Hardware versus Software

Have you ever tried to purchase electronics? Perhaps you've read a description in an advertisement for a camera or a cell phone. If so, you may have seen terms like *megapixels* or *gigabyte* in the description. If you didn't know what these words meant, it would be hard for you to understand the description and make an educated decision about your purchase.

This lesson will focus on some common technical vocabulary. You'll look at the differences between hardware and software and how they work together. You'll accomplish the following during this lesson:

**Objectives**

- Classify an item as hardware or software.

**Vocabulary**

<table>
<thead>
<tr>
<th>Term</th>
<th>Description</th>
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<tbody>
<tr>
<td>CPU</td>
<td>the central processing unit or part inside the body of the computer that enables the computer to function; sometimes referred to as the brain of the computer</td>
</tr>
<tr>
<td>hard drive</td>
<td>the component in the body of the computer that stores all your files and folders</td>
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<tr>
<td>hardware</td>
<td>physical parts of the computer or technical equipment</td>
</tr>
<tr>
<td>Internet</td>
<td>interconnected computer networks throughout the world that everyone can use</td>
</tr>
<tr>
<td>laptop</td>
<td>a small mobile computer</td>
</tr>
<tr>
<td>motherboard</td>
<td>the main board in the body of the computer; contains chips and other components</td>
</tr>
<tr>
<td>software</td>
<td>a computer program or a set of instructions for the hardware to perform</td>
</tr>
<tr>
<td>spreadsheet</td>
<td>software that acts like a calculator and is frequently used for numbers and money</td>
</tr>
<tr>
<td>word processor</td>
<td>software used to create printable material</td>
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**Hardware**

Most types of businesses make use of two types of technology—*hardware* and *software*. The term hardware refers to the physical devices that you can see and touch. The keyboard, mouse, and monitor are all examples of hardware. A *laptop* computer is hardware, and there is hardware inside the body of the computer, including the *CPU*, *hard drive*, and *motherboard*. In addition, scanners, printers, and CD-ROM drives are all hardware. Networking devices such as modems...
are physical devices and therefore also hardware. Peripheral devices such as microphones, trackballs, speakers, and game controllers are all hardware.

In addition to the hardware you see near a computer, specific hardware may be used by workers in certain professions. For example, a videographer uses a video camera to capture action on video. A video camera is technical equipment, which is also considered hardware. An electrical engineer might use a digital multimeter, which is a physical device used to measure electrical current. Therefore, the digital multi-meter is also hardware. A person delivering packages uses a portable tablet. The person receiving the package can physically sign the tablet, and the signature is then sent to the office. Is the portable tablet hardware? Yes. Pretty much, anything you can touch and feel is hardware.

Software

Hardware may seem to work like magic; for example, when you type the letter "a" on the keyboard, an "a" appears on the screen. But here's what's actually happening: Hardware, like your keyboard, needs special instructions called software to perform tasks. When you type the "a," special keyboard software gives the computer the instructions it needs to make the "a" appear. These instructions are called computer programs, and they are known as software. Software is created from computer code that is written by computer programmers or software developers. Software is written in a programming language, of which there are thousands of different types. Because a computer only does exactly what it is told to do, programmers must make sure that there are no mistakes in these instructions or programs. The picture below gives you a glimpse of what a programming language looks like.

Types of Software

There are three different types of software: system software, programming software, and application software. System software helps directly run the computer hardware. For example, your mouse needs to communicate instructions to your computer in order to have the cursor move around on your screen in response to your hand movements, and so programmers write system software to help run that mouse.

Programming software provides tools for programmers to help them write programs for other types of software. A software developer creating a Web page might use a program designed to help create these Web pages. Microsoft® FrontPage® and Macromedia® DreamWeaver® are two examples of such programming software.
Application software helps the computer user complete specific tasks, such as writing a report, watching a video, or keeping track of a budget. Businesses rely heavily on application software, which is often referred to simply as "applications" or "programs."

Some common applications include word processors and spreadsheets. A word processor allows you to type, edit, and format a written document. It also enables you to print or save the document for further editing. If you wanted to send a business letter or memo, you would use a word-processing application.

A spreadsheet is application software that is most often used for numbers or money. If you wanted to keep track of long lists of numbers and perform calculations, you would use a spreadsheet. An accountant would use a spreadsheet to track expenses or create a budget.

There are many different types of application software, and word-processing applications and spreadsheets are just two examples of common application software. Sometimes, special custom software is even developed for a specific company to perform specific tasks.

Working Together

How do software and hardware work together? Generally, software needs to be installed, or loaded on the computer's hard drive. Some software may come preloaded on a computer. Other software must be separately purchased and is often delivered to the user as data stored on a CD. After inserting the CD, the user follows some simple steps to complete the installation. Other software may be downloaded from the Internet.

Once the software has been installed, it may need to be opened or started. The software and hardware interact when the computer user types on the keyboard or uses the menu to give commands related to that software. For example, the user might click twice (or double click) with the mouse on an installation icon to open the software. The software and hardware then begin interacting. Another example of the interaction between software and hardware can be seen when a file is saved: After the computer user opens word-processing software and types some text, he can use the keyboard or the mouse to give the Save command. When this happens, the software gives instructions for the new file to be saved on the hard drive. In other words, the software gives instructions to the hardware.

Now that you have had a chance to think about the difference between hardware and software, let's classify the following items. You will be shown a list of items. If you think an item is hardware, drag and drop it into the Hardware column. But if you think an item is software, drag and drop it into the Software column.

Let's Review!

Remember, hardware is a physical part of the computer or technical equipment. You can touch and feel hardware. Some examples of hardware are the computer mouse, speakers, camera, monitor, and the CPU. Computer programmers write software programs in a computer language that provides the instructions necessary for hardware to perform a task. In other words, software programs provide the directions a computer can follow to complete certain operations. Examples of software that were discussed in this lesson are word-processing applications and spreadsheets.
Hardware v. Software Check for Understanding

Name____________________________________

Directions: Circle the choice that best completes the statements.

1. An example of software is a _____.
   - spreadsheet
   - mouse
   - track ball
   - printer

2. An example of hardware is a _____.
   - database
   - spreadsheet
   - monitor
   - program used to enhance photos

3. Match the term with the appropriate definition. Write the correct word in the box.

   1. motherboard ______ the central processing unit
   2. CPU ______ software that helps run the computer hardware
   3. system software ______ the main board in the body of the computer
   4. program ______ instructions for the computer written in a programming language
   5. laptop ______ a small mobile computer

4. A telephone-repair technician uses a meter to measure voltage on a phone line. This meter is an example of _____.
   - hardware
   - software
5. An administrative assistant types a document, saves, and prints. The assistant is using _____.

☐ hardware
☐ software
☐ hardware and software

Question #6

Pretend you listened to a song on your computer. Did you use hardware or software? Write a paragraph to explain your answer.