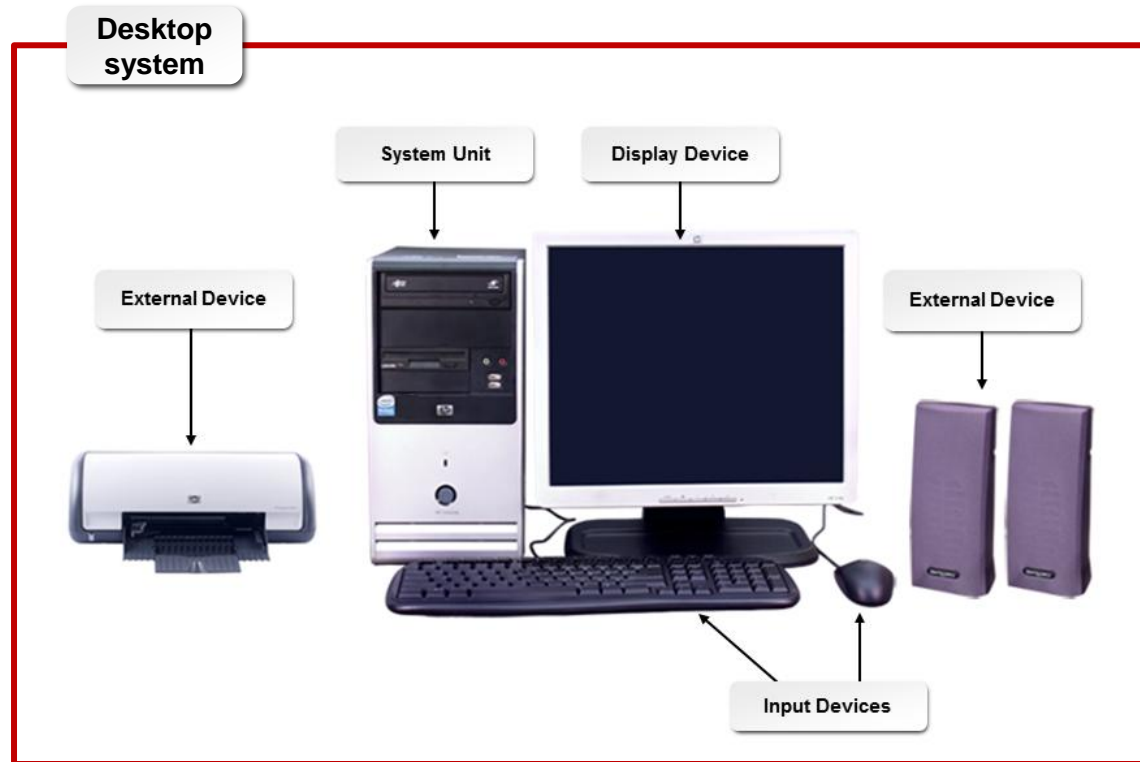


- **Identifying Computer Hardware**
- **Identifying Computer Software**
- **Setting Up a Basic Workstation**
- **Configuring Network Access**
- **Working with Files, Folders, and Applications**
- **Configuring and Using Wireless Devices**
- **Securing Computing Devices**
- **Supporting Computers and Users**

- **Identify Types of Computing Devices**
- **Identify Internal Computer Components**
- **Common Computer Connector Types**
- **Identify Common Peripheral Devices**



- **Computing device for one**
- **Used in offices, homes, and schools**
- **Used for a variety of functions**
 - Run software applications
 - Access the Internet
 - Communicate with others via email
 - Create new applications
 - Play games
 - Conduct research
- **Only limited by imagination and hardware computing power**



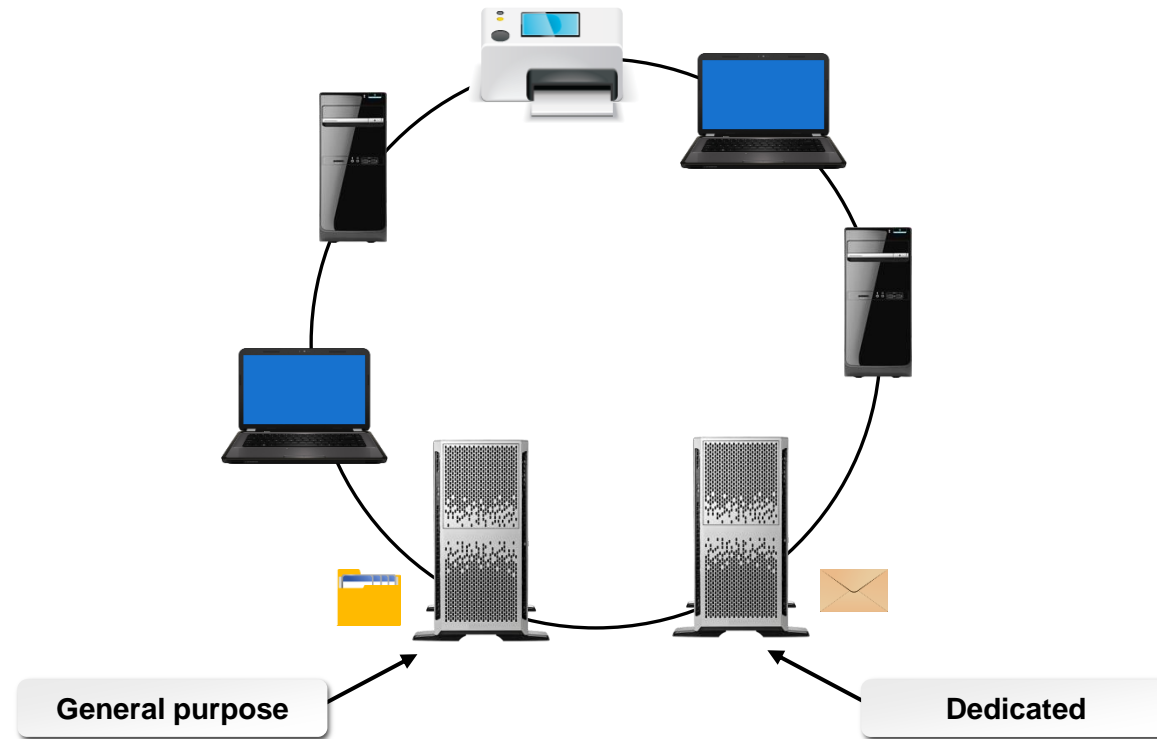


- Apple's iPad® and iPod® touch
- Amazon™ Kindle Fire™
- Samsung™ Galaxy tablets
- Toshiba Excite™
- Acer® ICONIA TAB
- ASUS Eee Slate
- Samsung™ Series 7 tablet
- Microsoft® Surface™
- BlackBerry® PlayBook™



- **Apple iPhone®**
- **Samsung™ Galaxy® Note**
- **Motorola® Moto X**
- **HTC One™**
- **Google™ Nexus**
- **Nokia™ Lumia Icon**
- **Blackberry® Z30**

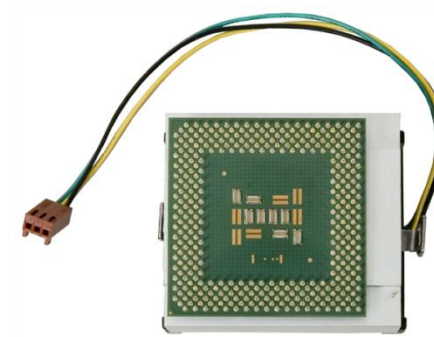
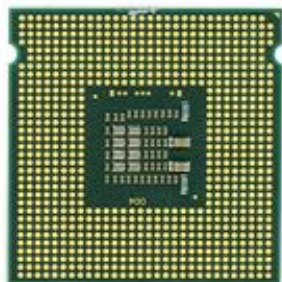


