

## 1.2.2 Computing Facts

Computers are made up of several constituent components. These components can be divided into two main categories:

Category	Description
Hardware	<p>The physical components that compose a computer system or network. Common hardware components include the following:</p> <ul style="list-style-type: none"><li>▪ Keyboard, mouse, monitor, printer</li><li>▪ Connectors and cables</li><li>▪ Hard disk drives</li><li>▪ Circuit boards</li></ul>
Software	<p>Instructions or data that are stored electronically, either on a hard drive or a special chip. Software components include the following:</p> <ul style="list-style-type: none"><li>▪ Operating systems.</li><li>▪ Program applications.</li><li>▪ Hardware drivers (special programs that tell the operating system how to use the hardware.)</li></ul> <p><i>Firmware</i> is a special type of software that is embedded in the read-only memory of a hardware component. A BIOS chip is an example of firmware.</p>

Computer hardware can be categorized based on the function it performs.

Function	Description
Input	<p>The movement of data or commands to the internal computer hardware. Input devices include:</p> <ul style="list-style-type: none"><li>▪ Standard input devices:<ul style="list-style-type: none"><li>▪ Mouse</li><li>▪ Keyboard</li><li>▪ Touchscreen</li></ul></li><li>▪ Gaming input devices:<ul style="list-style-type: none"><li>▪ Game controller</li><li>▪ Joystick</li></ul></li><li>▪ Media input devices:<ul style="list-style-type: none"><li>▪ Scanner</li><li>▪ Digital camera</li><li>▪ Webcam</li></ul></li><li>▪ Audio input devices:<ul style="list-style-type: none"><li>▪ Microphone</li><li>▪ MIDI controller</li></ul></li></ul>
Processing	<p>The flow of data through a series of procedures as defined by a set of instructions. Major processing components include:</p>

	<ul style="list-style-type: none"> <li>▪ CPU (central processing unit)</li> <li>▪ RAM (random-access memory)</li> </ul> <p>RAM is a temporary short-term type of storage used to store processed information for quick access. RAM is considered volatile memory because it is not persistent. When the computer is turned off, all the data that was stored in RAM is lost.</p>
Storage Devices	<p>Devices that contain non-volatile memory for saving or maintaining data. Storage devices include:</p> <ul style="list-style-type: none"> <li>▪ Hard disk drives</li> <li>▪ Solid-state drives</li> <li>▪ Optical drives (CD-ROM, DVD-ROM, and Blu-ray)</li> <li>▪ Flash drives</li> </ul>
Output	<p>The process of the computer presenting, displaying, or otherwise giving data. Output devices include:</p> <ul style="list-style-type: none"> <li>▪ Video</li> <li>▪ Audio</li> <li>▪ Printing</li> </ul>
Networking and Communications	<p>The practice of connecting two or more computers in order to transfer data. Networking components include:</p> <ul style="list-style-type: none"> <li>▪ Connecting media: <ul style="list-style-type: none"> <li>▪ Copper cables</li> <li>▪ Radio signals</li> </ul> </li> <li>▪ Connection devices: <ul style="list-style-type: none"> <li>▪ Routers</li> <li>▪ Switches</li> </ul> </li> </ul>

Modern hardware components use modular design that implements both componentization and standardization.

- **Componentization:** a functional PC is a combination of several constituent parts. Each part is considered a field-replaceable unit (FRU), meaning it can be quickly replaced when faulty or easily upgraded when needed. Componentization keeps maintenance costs low and reduces downtime.
- **Standardization:** specifications that allow components from different manufacturers to be interchangeable. If a component meets the specified standards, it will work in the computer regardless of manufacturer.

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