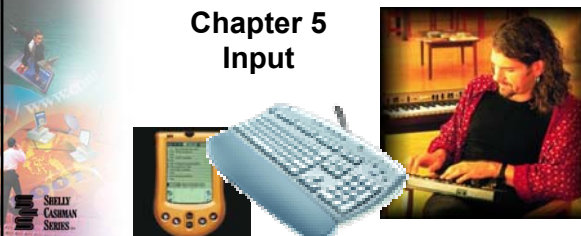


SHELLY CASHMAN SERIES<sup>™</sup>

# Discovering Computers

Concepts for a Digital World  
Web and XP Enhanced

## Chapter 5 Input



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## 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

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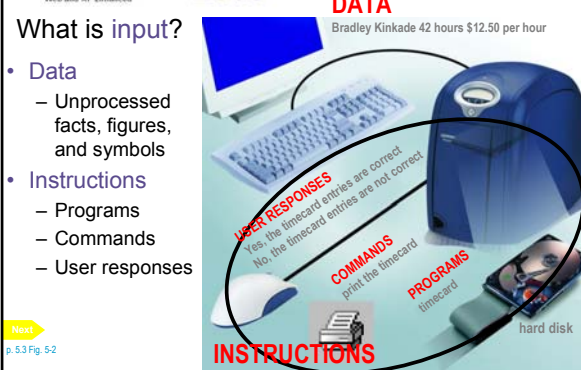
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## What Is Input?

**DATA**  
Bradley Kinkade 42 hours \$12.50 per hour

What is input?

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




Next p. 53 Fig. 5-2

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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



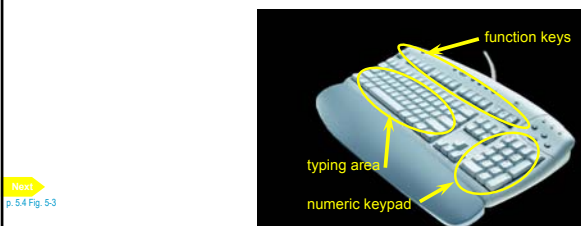
Next p. 54

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## The Keyboard

How is the keyboard divided?

- Typing area
- Numeric keypad
- Function keys



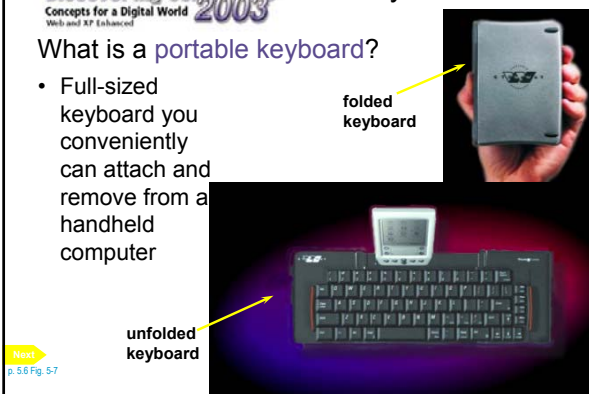
Next p. 54 Fig. 5-3

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## The Keyboard

What is a portable keyboard?

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



Next p. 55 Fig. 5-7


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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






Next  
p. 58 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

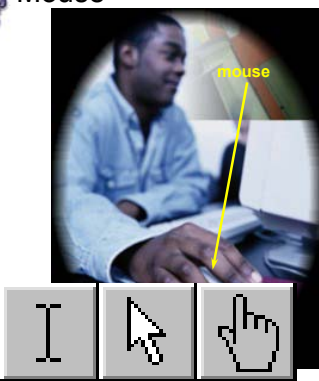
Next  
p. 54 Fig. 5-4

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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

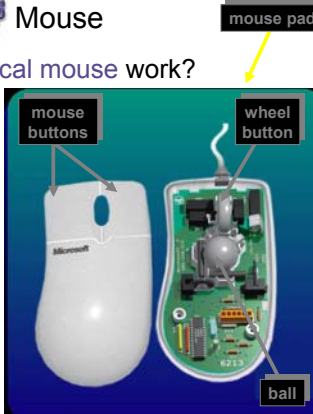
Next  
p. 57

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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  
mouse buttons  
wheel button  
ball


Next  
p. 57 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



back button    wheel button  
forward button  
optical sensor


Next  
p. 57 Fig. 5-10

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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




Next  
p. 58 Fig. 5-11

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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

Next  
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



Next  
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



Next  
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



Next  
p. 5.11 Fig. 5-16

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 surface and then press button on pen



Next  
p. 5.12 Fig. 5-17


light pen

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### Other Pointing Devices

What is a **touch screen**?

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



Next  
p. 5.12 Fig. 5-18

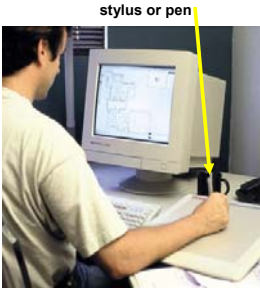
touch screen

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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




Next  
p. 5.13 Fig. 5-19

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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




Next  
p. 5.13 Fig. 5-20

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### Other Pointing Devices

What is **handwriting recognition software**?

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



Next  
p. 5.14 Fig. 5-21

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### Voice Input

How does voice recognition work?

