

# How Systems Work (What is a Computer?)

## Lesson Video

### Objective: *Students will be able to...*

- Differentiate between inputs and outputs for computer-based systems and identify types of software used in different technologies.

### Prerequisites

- Computer Science: Students should have experience with using a computer.

### Materials & Tools

- [Ready-to-Go Slides](#) or [Teacher-led Slides \(Spanish\)](#)
- **Activities:** Share this [handout \(Spanish\)](#) or [digital activity \(Spanish\)](#) ([answer key](#)) with students..

### Lesson Preparation

- There is a paper and digital version of the activity. Decide ahead of time how your students will interact with the activity. If they are using the paper version, create copies for each student. If they are using the digital version, make sure all students have access to the slides.

### Vocabulary

Word	Definition
<b>Input Device</b>	A device that is used to get information from the user
<b>Sensors</b>	Input devices that detect some type of information for a computer
<b>Output Device</b>	A device that sends information or is controlled by the computer
<b>Software</b>	An application or program used by the computer
<b>Web App</b>	Software that is used through an internet browser
<b>Local App</b>	Software that is installed directly onto a computing device
<b>Hardware</b>	A physical computer or computer part.

### Lesson Agenda

- Introduction (5-10 mins)
- Input Devices (15 mins)
- Output Devices (5 mins)
- Software and Hardware (15 mins)
- Closing (5 mins)

**Computer Science Explanation**  
 Computer systems are made up of input devices, which provide information to a computer, and outputs, which output information or actions. Computer systems are all around us, from oven timers to video games to cars, each with different types of inputs and outputs. Computers require software to be able to process inputs and produce outputs.



## Lesson Details

### Input Devices (15 mins)

Today we are going to explore what a computer is, and how its parts work together. Computers have many parts! Explore with students how many parts of a computer they can name. Many of the parts that we named are input and output devices - they are the ways that information gets put into the computer, and what the computer is able to do or put out. Input devices are like our 5 senses - hearing, smelling, seeing, touch, and taste. These are all ways that our brains get information from the world around us. Do computers have any ways of getting input like these? Computers do have ways they can “hear” - through a microphone, or “see” with a camera, or touch with sensors that can sense pressure. There are not really any devices that can sense smell or taste that well, but computers don’t have that much need for those inputs. Share the Interactive Activity with students.

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### Output Devices (5 mins)

This section covers output devices. Output devices give us information and tell us what to do. Examples are speakers or a printer. Share these optional activities with students:

- [Handout](#)
    - Students will cut out the cards (including the software cards) and will place the cards in the input/output/software spaces according to what they think happens for each computing activity.
  - [Digital activity.](#)
    - Students will copy and paste the images from slide 3 into the input/output spaces on slides 4 and 5 according to what they think happens for each computing activity.
    - There will be many different possible ways for students to answer - there is no one specific right answer. The main goal is for students to be able to explain why/how a certain input/output/software is being used in that situation.
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### Software and Hardware(15 mins)

Guide students in a discussion of the differences between hardware and software. Emphasize that hardware is generally a part of a computer that they can touch, but the software is a program installed on the computer. You can also demonstrate various types of software and hardware examples with classroom devices.

Provide students with the link to the Interactive Activity to sort hardware and software. You may also provide students with a link to the last Interactive Activity where they can sort input and output devices.

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## Closing (5 mins)

Give students time to share:

- What is the difference between an input and an output
  - *Input devices provide information to the computer*
  - *Output devices display information or turn on other components*
- What is the difference between a local app and a web app?
  - *A local app is installed on the computer*
  - *A web app is used on the internet through a browser*

## Assessment Rubric

Category	4	3	2	1
	Advanced: demonstrates superior performance	Proficiency: demonstrates consistent performance	Moving toward proficiency/expectations	Experiencing significant difficulty
Differentiate between inputs and outputs and identify types of software used in different technologies.	Student is able to differentiate between input and output devices, the difference between hardware and software, and at least three ways people use technology.	Student is able to differentiate between input and output devices, the difference between hardware and software.	Student is able to differentiate at least two of the following: input devices, output devices, and hardware vs software.	Student needs significant support to explain one of the computer science concepts from this lesson.