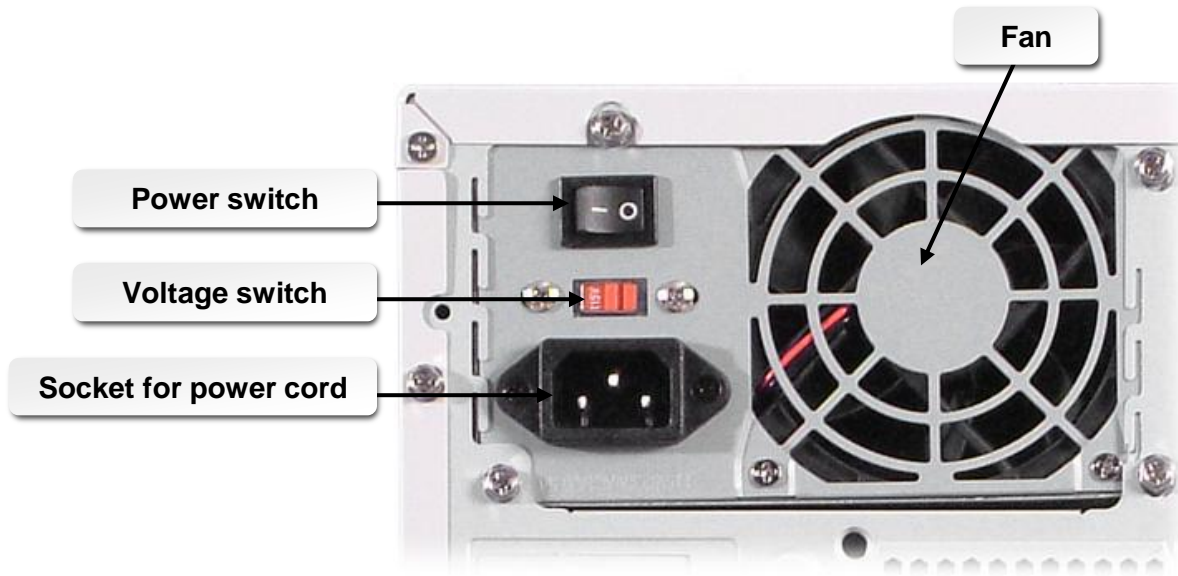


- **Super computers**
- **Mainframes**
- **eBook readers**
- **PDA's**
- **Media players**

The Motherboard







External view



Internal view

Wires from the power supply to the system board and drives

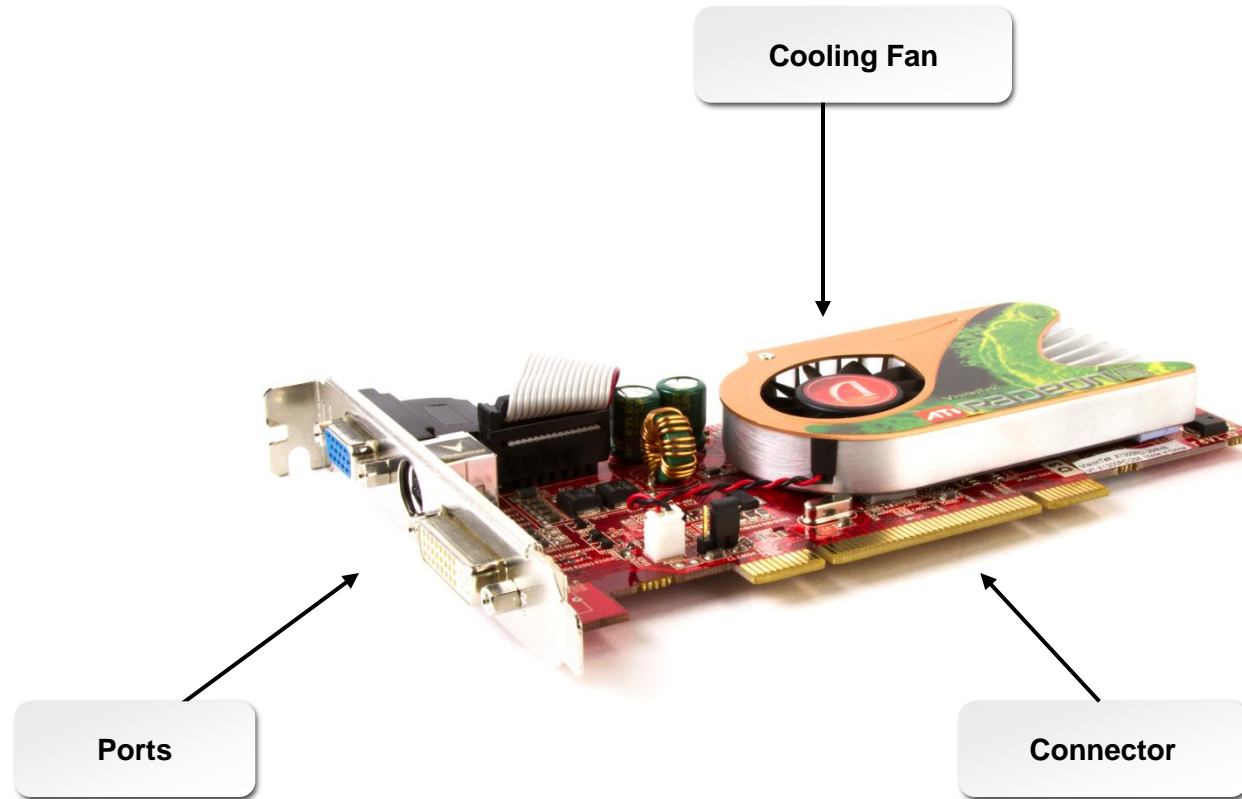
RAM



| Memory Unit | Description |
|---------------------------------|--|
| Byte | One character. A byte consists of 8 bits. |
| Kilobyte (KB) | 1,024 bytes or 8,192 bits constitute 1 KB. |
| Megabyte (MB, Meg, or M) | 1,048,576 bytes or 1,024 KB constitute 1 MB. |
| Gigabyte (GB) | 1,073,741,824 bytes or 1,024 MB constitute 1 GB. |
| Terabyte (TB) | 1,099,511,627,776 bytes or 1,024 GB constitute 1 TB. |

