# What's Inside a Computer?

Yellow Level: Unit 1, Lesson 2

## Objectives

In this activity, students will:

- explore the inner workings of a computer through a creative lens.
- name and describe the five hardware components that make up a computer.
- create and design their own computer made out of paper.

## Activity Description (45-60 minutes)

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| 5 min. | Engage students by asking them to think about the question "What is inside a computer?". Encourage them to predict what Ruby will see now that she has entered the computer through the mouse hole. |
| 10-15 min. | Review what happened in the first two chapters of *Hello Ruby Journey Inside the Computer*, then proceed by reading Chapters 3-5, p. 20-33. Chapter 4 (Logic Gates) may be a little confusing to students; don't worry about students gaining a deep understanding from these few pages. Instead, focus on the computer components named and described in Chapter 5. |
| 25-40 min. | Provide students with a Paper Computer handout*, scissors, tape, and glue. Using this slidedeck for guidance, instruct them to build the computer step-by-step:<br>1. Cut out the entire computer case<br>2. Cut out the 5 hardware components<br>3. Glue/tape the 5 components in place inside the computer<br>4. Design your own power plug *(optional)*<br><br>As students assemble the hardware components, review what role they each play in a computer. Refer back to Chapter 5 (p. 28-33) to see how Ruby experiences each component, and use the slidedeck for information about each component.<br><br>If time permits, encourage students to create a power cord for their computer. Consider using paper, string, yarn, or pipe cleaners for this. Refer back to Chapter 3 (p. 20-23) to review the importance of electricity in computers. Use the slidedeck image of different cords to discuss how computers use cords to transfer electricity and data.<br><br>Reserve the rest of the paper computer pieces for lesson 3 in this unit. At the end of the class period, collect and store students' paper computers in a large envelope or |

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| | Ziplock bag. Be sure to have students write their names and classroom number on the computer case! |
| *5-10 min. opt.* | For students who finish their paper computers early, consider having them explore a Memory-style game to test their knowledge of computer components. You can create a memory game out of paper here, or have students play an online version here: computer components (5 cards) / hardware & software (12 cards) / challenge set (20 cards) |
| 5 min. | Close out the lesson with a review of what students experienced today, and provide space for student reflection. Use these any or all of these questions as a guide:<br>• What did Ruby discover inside the computer?<br>• What surprised you about the things Ruby discovered inside the computer?<br>• What part of the computer you created today are you most proud of? |

## Reviewing Student Work

★ Are students able to locate where all 5 hardware components live inside the computer?
★ Are students able to name and describe the role of each of the 5 hardware components?
★ Are students able to create a power plug for their computer? Are they able to add any other personal touches to their computer?

## Lesson Notes

➕ While logic gates (Chapter 4) are an important part of computer architecture, it is not important for elementary students to gain a deep understanding of the different types of gates that exist. If students are interested in learning more, explore the activities on p. 80-87 in *Journey Inside the Computer*.
➕ Consider pre-cutting paper computer elements to scaffold the activity for students. You may wish to only provide students with the case, the components, and the keyboard in this lesson, reserving the operating system logos, files, stickers, and website for the next lesson in this sequence.
➕ Consider using the optional computer memory game (either printed or online versions) as a classroom or home extension. This would be great for a sub plan or centers activity station, too!

*Paper computer handouts are provided for all SFUSD teachers. Print copies using these links: 8.5x11 / 11x17.