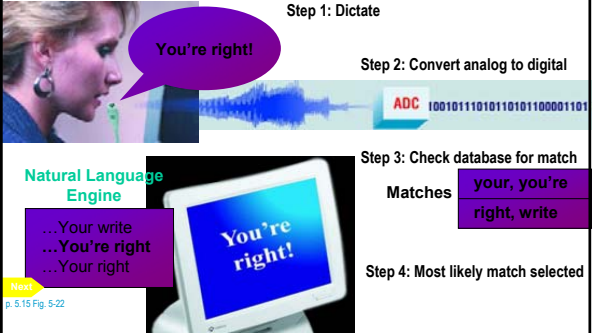
Step 1: Dictate  
You're right!

Step 2: Convert analog to digital  
ADC 10010111010110101100001101

Step 3: Check database for match  
Matches your, you're right, write

Step 4: Most likely match selected  
You're right!

Natural Language Engine  
...Your write  
...You're right  
...Your right



Next  
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



Next  
p. 5.16 Fig. 5-23

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### Input Devices for Handheld Computers

How is a data entered into a handheld device?



Next  
p. 5.17 Fig. 5-25

**Discovering Computers 2003** Digital Cameras  
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### 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

**Discovering Computers 2003** Digital Cameras  
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### 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

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### What is resolution?

- Sharpness and clarity of image
- Higher the resolution, the better the image quality, but the more expensive the camera
- Pixel (picture element) is single point in electronic image
- Greater the number of pixels, the better the image quality




**Next**  
p. 5.20 Fig. 5-29

**Discovering Computers 2003** Video Input  
 Concepts for a Digital World  
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### 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

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 Concepts for a Digital World  
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### 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

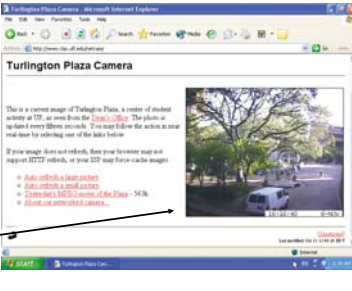


**Next**  
p. 5.22 Fig. 5-29

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### 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



**Next**  
p. 5.23 Fig. 5-31


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 Concepts for a Digital World Web and XP Enhanced

### 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. 524 Fig. 5-32


**Discovering Computers 2003** Scanners and Reading Devices  
 Concepts for a Digital World Web and XP Enhanced

### Scanners and Reading Devices

#### What is a scanner?

- Device that captures data directly from source document

- Source document




Next p. 524

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 Concepts for a Digital World Web and XP Enhanced

### 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



Next p. 525 Fig. 5-33

**Discovering Computers 2003** Scanners and Reading Devices  
 Concepts for a Digital World Web and XP Enhanced

### Scanners and Reading Devices

#### What are various types of scanners?




Next p. 526 Fig. 5-34

**Discovering Computers 2003** Scanners and Reading Devices  
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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**



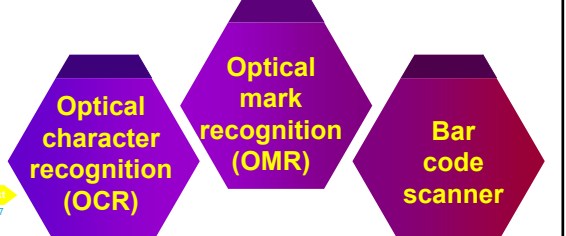
Next p. 526

**Discovering Computers 2003** Scanners and Reading Devices  
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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



Next p. 527

**Discovering Computers 2003** Scanners and Reading Devices  
 Concepts for a Digital World Web and XP Enhanced

### 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. 527 Fig. 5-35

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 Concepts for a Digital World Web and XP Enhanced

### What is a turnaround document?

- You return it to company that sent it

numbers are read by OCR device when document is returned

Next p. 527 Fig. 5-36

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### What is optical mark recognition (OMR)?

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

Next p. 528 Fig. 5-37

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### What is a bar code scanner?

- Uses laser beams to read bar codes

bar code scanners

Next p. 528 Fig. 5-38

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### 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. 528 Fig. 5-39

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 Concepts for a Digital World Web and XP Enhanced

### 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

Next p. 530 Fig. 5-41

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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

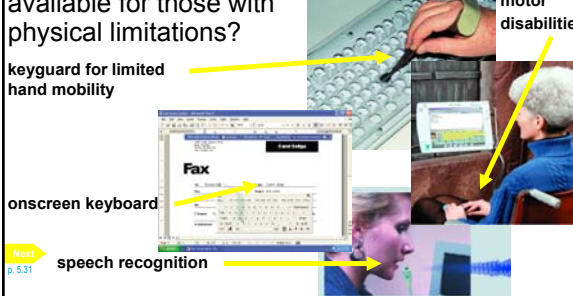


Next  
p. 5.30 Fig. 5-42

**Discovering Computers 2003** Input Devices for Physically Challenged Users  
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What input devices are available for those with physical limitations?

- keyguard for limited hand mobility
- onscreen keyboard
- speech recognition
- pointing device for those with motor disabilities



Next  
p. 5.31

**Discovering Computers 2003** Input Devices for Physically Challenged Users  
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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

**Discovering Computers 2003** PUTTING IT ALL TOGETHER  
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What type of input devices do home users require?



Home


- 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

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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

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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



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What type of input devices do power users require?




**Power**

- 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

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What type of input devices do large business users require?



**Large Business**

- 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

**Next**  
p. 5.33 Fig. 5-46

**Discovering Computers** Summary of Input  
Concepts for a Digital World 2003  
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- 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**

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