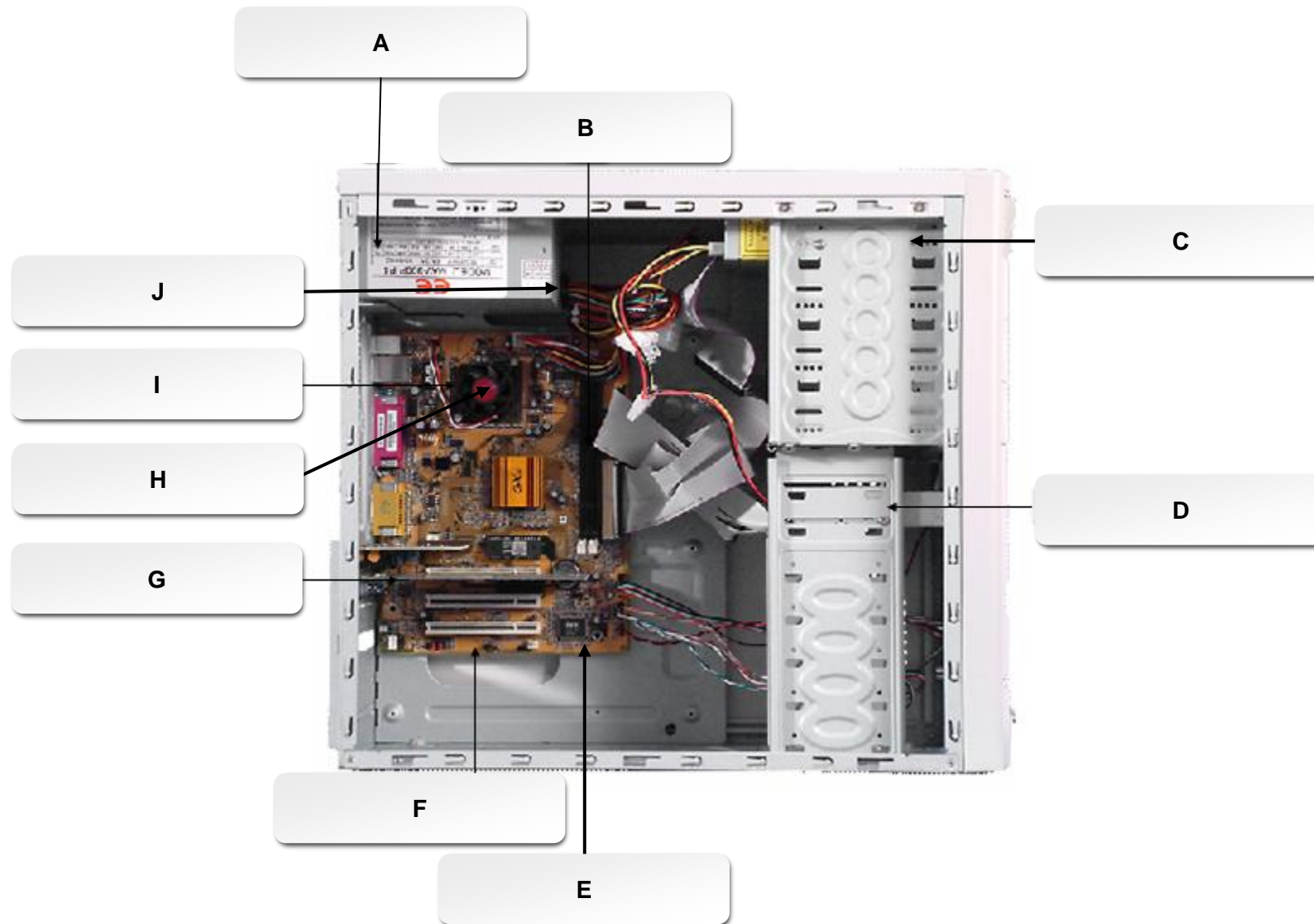
| Storage Type | Description |
|---|--|
| <p>Hard Disk Drive (HDD)</p>  | <p>Devices that store data digitally on non-removable magnetic coated disks that are rotated underneath a read/write head.</p> |
| <p>Solid State Drive (SSD)</p>  | <p>Devices, such as flash drives, contain no moving parts and store data in non-volatile memory instead magnetic drives.</p> |
| <p>Optical Drives</p>     | <p>Devices, such as CDs, DVDs, or Blu-ray discs, that store data optically rather than magnetically.</p> |

