SHELLY CASHMAN SERIES

Discovering Computers 2003

Concepts for a Digital World

Web and XP Enhanced

Chapter 5
Input

Chapter 5 Objectives

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

Next p. 5.2

What Is Input?

What is input?

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

Next p. 5.3 Fig. 5-2

What are Input Devices?

What is an input device?

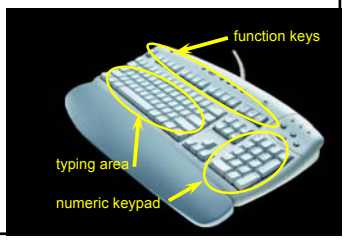
- Any hardware component used to enter data, programs, commands, and user responses into a computer

Next p. 5.4

The Keyboard

How is the keyboard divided?

- Typing area
- Numeric keypad
- Function keys

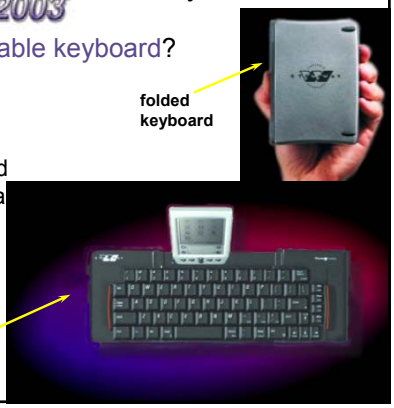


Next p. 5.4 Fig. 5-3

The Keyboard

What is a portable keyboard?

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



Next p. 5.6 Fig. 5-7

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

Next
p. 5.6 Fig. 5-8

The Keyboard

What are alternative forms for commands?

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

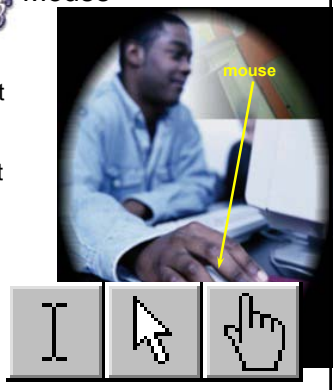
Command	Button	Menu	Function Key(s)
Copy		Edit|Copy	SHIFT+F2
Open		File|Open	CTRL+F12
Print		File|Print	CTRL+SHIFT+F12

Next
p. 5.4 Fig. 5-4

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



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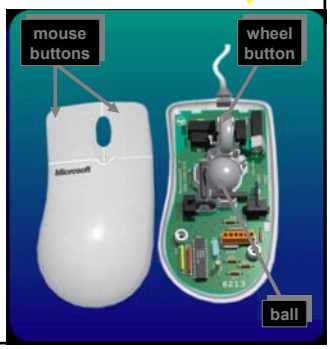
p. 5.7

Mouse

How does a mechanical mouse work?

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



Next
p. 5.7 Fig. 5-9

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

Next
p. 5.7 Fig. 5-10

Other Pointing Devices

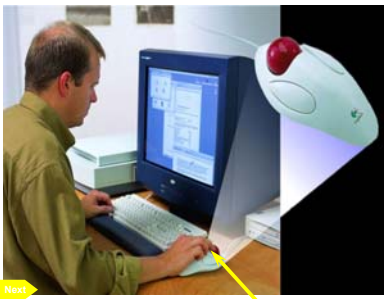
What are common mouse operations?

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

Next
p. 5.8 Fig. 5-11

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

Other Pointing Devices

What is a touchpad?

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

Other Pointing Devices

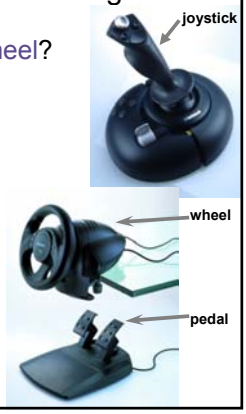
What is a pointing stick?

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

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



Other Pointing Devices

What is a light pen?

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

Other Pointing Devices

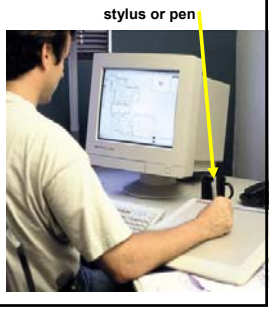
What is a touch screen?

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

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



Next
p. 5.13 Fig. 5-19

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

Next
p. 5.13 Fig. 5-20

Other Pointing Devices

What is handwriting recognition software?

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

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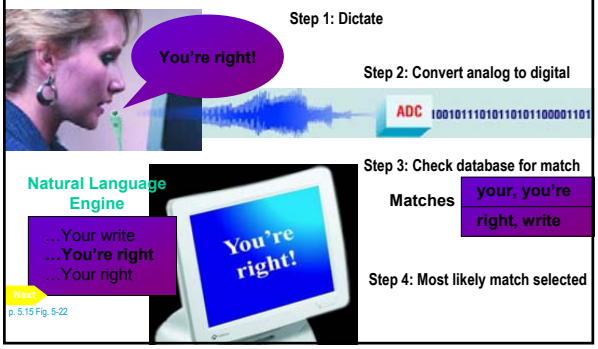
p. 5.14 Fig. 5-21

Voice Input

How does voice recognition work?



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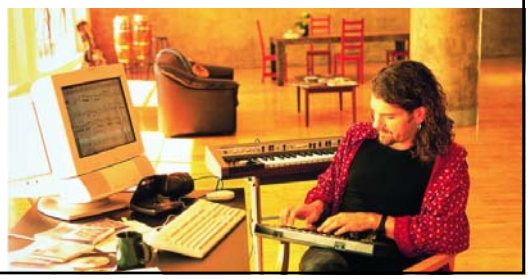
p. 5.15 Fig. 5-22

Voice Input

What is a MIDI?

