

Standard: CS.D.01 Grade: 5

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Describe and model how internal and external parts of **computing devices** function to form a system. Describe how some **components** rely on others for **correct functionality**.

Essential Skills

Create a model of a computing system that shows how **components** interact to function correctly.

Essential Questions

How do internal and external parts of a **computing device** work together to form a system?

How do components of a computing device rely on each other to function?

Explanation

Students will explain that **computing devices** often include various components (mouse, keyboard, monitor, game controller). The **components** may be connected physically (with wires, or as part of one device) and/or connected wirelessly to form an interconnected system. These components depend on the computer's **central processing unit (CPU)** to function. Students should be able to identify, and by 5th grade to model, how the CPU depends on the components to provide **input** and produce **output**. Input may be received from the keyboard and/or controller, mouse, touchscreen, or trackpad and output may be produced on a screen in the form of text and images and/or on speakers in the form of sound.

Think of this as similar to....

When you bake a cake you use bowls, pans, mixing spoons, flour, sugar, butter, eggs, measuring cups, an oven, oven mitts and probably other items. Each item has its own role, and all are essential to create the final product.

Implementation Examples—What would this look like in the classroom?

Title	Description	Link	Content Connection & Notes
Nervous System-- Human and Computer	Grade 5 --Students describe how animals and people receive different types of information through their senses, which trigger signals to be sent to and processed by their brain, which triggers responses to that information. Students compare this to how information travels through a computer from mouse (sensor) to processor (brain) and prompts a response (output).		This lesson also aligns with CS CS.HS.01 and with NGSS 4-LS1-2 .
Simulate Plotting on a Coordinate Plane	Grade 5 --Students take on the role of a part of a computer (display, CPU, or memory) and model its function and interactions with other components by plotting a value on a coordinate plane.	Simulate Plotting on a Coordinate Plane	This lesson also aligns with CS CS.HS.01 and Math 5.G.1 .
Flow Chart	Grade 5 --Students create a diagram or flow chart to indicate how a keyboard, desktop computer, monitor, and word processing software interact with each other. The keyboard (hardware) detects a key press, which the operating system and word processing application (software) displays as a new character that has been inserted into the document and is visible through the monitor (hardware). Students could also create a model by acting out the interactions of these different hardware and software components.		This lesson also aligns with CS CS.HS.01 .

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