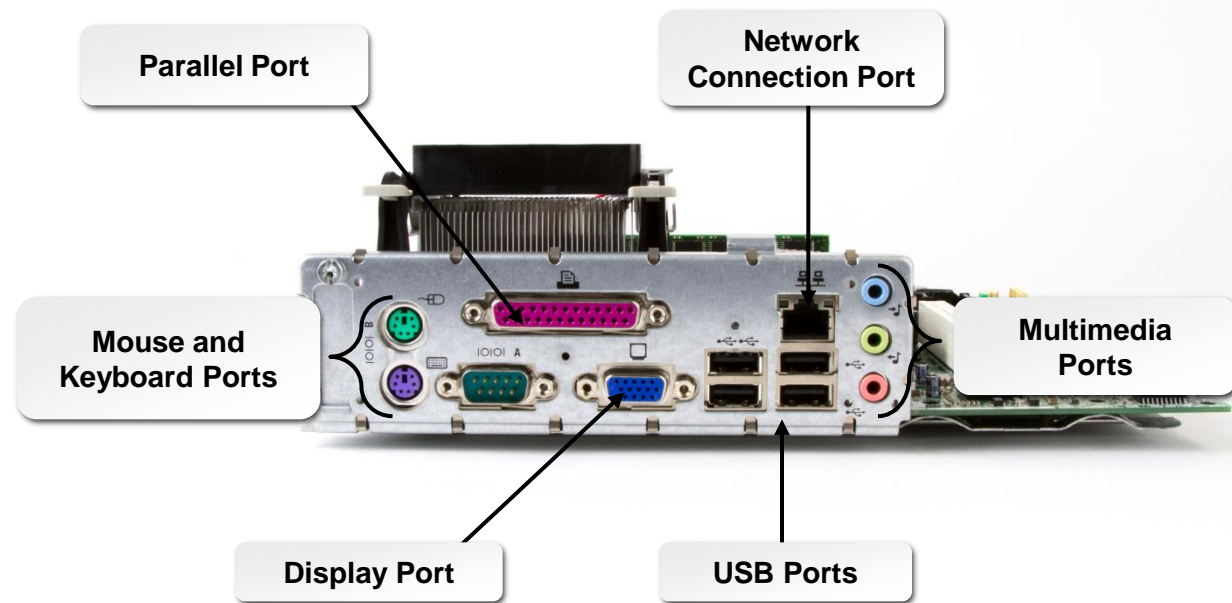
Expansion Cards

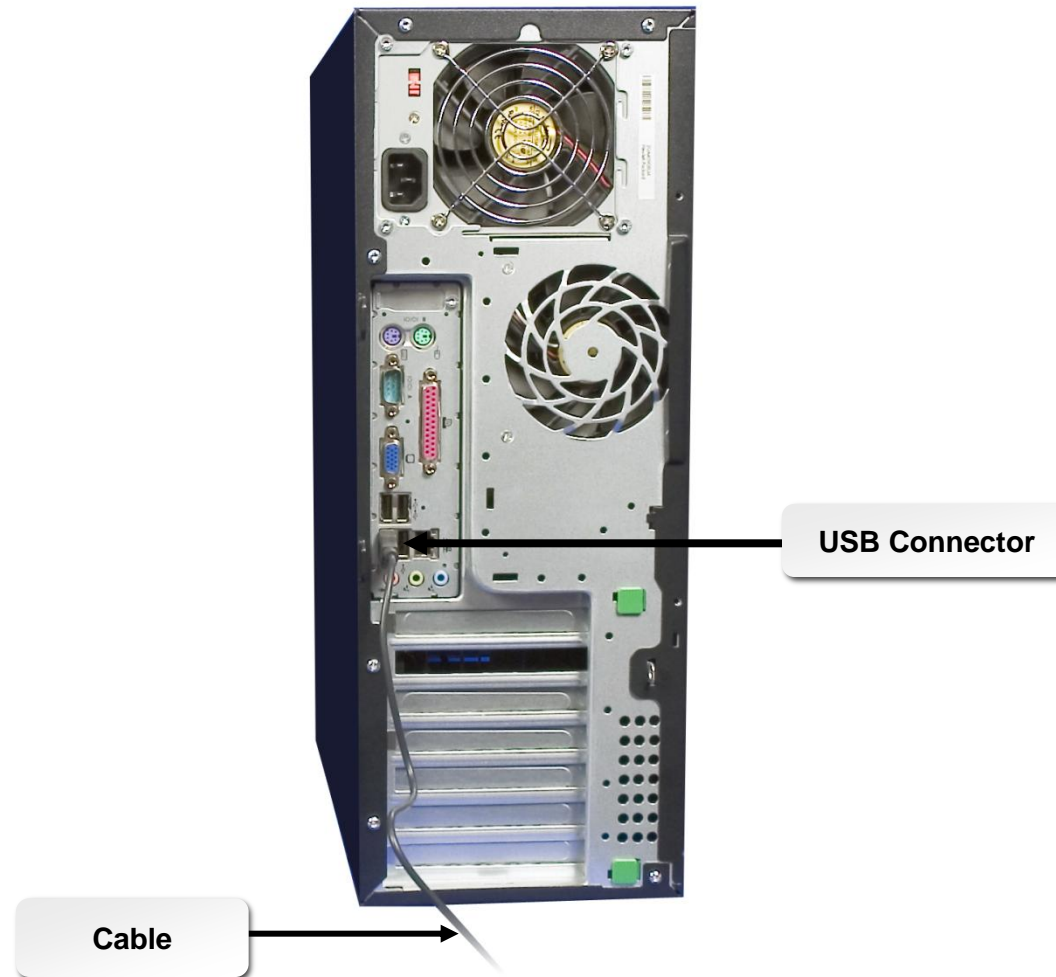




Internal Computer Components







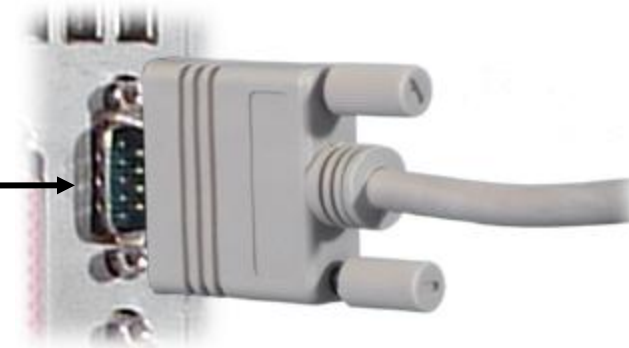
PS/2 Ports



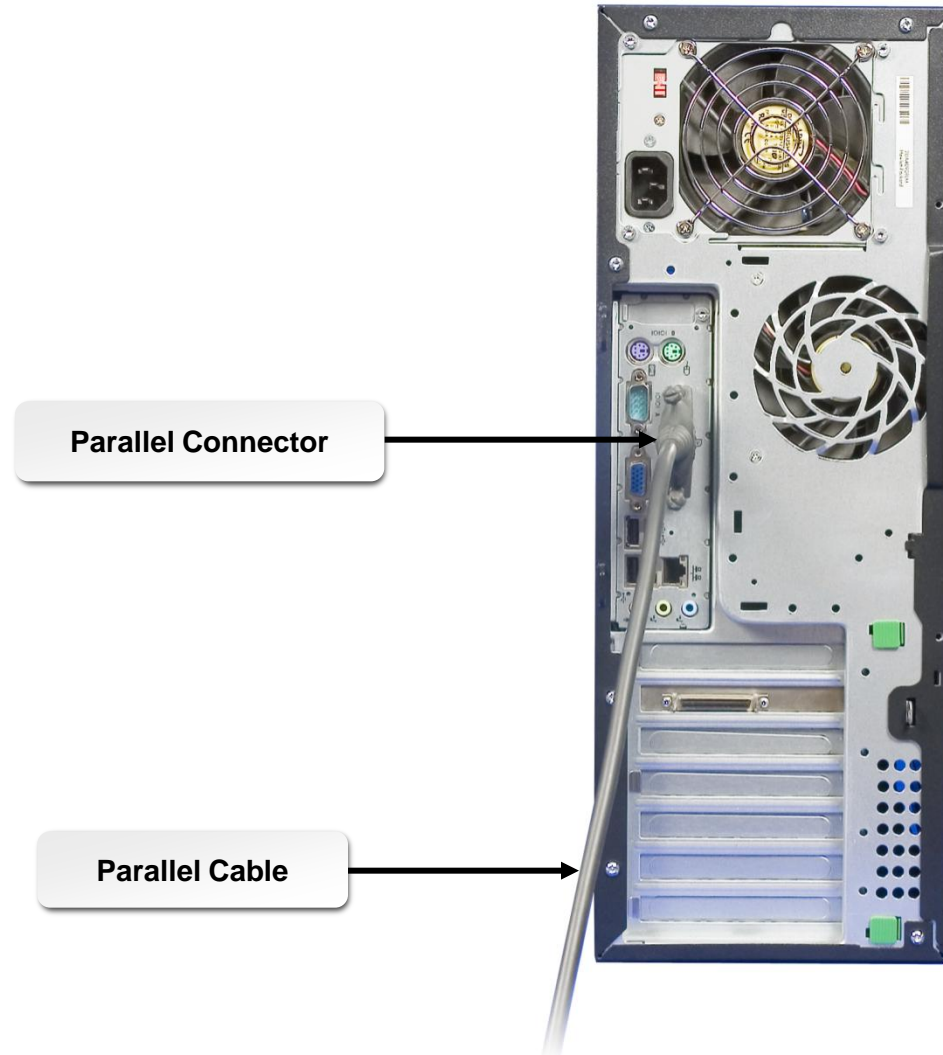
25-pin serial port
on a serial device



25-pin end of serial cable connects
to modem and 9-pin end
connects to computer's serial port



