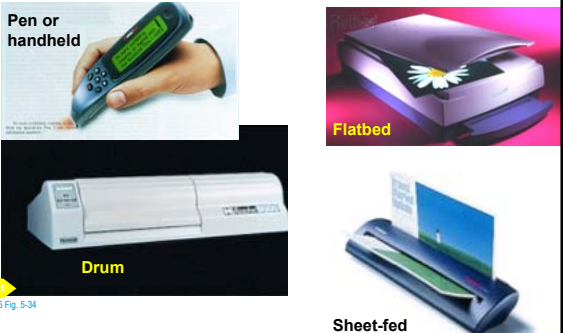
What are various types of scanners?

Pen or handheld

Flatbed

Drum

Sheet-fed




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p. 526 Fig. 5-34

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Scanners and Reading Devices

What is image processing?

- Capturing, storing, analyzing, displaying, printing, and manipulating images
- Converting paper documents into electronic form
- Also called imaging



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Scanners and Reading Devices

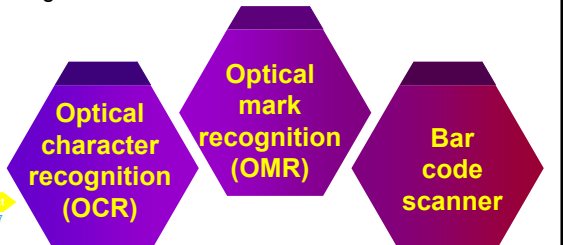
What is an optical reader?

- Device that uses light source to read characters, marks, and codes and then converts them into digital data

Optical character recognition (OCR)

Optical mark recognition (OMR)

Bar code scanner



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Scanners and Reading Devices

What is an OCR font?

ABCDEFGHIJKLMNOPQRSTUVWXYZ
1234567890-=_; ', . /

- OCR font, such as OCR-A, used with OCR devices
- OCR device determines characters' shapes by detecting patterns of light and dark
- OCR software converts shapes into characters the computer can understand

Next

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Scanners and Reading Devices

What is a turnaround document?

- You return it to company that sent it

numbers are read by OCR device when document is returned

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Scanners and Reading Devices

What is optical mark recognition (OMR)?

- Reads hand-drawn pencil marks, such as small circles or rectangles

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Scanners and Reading Devices

What is a bar code scanner?

- Uses laser beams to read bar codes

bar code scanners

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Scanners and Reading Devices

What is a bar code?

- Identification code that consists of a set of vertical lines and spaces of different widths
- Universal Product Code (UPC)

Number system character identifies type of product

Manufacturer identification number (Kellogg's, in this case)

Check character verifies accuracy of scanned UPC symbol

Item number (10 oz. box of Froot Loops)

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Scanners and Reading Devices

What is a magnetic ink character recognition reader (MICR)?

- Can read text printed with magnetized ink
- Banking industry almost exclusively uses MICR for check processing

check number

bank number

account number

check amount

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Scanners and Reading Devices

What is wireless input?

- Handheld computer or device used to collect data wirelessly at the location where transaction or event takes place
- Data transferred later to desktop computer through docking station



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Input Devices for Physically Challenged Users

What input devices are available for those with physical limitations?

keyguard for limited hand mobility

onscreen keyboard

Next
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speech recognition



pointing device for those with motor disabilities

Input Devices for Physically Challenged Users

What are new developments in computing that will benefit physically challenged users?

Gesture recognition

- Computer will detect human motions
- Computers with this capability have potential to recognize sign language, read lips, track facial movements, or follow eye gazes

Implantation

- For paralyzed or speech-impaired individuals
- Doctor will implant computerized device containing transmitter into brain
- As user thinks, transmitter will send signals to computer

Next

PUTTING IT ALL TOGETHER

What type of input devices do home users require?



- ☐ Enhanced keyboard or ergonomic keyboard
- ☐ Mouse
- ☐ Joystick or wheel
- ☐ 30-bit 600x1,200 dpi color scanner
- ☐ 1- to 4-megapixel digital camera
- ☐ Microphone
- ☐ Voice recognition software
- ☐ PC video camera

Next
p. 5.33 Fig. 5-46

PUTTING IT ALL TOGETHER

What type of input devices do SOHO users require?

- ☐ Enhanced or ergonomic keyboard
- ☐ Mouse
- ☐ Stylus and portable keyboard for handheld computer
- ☐ 36-bit 600 x 1,200 dpi color scanner
- ☐ 1- to 4-megapixel digital camera
- ☐ Microphone
- ☐ Voice recognition software
- ☐ PC video camera

Small Office/Home Office



Next
p. 5.33 Fig. 5-46

PUTTING IT ALL TOGETHER

What type of input devices do mobile users require?

- ☐ Wireless mouse for notebook computer
- ☐ Trackball, touchpad, or pointing stick on notebook computer
- ☐ Stylus and portable keyboard for handheld computer
- ☐ 2- or 3-megapixel digital camera
- ☐ Voice recognition software

Mobile



Next
p. 5.33 Fig. 5-46

PUTTING IT ALL TOGETHER

What type of input devices do power users require?

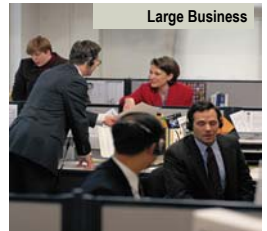


- ☐ Enhanced or ergonomic keyboard
- ☐ Mouse
- ☐ Stylus and cursor for graphics tablet
- ☐ 48-bit 1,200x1,200 dpi color scanner
- ☐ 3-megapixel digital camera
- ☐ Microphone
- ☐ PC video camera

Next
p. 5.33 Fig. 5-46

PUTTING IT ALL TOGETHER

What type of input devices do large business users require?



- ☐ Enhanced or ergonomic keyboard
- ☐ Mouse
- ☐ Touch screen
- ☐ Light pen for point-of-sale terminals
- ☐ 48-bit 1,200x1,200 dpi color scanner
- ☐ OCR, OMR, bar code reader, or MICR reader
- ☐ Video camera for videoconferences
- ☐ Voice recognition software
- ☐ Microphone

Next
p. 5.33 Fig. 5-46

Summary of Input

- What is input?
- What are input devices?
- The keyboard
- Mouse
- Other pointing devices
- Voice input
- Input devices for handheld computers
- Digital cameras
- Video input
- Scanners and reading devices
- Input devices for physically challenged users

Chapter 5 Complete