**Lesson 7** Sliders

**How can we use sliders to control a p5 sketch?**

| **Overview** | |
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| In this lesson students will learn how to add a slider to a webpage and use its values to manipulate a p5 sketch. They will also compare the advantages and disadvantages of using different kinds of DOM elements. | |
| **Lesson Objectives** | |
| Students will be able to   * Add sliders to a web page * Control a p5 sketch using values from a slider * Compare buttons and sliders and describe how they affect user interaction | |
| **Suggested Duration** | |
| One period (45 minutes) | |
| **Blueprint Foundations Student Outcomes (**https://blueprint.cs4all.nyc/outcomes/) | |
| Algorithms  Prototype | **Explain why** I used specific instructions to complete a task. |
| Programming Communicate | **Discuss** what can and cannot be done with a specific set of commands. |
| Algorithms Communicate | **Compare and contrast** my instructions with other instructions that complete the same task. |
| **Vocabulary** | |
| * **Slider**: A web interface element that has a minimum and a maximum range | |
| **Planning Notes** | |
| * N/A | |
| **Resources** | |
| * Video Tutorial: [Interacting with the DOM using Sliders, Buttons and Text Inputs](https://www.youtube.com/watch?v=587qclhguQg) * p5 Reference: [createSlider](https://p5js.org/reference/#/p5/createSlider) | |
| **Assessments** | |
| * Assess the **Do Now**. Check for the ability to:   + Compare sliders to buttons and describe how they change user interaction * During the **Demo**, assess group work. Check for the ability to:   + Describe the parameters of createSlider()   + Explain how a slider’s value can control a p5 sketch * Assess the **Student Activity**. Check for the ability to:   + Add sliders to a web page   + Use sliders to control a p5 sketch | |

| **Do Now:** |
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| * **[Design Journal]** What do you observe about the sliders in [this sketch](https://p5js.org/examples/dom-slider.html)? How is the interaction different from what happens in [this sketch](https://editor.p5js.org/undefined/present/5XyjgjI-)? In your design journals, list the important features of sliders. |
| **Discussion:** |
| * Have students share their responses from the **Do Now**. * Ask: When does it make more sense to use sliders instead of buttons? |
| **Teacher Demo:** |
| * Share [this sketch](https://editor.p5js.org/mparker/sketches/pi6wEwJd) with your students. Then in pairs or groups, have them work together to answer the following questions:   + On what line is the slider element **created**? *Answer: On Line 7*   + What do each of the three parameters of createSlider() do? Try changing each number one at a time to figure it out. If you get stuck, look at the p5 reference. *Answer: The first two parameters are the minimum and maximum range of the slider’s values. The third parameter controls the default value of the slider (and the starting location of the bar on the slider).*   + What variable stores the **value** of the slider? On what line does that happen? *Answer: The variable x stores the value of the slider on Line 13*   + In your own words, how does the slider control the movement of the ellipse? *Answer: The slider’s value is stored in a variable that controls the x position of the ellipse, so when the slider is moved the ellipse’s x position also changes.* * To reinforce what the parameters mean, show students this image:      * Ask students to identify the minimum, starting, and maximum values in this image:      * Try changing the values of the arguments in the original sketch and ask students to make predictions. For example, change the third argument from 200 to 25 and have students predict what will happen to the ellipse when you run the sketch. You can change the minimum to 300 and the maximum to 500 and have students predict how this will affect the range of the ellipse’s movement. * You can also demonstrate the optional fourth parameter for createSlider(), which controls the amount by which the value changes when the slider is moved. * Optional Practice: Ask students to duplicate the sketch and update the code so that the slider controls the **y position** of the ellipse instead of the x position. |
| **Student Activity:** |
| * Have students choose one of the following options for the **Student Activity**:   + [Mild](https://editor.p5js.org/mparker/sketches/LIgeFidv): Add a slider to change the size of the pink bubblegum. For an extra challenge, add in a conditional statement that creates a “pop” when the size is a certain value (for example, use the text() function to write “POP” in big letters on the screen, or change the shapes to make it look like the gum burst).   + [Medium](https://editor.p5js.org/mparker/sketches/KmbFxH1U): Add a slider to control the window blinds and the background color instead of mouseY.   + Spicy: Make a duplicate of your button game sketch, and control the button’s speed (frameRate) by using a slider. |
| **Wrap Up** |
| * Make sure your students save their sketches and share them with you before they leave. |
| **Extensions:** |
| * N/A |