Parallel Connections



ATX



Berg

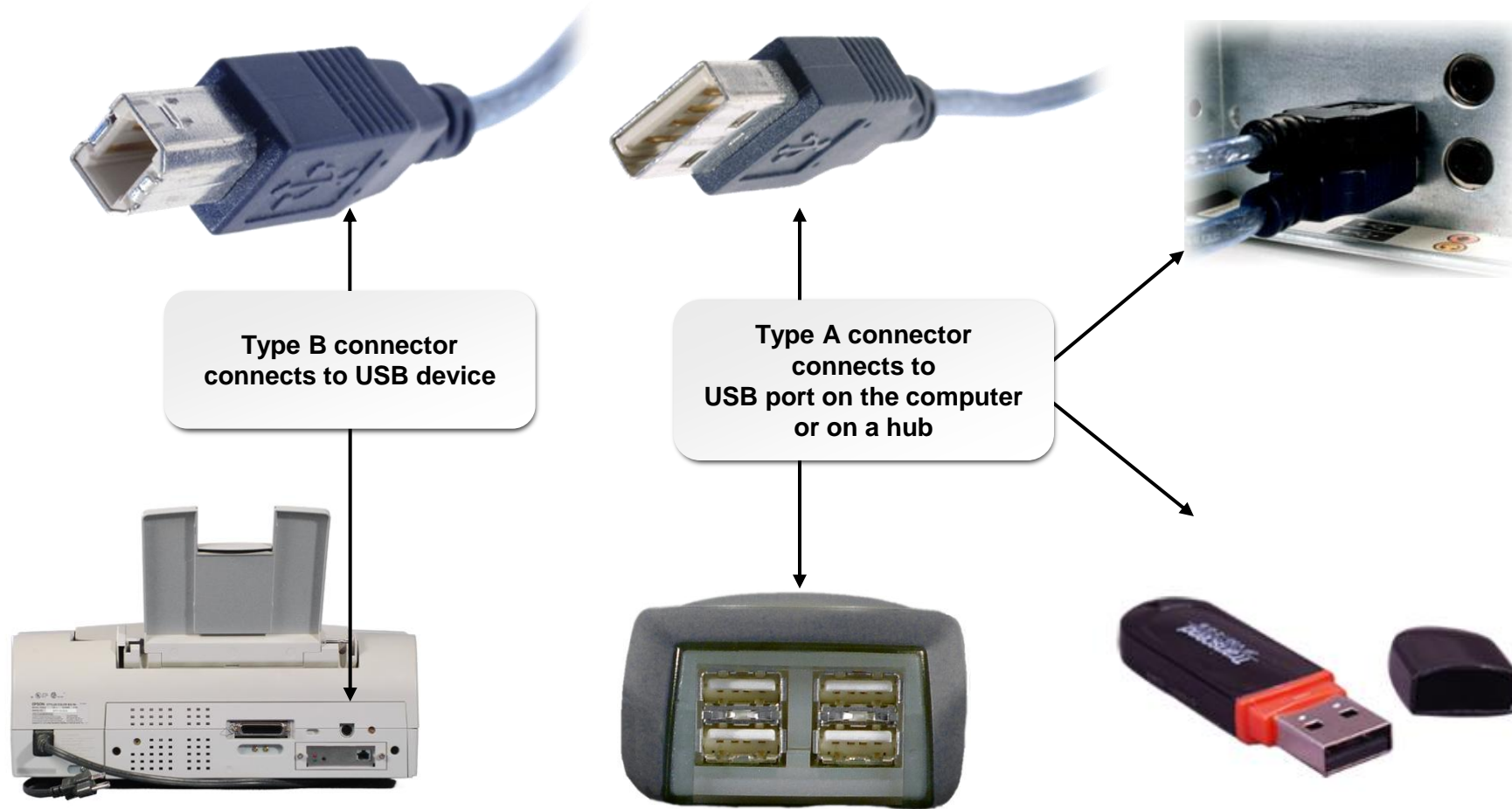


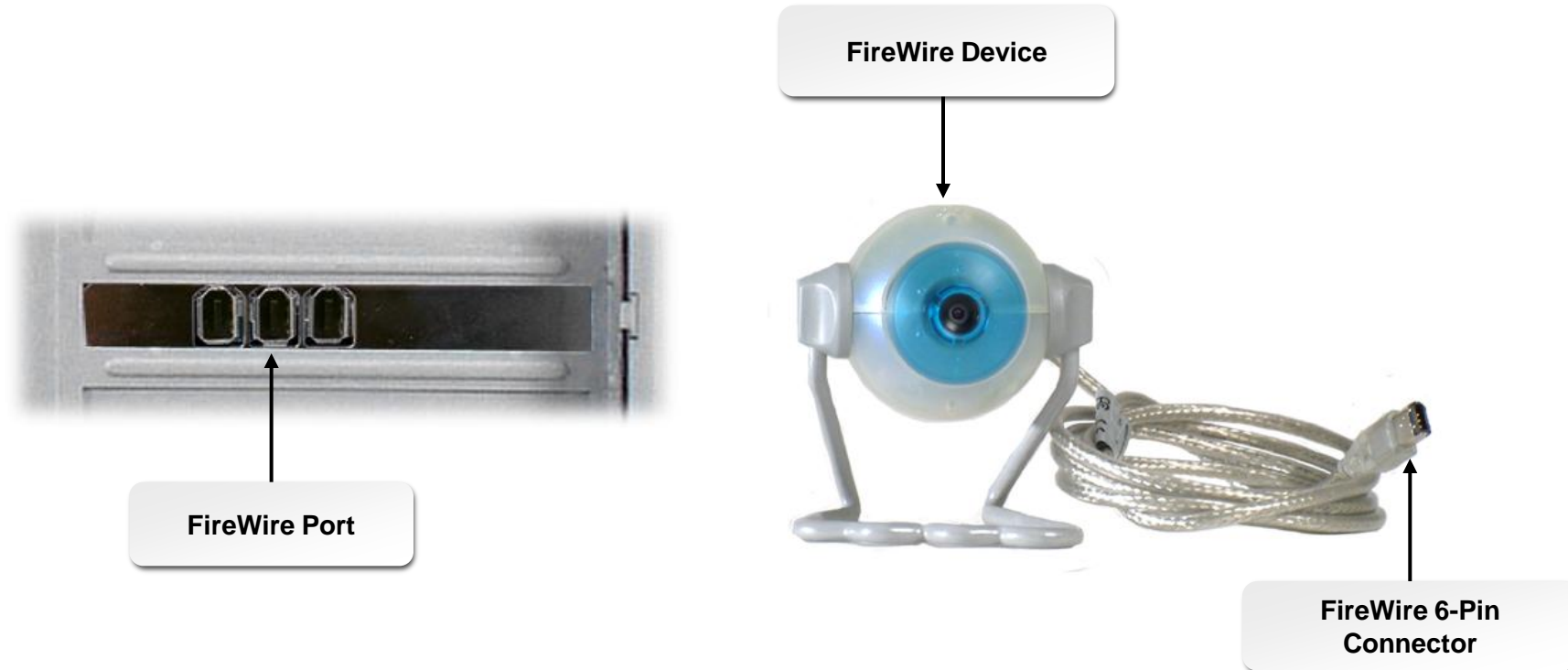
Molex



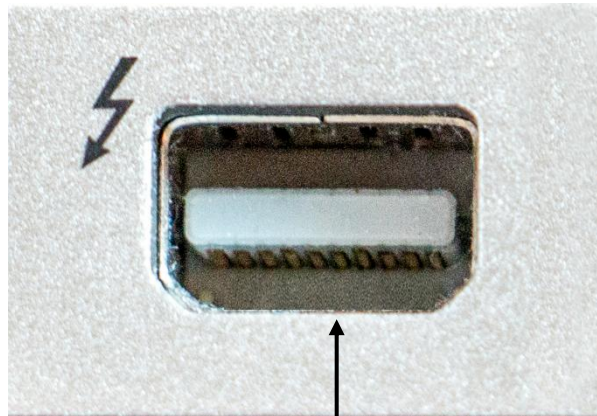
SATA







- Developed by Apple and Intel
- Carries data and display on a single cable
- Works with PCI and DisplayPort
- Can power peripherals with 10 watts of power
- Data transfer rate of about 10 Gbps
- Peripherals can be daisy-chained together



