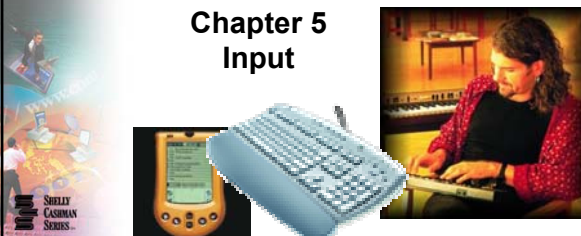


SHELLY CASHMAN SERIES<sup>™</sup>

# Discovering Computers

Concepts for a Digital World  
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## 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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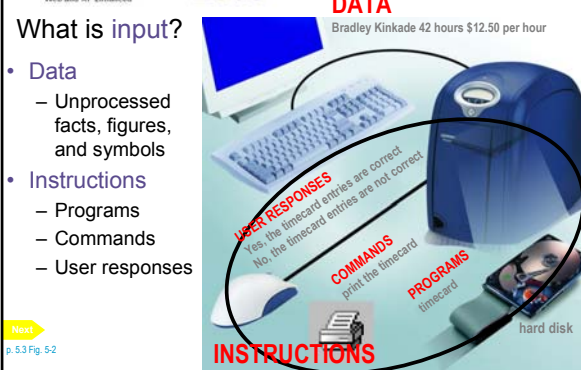
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## What Is Input?

**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



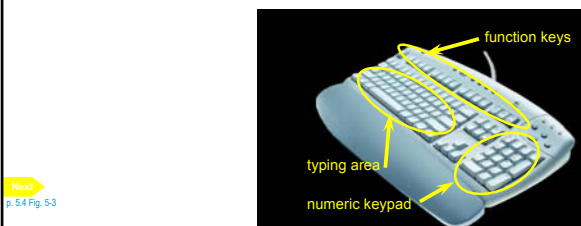
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## The Keyboard

How is the keyboard divided?

- Typing area
- Numeric keypad
- Function keys



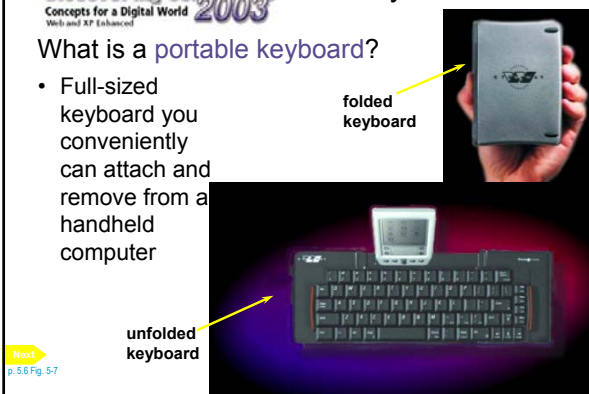
Next p. 54 Fig. 5-3

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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

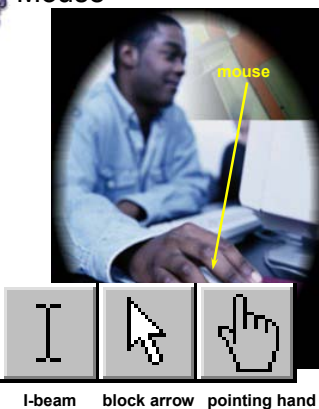
Next  
p. 54 Fig. 5-4

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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



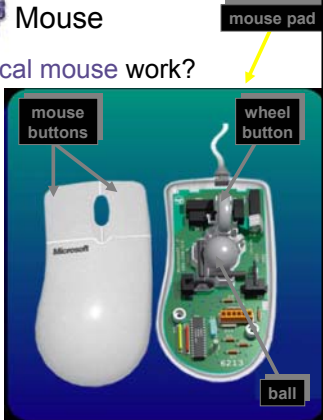
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## Mouse

How does a **mechanical mouse** work?

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




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




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

**trackball**


Next  
p. 5.10 Fig. 5-13

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### Other Pointing Devices

What is a **touchpad**?

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



**touchpad**


Next  
p. 5.10 Fig. 5-14

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### Other Pointing Devices

What is a **pointing stick**?

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



**pointing stick**


Next  
p. 5.11 Fig. 5-15

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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**


Next  
p. 5.11 Fig. 5-16

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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**


Next  
p. 5.12 Fig. 5-17

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### Other Pointing Devices

What is a **touch screen**?

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



**touch screen**

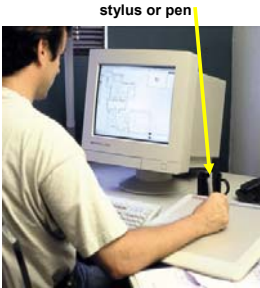
Next  
p. 5.12 Fig. 5-18

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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




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

**Discovering Computers 2003** Digital Cameras  
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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  
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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

**Discovering Computers 2003** Video Input  
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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

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 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

OCR




Next p. 524

**Discovering Computers 2003** Scanners and Reading Devices  
 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

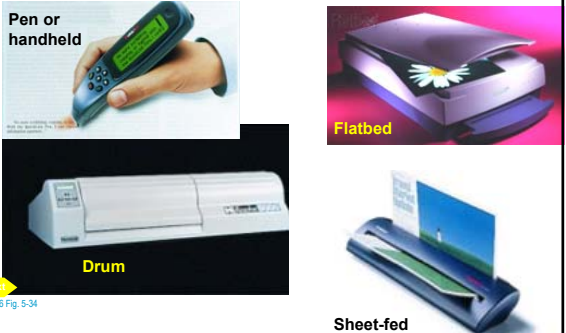


Next p. 525 Fig. 5-33

**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?



Pen or handheld

Flatbed

Drum

Sheet-fed


Next p. 526 Fig. 5-34

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 Concepts for a Digital World Web and XP Enhanced

### 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**



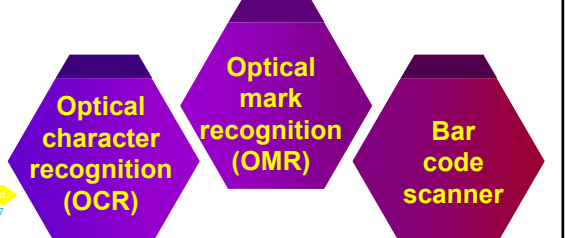
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**Discovering Computers 2003** Scanners and Reading Devices  
 Concepts for a Digital World Web and XP Enhanced

### 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

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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### 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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 Concepts for a Digital World Web and XP Enhanced

### 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

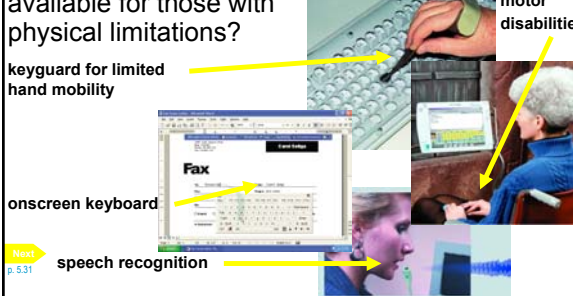


Next  
p. 5.30 Fig. 5-42

**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  
 Concepts for a Digital World Web and XP Enhanced

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

**Discovering Computers 2003** PUTTING IT ALL TOGETHER  
 Concepts for a Digital World Web and XP Enhanced

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



**Discovering Computers** PUTTING IT ALL TOGETHER  
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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

**Discovering Computers** PUTTING IT ALL TOGETHER  
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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 Web and XP Enhanced

- 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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