Chapter 5

Information Input and Output
Let's Interface

Monthly Technology Update
Traditional Input Devices

Keyboards

Point-and-Draw Devices
Keyboards

- Alphanumeric
- Special-function
- Function keys
- Text cursor
- Menu
- QWERTY
Point-and-Draw Devices

- GUI
- Mouse cursor
- Click
- Double-click
- Drag
Point-and-Draw Devices

- Trackball
- Joystick
- Digitizer
- Tablet and Pen
- Trackpoint
- Trackpad

Photos Courtesy of:
- Imation Corporation
- Houston Instrument Div. AMETEK, Inc.
- Advanced Gravis Computer Technology Ltd.
Source-Data Automation

- Need to enter data more quickly, efficiently, and as close to the source as possible
- How?
  - Scanners
  - Smart Cards
  - Speech Recognition
  - Vision-Input Systems
  - Digital Cameras
Input Devices - Scanners

OCR  Optical Character Recognition

Bar codes

Two scanner types:

Laser

Contact

Courtesy of International Business Machines Corporation and Caere Corporation
3 Basic Scanner Categories
(OCR and Bar codes)

• Handheld label scanners
  ◆ Wand scanners
  ◆ Can use contact or laser technology

• Stationary label scanners
  ◆ Common in grocery stores
  ◆ Use laser technology only

• Document scanners
  ◆ Can scan documents of various sizes
  ◆ Can create a turnaround document
Image Scanners

- Digitizes an image
- Image Processing: *manipulating* and *managing* scanned images
- Two types:
  - Page image scanners
  - Hand image scanners
- Paperless society

Photo courtesy of Hewlett-Packard Company
Cards Using Technology

Magnetic Stripe Cards

- Magnetic stripe encoded with data
- Great for storing confidential information
- Badge readers

Smart Cards

- Contains microprocessor
- May soon replace magnetic stripe cards
- Stored-value cards

Courtesy of Gemplus
Speech Recognition

- “Killer App” includes
  - Software
  - Generic vocabulary database
  - High-quality microphone
- Need to train system
- Speaker-Independent systems

Courtesy of Dragon Systems Inc.
Vision-Input Systems

- Uses a camera to digitize the image
- Stores digitized image in a database
- Continually compares new images to stored images in database
- Suited to very specialized tasks like quality-control inspections
Digital Cameras
Are you getting the picture?

Is it making sense?

GOOD!!

Mr. Potato Head wants to know:
Output Devices

- Monitors
- Printers
- Multimedia Projectors
- Voice - Response Systems
What Determines a Monitor’s Capabilities?

- Graphics Adapter
- Size
- Resolution
- Display Quality
• Device controller for the monitor
• Inserted into expansion slot
• AGP technology
• Video RAM (VRAM)
Monitor Size

Balance what you need with what you can afford.
Screen Resolution

The size of the screen image is measured in pixels.

1024 pixels

768 pixels

Students are great!
Dot Pitch

The distance between centers of adjacent pixels.

Low Resolution  Higher Resolution

.28mm (millimeters) or less is recommended!
Vertical Refresh Rate

The number of times per second the screen image is redrawn.

80 Hz or better and non-interlaced is recommended!
Flat Panel Monitors (LCD)

Main difference is refresh rate.

Passive is much slower - can’t play video/animation!

Active vs. Passive Matrix

Courtesy of ViewSonic® Corporation
Touch Screens

Courtesy of Diebold Incorporated
Printers

- Cost
- Color vs. black and white
- Output volume needs
- Output quality needs
- Special feature needs
- Network concerns

Purchase Considerations
Page Printers

- Laser, LED, LCS
- Near-typeset-quality
- 600 dpi to 1200 dpi
Ink-jet Printers

- Budget-minded consumer’s choice
- 600 dpi and up
- Inexpensive for color abilities
Other Printers

- Large-Format Ink-Jet Printers
- Dot Matrix Printers
- Multifunction Peripheral
Other Output Devices

- Presentation Graphics
  - LCD Panels
  - LCD Projectors
- Voice-Response Systems
  - Reproduction of human voice/sounds
  - Speech synthesis
Terminals

- Dumb and smart terminals:
  - Video display terminal (VDT)
  - Dumb: monitor and keyboard only
  - Smart terminals: may have RAM and processor, but not meant for stand-alone
- Telephone terminals and telephony
  - Integration of computers and telephones
- ATM and POS
End of Chapter 5