Thunderbolt port



Thunderbolt connector

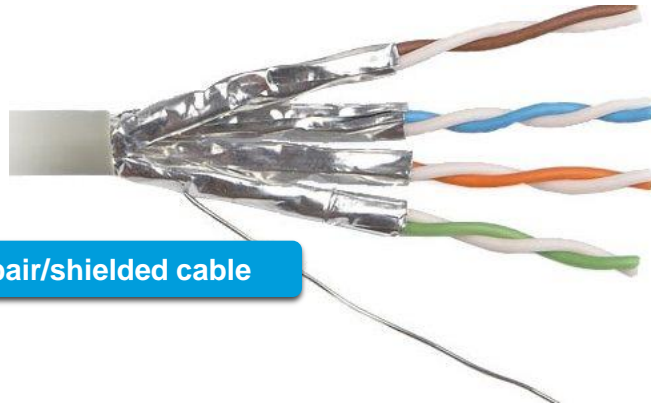
Single-core/shielded cable



TS and TRS connectors



One pair/shielded cable



3-pin XLR connectors



Video Ports and Connectors

VGA



DVI



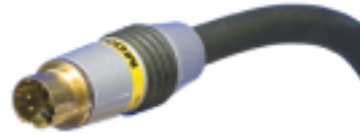
HDMI



Mini-HDMI



S-Video



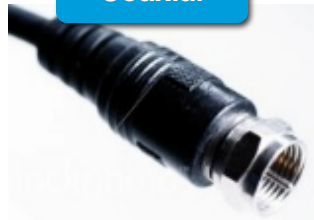
Component/RGB



Composite video



Coaxial



DisplayPort



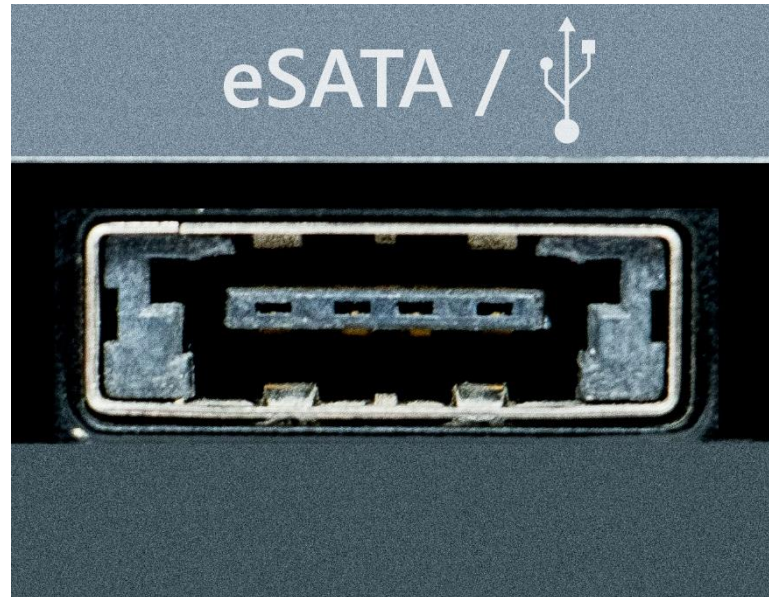
RCA



BNC



- External interface for SATA connections
- Connects external storage devices
- Provides fast data transfer rates
- Storage devices require their own power connector



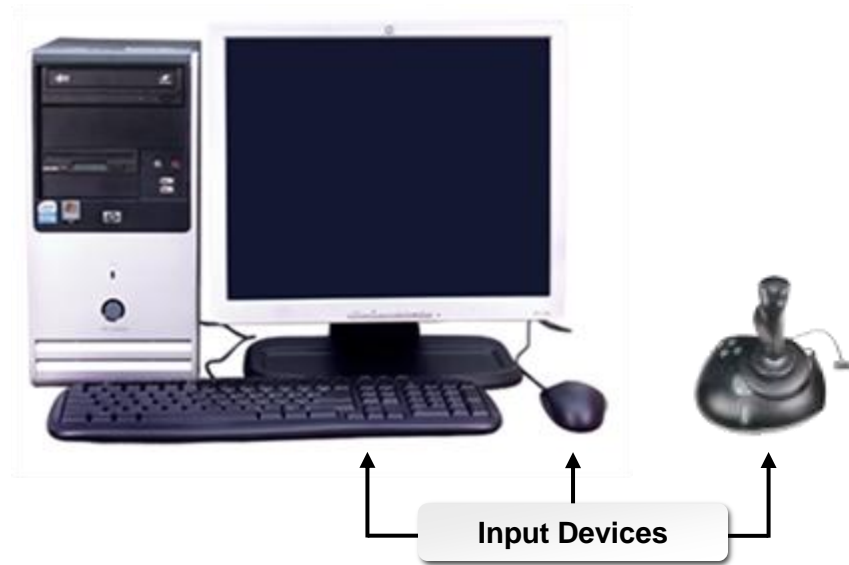
RJ-45 Connector



- **Used for telephones**
- **Has 4 or 6 pins**
- **Not suitable for network connectivity**



- **Input**
 - Mouse
 - Keyboard
- **Output**
 - Display
 - Speakers
 - Printer
- **Storage Devices**
 - Flash Drive
 - External Hard Drive





Standard Keyboards



Ergonomic Keyboard



Dvorak Keyboard



Pointing Devices



Other Input Devices



Output Devices



- **Laser**
- **Inkjet**
- **Thermal**

- **CRT**
- **LCD**
- **LED**
- **OLED**
- **Plasma**
- **Projector**

- **Fax devices**
- **External storage devices**
 - Flash drive
 - External hard drive
 - Optical discs and drives
 - Network attached storage
 - Memory card
 - Mobile media
 - Smartphone
- **Touchscreens**

- 1. How many of the personal computer components described are familiar to you?**
- 2. Which of the device connections discussed have you worked with before? Which were new?**

Identify Computer Software

- **Compare Functions and Features of Common Operating Systems**
- **Identify Application Software**



Operating System Software



- **Provides a user-friendly environment to work with system features and applications**
- **Converts user input and sends it to the monitor or other display device**
- **Controls peripheral devices**
- **Provides the structure for files and folders**
- **Monitors the operating system's health and functionality**

- **Open source**
- **Freeware**
- **Commercial**
- **Copyleft**
- **Shareware**

Types of Operating Systems for Workstations

- **Windows**
- **Mac OS X**
- **Linux**
- **Chrome OS**

Types of Operating Systems for Mobile Devices

- **Apple iOS**
- **Android OS**
- **Blackberry OS**
- **Firefox OS**
- **Windows Phone OS**

- **Hardware**
 - Windows Upgrade Assistant
- **Architecture (32-bit and 64-bit)**
 - Hardware
 - Applications
 - Drivers



Database



Word processing



Web browsers



Spreadsheets



PDF readers



Email



Presentations



Drawing and painting

- **Mobile**
- **Desktop**
- **Web-based**

- **Word processing**
- **Spreadsheet**
- **Email**
- **Database**
- **PDF**
- **Presentation**
- **Desktop publishing**
- **Personal information managers**
- **Remote desktop**

- **Online workspace**
- **Document storage/sharing**
- **Screen sharing**
- **Video conferencing**
- **Instant messaging**
- **Email**

- **Anti-malware**
- **Firewalls**
- **Diagnostic/Maintenance**
- **Compression**

- **Computer-aided design (CAD)**
- **Graphic design**
- **Medical**
- **Scientific**
- **Financial**
- **Gaming**
- **Entertainment**

- **Documents**
 - .txt, .rtf, .doc/.docx, .xls/.xlsx, .ppt/.pptx, .pdf
- **Audio**
 - .aac, .flac, .m4a, .mp3, .wav
- **Images**
 - .bmp, .gif, .jpg/.jpeg, .png, .tif/.tiff
- **Video**
 - .avi, .flv, .mp4, .mpg/.mpeg, .wmv
- **Executables**
 - .app, .bat, .com, .exe, .msi, .scexe
- **Compression formats**
 - .iso, .dmg, .gzip/.gz, .jar, .rar, .7zip/.7z, .tar, .zip

- 1. With which type of operating system (mobile, desktop, or web-based) do you have the most experience? Which do you have the least experience using?**
- 2. List one software application that you use most frequently. Which of its features do you like the most?**

- **Connect Hardware**
- **Install and Configure Operating Systems**
- **Install and Configure Applications**
- **Configure Accessibility Options**

- 1. Gather and connect hardware components.**
- 2. Power on computer.**
- 3. Run the operating system setup utility as needed.**
- 4. Configure peripherals as needed.**
- 5. Configure and verify the Internet connection as needed.**
- 6. Install security software.**
- 7. Install and remove applications as needed.**
- 8. Update operating system, security, and application software as needed.**
- 9. Configure user accounts as needed.**
- 10. Manage cables.**

- **Computer cords and cables can be a possible safety hazard, and can become disorganized and unsightly.**
- **Cable management tips:**
 - Use cord protectors when cords and cables must be on the floor where people need to walk.
 - Use Velcro strips, twist ties, or binder clips to gather cables so that they take up less space in your work area.

