

Input and Output

Chapter 6

Computing
Essentials 2014

Competencies (Page 1 of 2)

- Define input.
- Describe keyboard entry including types and features of keyboards.
- Discuss pointing devices including game controllers and styluses.
- Describe scanning devices including optical scanners, RFID readers and recognition devices.
- Discuss image capturing devices and audio-input devices.

Competencies (Page 2 of 2)

- Define output.
- Discuss monitor features and types including flat-panels and e-books.
- Define printing features and types including ink-jet and cloud printers.
- Discuss audio and video devices including portable media devices, and Mobile DTV.
- Define combination input and output devices including multifunctional devices, Internet telephones, robots, and VR headgear and gloves.
- Discuss ergonomics and ways to minimize physical damage.

Introduction

- Have you ever wondered how information gets into your computer or comes out in a form you can use?
 - Input devices convert what we understand into what the system unit can process
 - Output devices convert what the system unit has processed into a form that we can understand





What is Input?

- Any data or instructions used by a computer
- Input devices translate data into a form that the system unit can process
- Some hardware input devices include:
 - Keyboards
 - Mice
 - Pointing devices
 - Scanning devices
 - Image capturing devices
 - Audio-input devices

Keyboard Entry

- Keyboards
 - Traditional keyboards
 - Notebook keyboards
 - Virtual keyboards
 - Thumb keyboards



Pointing Devices (Page 1 of 2)

*Mice -
Optical
Mechanical
Wireless*



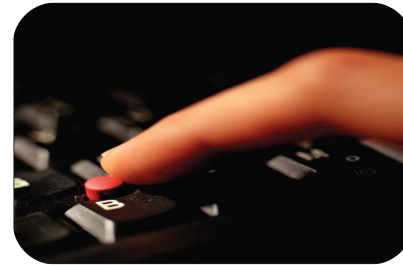
Mouse



Trackball



Touch pad



Pointing
stick

Pointing Devices (Page 2 of 2)



Stylus



Joystick



Multitouch
screen



Touchscreen



Game Pad



Dance Pad

Scanning Devices (Page 1 of 2)

- **Optical scanners**
 - Flatbed scanners
 - Document scanners
 - Portable scanners
- **Card Readers**
 - Magnetic card readers



Flatbed scanner



Portable scanner



Document scanner

Scanning Devices (Page 2 of 2)

■ Bar code readers

- Handheld wand readers or platform scanners
- Contain photoelectric cells that read bar codes



■ RFID Readers

- RFID tags are tiny chips embedded for tracking



■ Character and mark recognition devices

- Magnetic-ink character recognition (MICR)
- Optical-character recognition (OCR)
- Optical-mark recognition (OMR)



Image Capturing Devices

- Digital cameras
 - Images recorded digitally on disk or in camera's memory
 - Images can be downloaded to a computer
- Digital video cameras
 - Records motion digitally, can also take still images
- WebCams
 - Specialized digital video cameras built-in or attached to the monitor



Attached WebCam

Audio-Input Devices

- Voice recognition systems
 - Use a microphone, sound card, and special software
 - Users can operate computers and create documents using voice commands



What is Output?

- Processed data or information
- Types of output
 - Text
 - Graphics/photos
 - Audio & video
- Output devices
 - Monitors
 - Printers
 - Audio-output devices



Monitors (Page 1 of 3)

- Known as screens or display screens
- Output referred to as soft copy
- Features
 - Resolution/pixels
 - Dot pitch
 - Contrast ratios
 - Size
 - Aspect ratio

| Standard | Pixels |
|----------|---------------|
| UXGA | 1,600 × 1,200 |
| QXGA | 2,048 × 1,536 |
| WQXGA | 2,560 × 1,600 |
| QXSGA | 2,560 × 2,048 |
| QWXGA+ | 2,880 × 1,800 |



Monitors (Page 2 of 3)

- Flat-panel monitors
 - Require less power to operate
 - Portable and thinner than CRTs
 - Liquid Crystal Display (LCD)
 - TFT-LC
 - AMOLED



Monitors (Page 3 of 3)

- Other monitors
 - E-Book readers
 - Digital/interactive whiteboards
 - High-definition television (HDTV)



Making IT Work for You ~ Using E-Books

- Enjoy reading on the go
- Many feature subscriptions to newspapers and magazines



Printers (Page 1 of 2)

- Translates information that has been processed by the system unit
- Output referred to as hard copy
- Features
 - Resolution
 - Color
 - Speed
 - Memory
 - Duplex printing



300 dpi



1200 dpi

Printers (Page 2 of 2)

- Ink-jet printers
- Laser printers
 - Personal or shared
- Other printers
 - Cloud printers
 - Thermal printers
 - Plotters



Audio and Video Devices

- Translates audio information from the computer into sounds that people can understand
 - Speakers and headsets
- Portable media players/digital media players
 - Apple iPod, Creative Zen, Microsoft Zune
 - Mobile digital television (Mobile DTV)



