Lesson 14: Functions with Parameters

Overview

The lesson starts with a quick review of parameters, in the context of App Lab blocks that they students have seen recently. Students then look at examples of parameters within user-created functions in App Lab and create and call functions with parameters for themselves, using them to control multiple elements on a screen. Afterwards, students use for loops to iterate over an array, passing each element into a function. Last, students use what they have learned to create a star catching game.

Purpose

In previous lessons, students have used functions to define blocks of code that can be used in multiple places in a program. In this lesson, students learn how to use parameters to generalize the purpose of a function. Parameters allow a program to specify the details of how a function works when it is called, rather than when the program is defined. Although students have seen functions with parameters earlier in the unit, this is the first time that they are expected to define and call their own. Students also learn how to use a for loop to iteratively pass in the elements of an array as parameters to a function, allowing them to use the same function on multiple elements on the screen.

Assessment Opportunities

1. **Use parameters to generalize the purpose of a function.**

   Code Studio: See rubric on bubble 14

Agenda

Warm Up (5 minutes)

Activity (80 minutes)

Wrap Up (5 minutes)

Objectives

Students will be able to:

- Use parameters to generalize the purpose of a function.

Links

Heads Up! Please make a copy of any documents you plan to share with students.

For the teachers

- **CSD Unit 6 - Physical Computing** - Slides

Vocabulary

- **Parameter** - An extra piece of information passed to a function to customize it for a specific need

Introduced Code

- `function myFunction(n) { __; }`
- `myFunction(n)`

Teaching Guide

Warm Up (5 minutes)

Prompt: When you needed to access the pitch and roll of the accelerometer in the last lesson, you used the block `accelerometer.getOrientation` , and you chose whether to get the pitch or the roll. Why do you think the creators make the program work that way, rather than having two blocks, one for the pitch and one for the roll?

Discussion Goal

Goal: Students should eventually see that parameters give a program flexibility. Sometimes, multiple commands are similar enough that it makes sense to combine them into one, but with a parameter to distinguish between their differences. Sometimes, such as the case of `buzzer.frequency` , there are too make options to make a separate block for each one. Parameters allow a programmer to use a single solution to solve multiple, related problems.

What other blocks that you have seen take parameters? Why are parameters so useful?

Remarks

> So far, the functions that you have used always did the exact same thing. Today, we're going to look at a way to make functions even more useful by giving them parameters, just like some of the blocks that you just talked about.

Activity (80 minutes)

Send students to Code Studio

1-5 **Functions with Parameters**

1 2 3 4 5

6-8 **Iteration and Parameters**

6 7 8

9-16 **Star Chaser**

9 10 11 12 13 14

Assessment Opportunity

Level 14 You can use this level as a formative assessment for students. Click inside the level to view a rubric and leave feedback to your students

Wrap Up (5 minutes)

Prompt: Think back to some of the programs that you have made before. What are two times that you

could have used functions with parameters? What would the parameter be? How should the function's behavior change when the parameter changes?