- **Minimum RAM**
- **Minimum hard disk space**
- **Minimum display resolution**
- **Any required hardware**
 - Keyboard
 - Mouse

- **Window setup wizard**
- **System image**
 - ISO file
 - Virtual machine
 - USB stick image

- **Date**
- **Time zone**
- **Language**
- **Keyboard type**
- **Screen resolution**
- **Audio settings**

- **A user account is an information profile that uniquely identifies a user on a computer.**
- **Require a user name and password.**
- **A user account can have different rights and permissions than other users.**

- **Control Panel**
 - Devices and Printers
 - Display
 - Keyboard
 - Mouse
 - Sound
 - Speech Recognition

- **Address security flaws and performance issues**
- **Often free of cost**
- **Types of updates**
 - Patches
 - Hotfixes
 - Service Packs
 - Rollups
- **Automatic updates**
 - Automatic download
 - Automatic installation or manual installation
 - Disable automatic updates

- **Software suites**
 - Productivity tools
- **Programs sold with an OS or new computer**
 - Security programs

- **A list of all applications installed on a computer**
- **Manual or software-assisted**

- **Web browser**
- **Email client**
- **Word processing software**
- **Security software**
- **Software updates, including updates to the OS**

- **Software that has lots of features and requires considerable disk space and RAM to install and run**

- **Application sharing applies to multiple users on the same computer.**
- **The installer might prompt you to install “For current user” only.**
- **Usually, applications are available to any account that has the proper permissions.**

Guidelines for Ensuring a Computer Contains Only the Necessary Applications

- **Conduct a manual inventory or purchase an inventory utility and run it.**
- **Identify one application for each of the following:**
 - A web browser
 - An email client
 - Word processing software
 - Security software
 - Software updates, including OS updates
- **Remove unnecessary applications.**
- **Install any other necessary applications.**

- **The use of assistive technology to make computers available and easier to use**

- **Mac OS X**

- VoiceOver
- Zoom and Cursor Size
- Dictation
- Invert Colors
- Close Captions
- Screen Flash
- Mono Audio
- Switch Control
- Slow Keys
- Sticky Keys
- Speakable Items
- Simple Finder
- Text to Speech

- **Chrome OS**

- ChromeVOX
- Accessibility settings

- **Android OS**

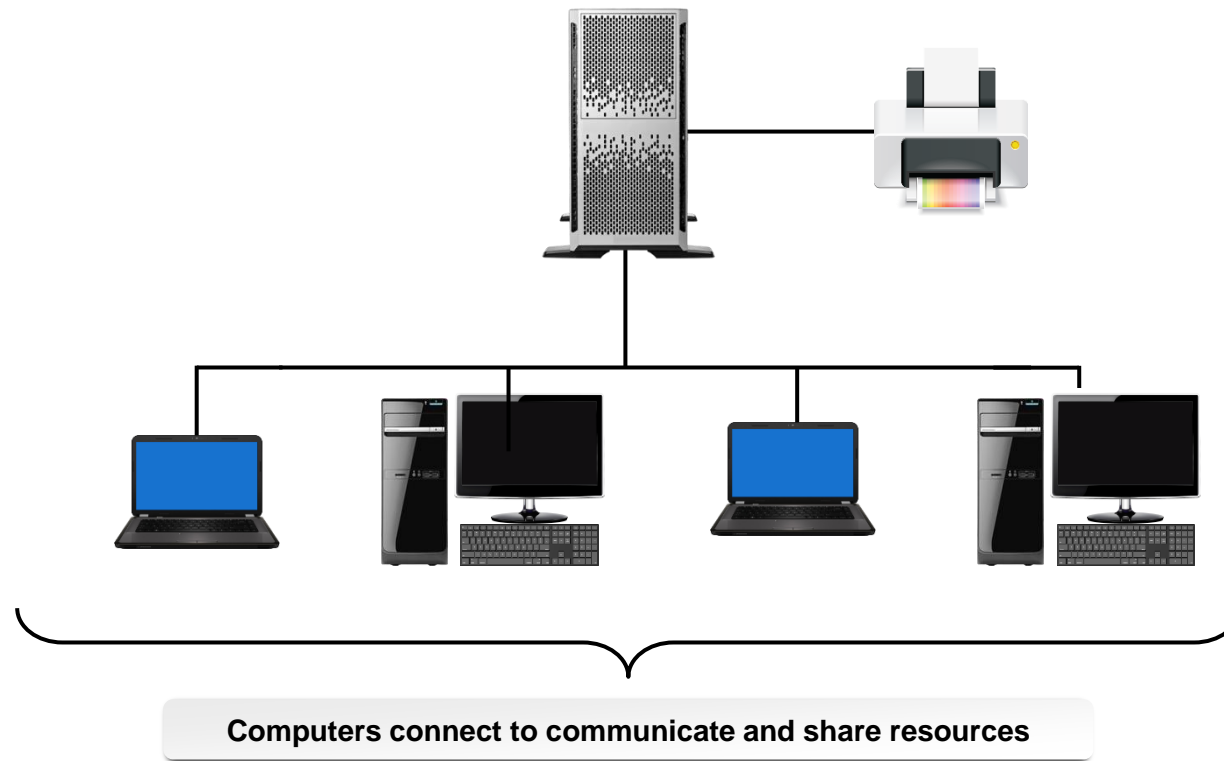
- TalkBack
- Explore by Touch

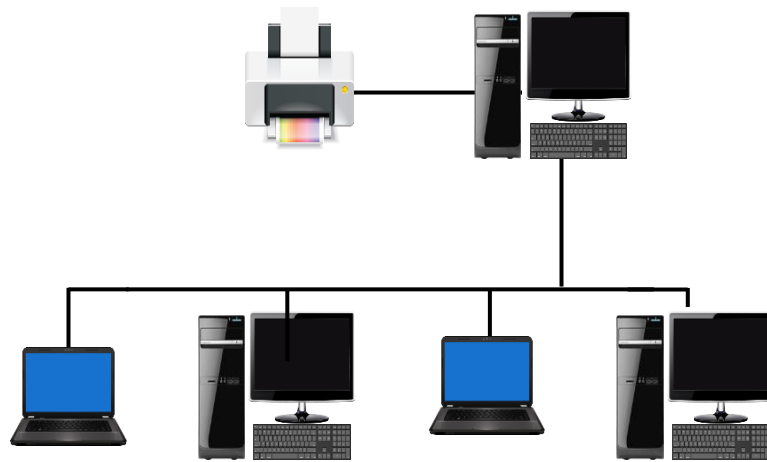
- **Braille translation software to convert text to Braille**
- **Eye-tracking devices to enable input capabilities with eye movements**
- **Tobii EyeMobile software to control a Windows 8 tablet with your eyes**

- 1. If you have experience with installing and configuring operating systems, what problems did you encounter and how did you address them?**
- 2. What applications do you feel are important to include in your personal required software list?**