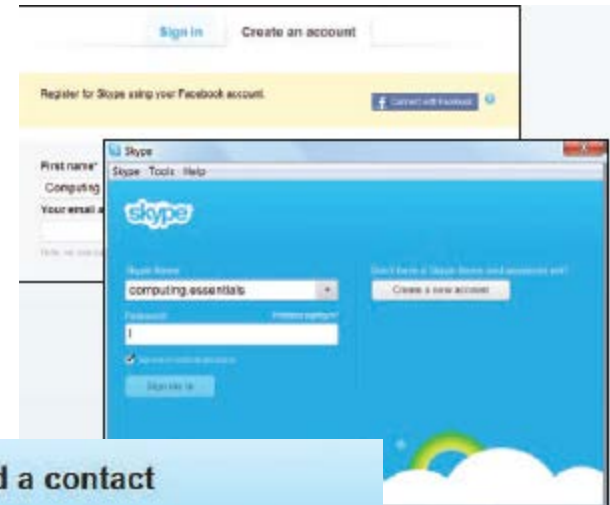
Combination Input and Output Devices

- Multifunctional devices (MFD)
- Internet telephones
 - Known as Internet telephony and IP telephony
 - Voice-over IP (VoIP)
 - Ooma
 - Vonage
 - MagicJack
 - Skype



Making IT Work for You ~ Skype

- Communications tool using VoIP
- www.skype.com



Add a contact

If they're on Skype too, calls are free.

Enter all the details you know:

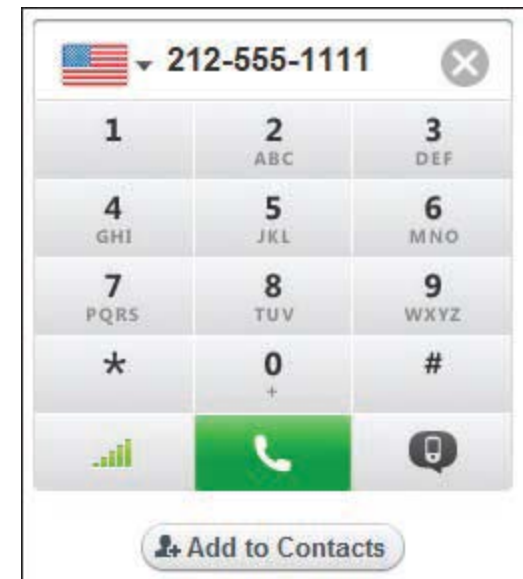
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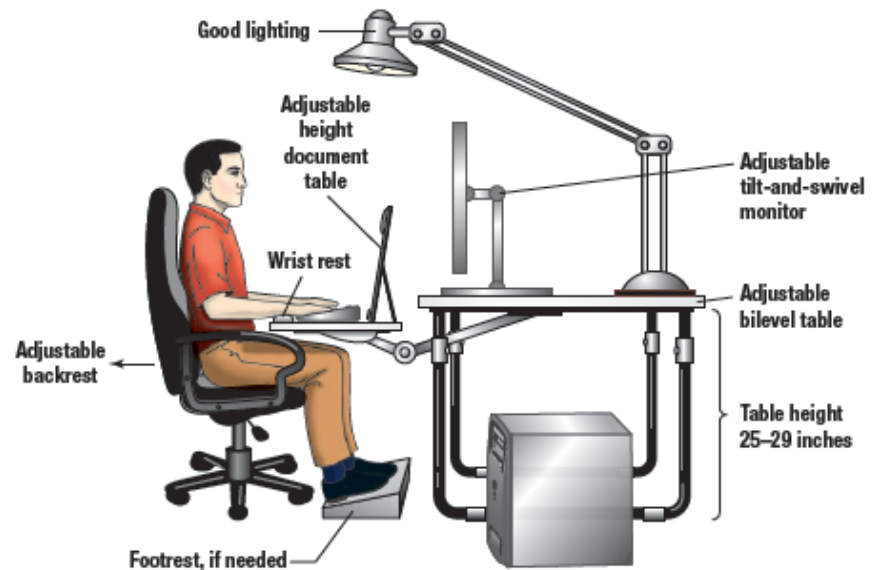


Artificial Intelligence and Virtual Reality

- Artificial intelligence (AI)
- Robotics
 - Robots
 - Perception system robots
 - Industrial robots
 - Mobile robots
 - Household robots
- Virtual Reality
 - Headgear

Ergonomics

- Study of human factors related to things people use
- Fit the task to the user to avoid:
 - Eyestrain and headache
 - Back and neck pain
 - Repetitive strain injury



Careers In IT

- **Technical writers prepare instruction manuals, technical reports, and other scientific or technical documents**
- **Typically requires a college degree**
 - Communications
 - Journalism
 - English
 - Specialization or familiarization with a technical field
- **Technical writers can expect to earn \$41,000 to \$78,000 annually**



A Look to the Future

Electronic Translators May Be in Your Future

- Electronic Interpretation may soon exist to provide personal interpretation for foreign languages and images
- Prototype portable handheld electronic interpreters are currently in a testing phase at the U.S. Office of Naval Research



Open-Ended Questions (Page 1 of 2)

- Define input and input devices.
- Describe the different types of keyboard, pointing, scanning, image capturing, and audio-input devices.
- Describe output and output devices.
- Describe the features and different types of monitors and printers.

Open-Ended Questions (Page 2 of 2)

- Describe audio and video devices including portable media devices and mobile DTV.
- Discuss combination input and output devices, including multifunctional devices, Internet telephones, robots, and virtual reality headgear and gloves.
- Define ergonomics, and describe ways to minimize physical discomfort.