Standard: CS.HS.01 Grade: 5

Standard 5.CS.HS.01
Model and explain how information flows through **hardware** and **software** to accomplish a task.

Essential Skills
Create a model that shows the path of an **input** through a **computing device** and its conversion to an **output**.

Essential Questions
How do the **components** of a **computing device** work together to receive **inputs** and create **outputs**?

Explanation
Accomplishing almost any task with a **computing device** involves **hardware** and **software**. Students should trace the basic elements in a system from **input** and **sensors** to **processors** and storage to **output**. Students should be able to explain the interactions between hardware and software. For example: 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 on the monitor (hardware).

Think of this as similar to….
Your eyes and ears are sensors. When you see and hear an audience clapping after your performance, your brain processes the input you see and hear as positive feedback and decides how to respond. Your brain tells your muscles to bend at the waist to produce the output, which is a bow.

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

Title	Description	Link	Content Connection & Notes
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.D.01
Nervous System--Human and Computer	**Grade 5**--Students describe how animals and people receive different types of information through their senses. Signals are then sent to and processed by the brain which prompts responses to that information. They compare this to how the information travels through a computer from mouse (sensor) to processor (brain) and prompts a response (output). Create a Venn diagram or similar display to compare how information travels in humans/animals vs computers..		This lesson also aligns with **CS** CS.D.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 when plotting a value on a coordinate plane.	Simulate Plotting on a Coordinate Plane	This lesson also aligns with **CS** CS.D.01 and with **MATH** 5.G.1

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These annotations are a collaboration between Maryland Center for Computing Education and the Maryland State Department of Education.