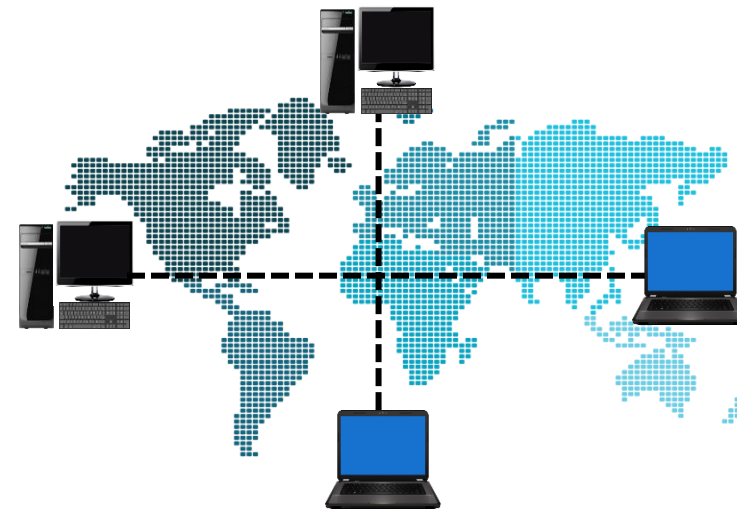
- **Network Connection Types**
- **Install and Configure a SOHO Router**
- **Network and Alternative Technologies**
- **Sharing and Storage Methods**

A Simple Computer Network





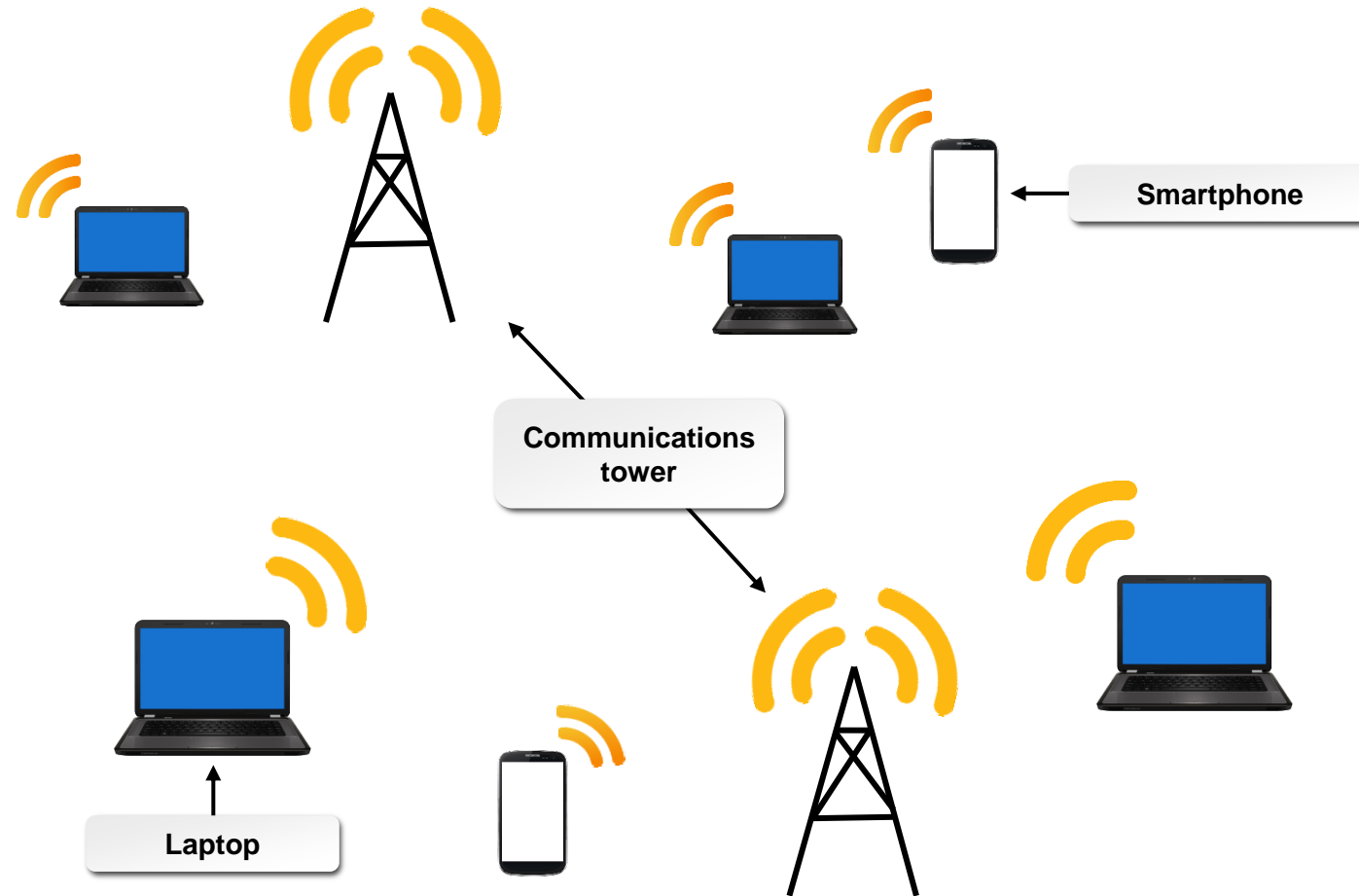
LAN

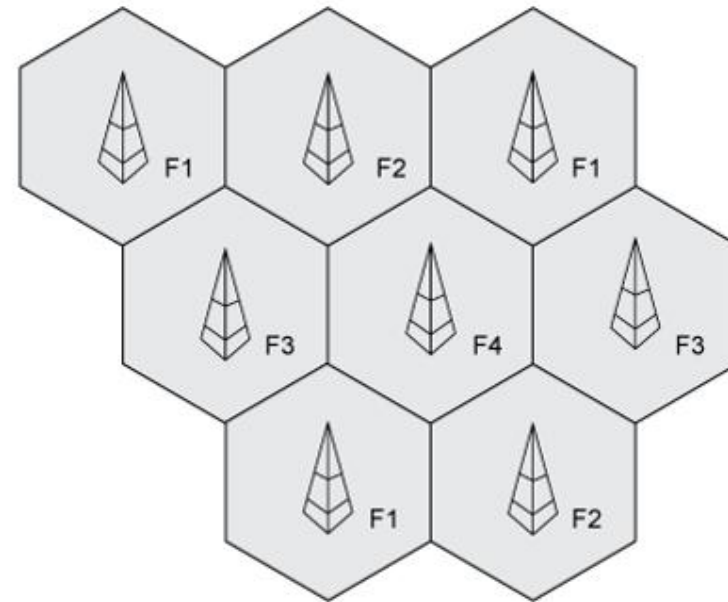


WAN

- **Wireless**
- **Wired**
- **Cellular**

- **Use Ethernet**
- **Communicate over small distances**





| Network | Mobility Level |
|----------|----------------|
| Wired | Low to None |
| Wireless | Medium |
| Cellular | High |

| Network | Availability Level |
|----------|--------------------|
| Wired | Medium to High |
| Wireless | Medium to High |
| Cellular | High |

Bandwidth and Throughput Comparison

| Network | Bandwidth and Throughput Level |
|----------|--------------------------------|
| Wired | High |
| Wireless | Medium |
| Cellular | Low |

| Network | Reliability Level |
|----------|-------------------|
| Wired | High |
| Wireless | Medium |
| Cellular | Low |

Concurrent Connections Comparison

| Network | Concurrent Connection Level |
|----------|-----------------------------|
| Wired | Medium |
| Wireless | Medium |
| Cellular | High |