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



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p. 5.16 Fig. 5-23

Input Devices for Handheld Computers

How is a data entered into a handheld device?

Next
p. 5.17 Fig. 5-25

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

Next
p. 5.18 Fig. 5-26

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

Next
p. 5.19 Fig. 5-27

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 (*pi*cture *e*lement) is single point in electronic image
  - Greater the number of pixels, the better the image quality

Next
p. 5.20 Fig. 5-28

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

Next
p. 5.21 Fig. 5-30

Video Input

What is a PC video camera?

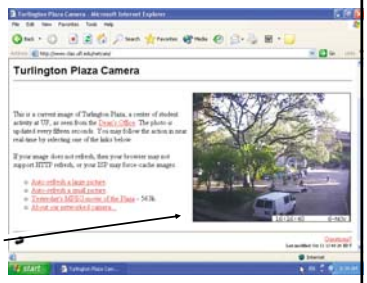
- Digital video camera that allows home user to record, edit, and capture video and still images, and to make video telephone calls on Internet
- Also called PC camera

Next
p. 5.22 Fig. 5-29

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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p. 5.23 Fig. 5-31

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

Next
p. 5.24 Fig. 5-32

Scanners and Reading Devices

What is a scanner?

- Device that captures data directly from source document
  - Source document

Next
p. 5.24

Scanners and Reading Devices

How does a flatbed scanner work?

1: Place document face down
2: Bright light scans document
3: Image reflected into mirrors
4: Light converted to analog electrical and then to digital signal
5: Digital information sent to computer
6: Print or save document

Next
p. 5.25 Fig. 5-33

Scanners and Reading Devices

What are various types of scanners?

Next
p. 5.26 Fig. 5-34

Scanners and Reading Devices

What is image processing?

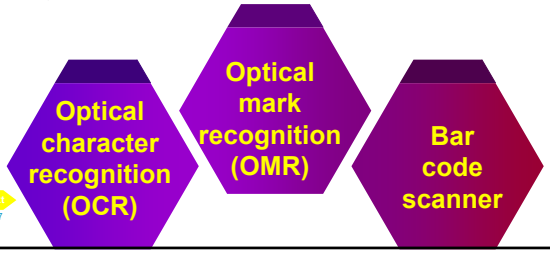
- Capturing, storing, analyzing, displaying, printing, and manipulating images
- Converting paper documents into electronic form
- Also called imaging

Next
p. 5.26

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



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p. 5.27

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

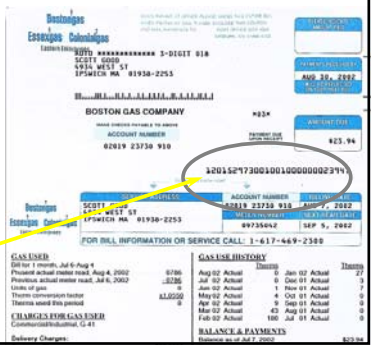
Next

p. 5.27 Fig. 5-35

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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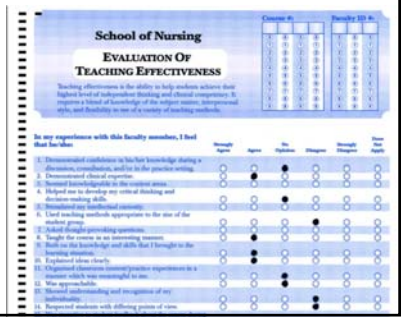
p. 5.27 Fig. 5-36

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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p. 5.28 Fig. 5-37

Scanners and Reading Devices

What is a bar code scanner?

- Uses laser beams to read bar codes

bar code scanners

Next

p. 5.28 Fig. 5-38

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)

Next

p. 5.28 Fig. 5-39

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

Next

p. 5.30 Fig. 5-41

check number | bank number | account number | check amount

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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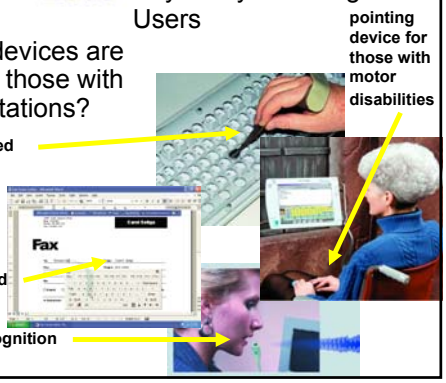
p. 5.30 Fig. 5-42

Input Devices for Physically Challenged Users

What input devices are available for those with physical limitations?



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p. 5.31

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
p. 5.32

PUTTING IT ALL TOGETHER

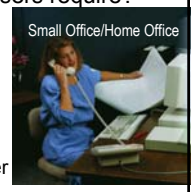
What type of input devices do home users require?

- ❑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

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

Next
p. 5.33 Fig. 5-46

PUTTING IT ALL TOGETHER

What type of input devices do power users require?

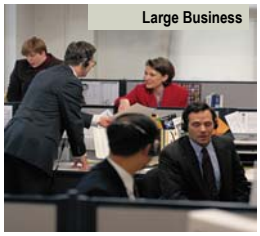
- ❑Enhanced or ergonomic keyboard
- ❑Mouse
- ❑Stylus and cursor for graphics tablet
- ❑48-bit 1,200x1,200 dpi color scanner
- ❑3-megapixel digital camera
- ❑Microphone
- ❑PC video camera

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
- ❑42-bit 1,200x1,200 dpi color scanner
- ❑OCR, OMR, bar code reader, or MICR reader
- ❑Video camera for videoconferences
- ❑Voice recognition software
- ❑Microphone



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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