

Computational Thinking

- ▶

Introduction

2 min
- ▶

Everything Is a Number

6 min
- ▶

How Is That a Number?

2 min
- ▶

Developing an Algorithm

6 min
- ▶

A Seven Step Approach to Solving Programming Problems

7 min
- ★


Practice Quiz: Solving Programming Problems

4 questions

Programming Fundamentals with JavaScript

In This Module

- Computational thinking → how to write a computer program





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Review

Introduction

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0:03

So far you've been looking at making web pages. Now, we're going to switch gears for awhile and we are going to talk about computational thinking, the type of thinking that enables you to write computer programs. You'll be programming in JavaScript so that, eventually, you can use your programs to enhance your web pages. In this module, you'll learn some basic programming concepts and JavaScript syntax, a process for designing algorithms or solutions to programming problems, and how to work with some image processing libraries we've developed for this course. So why are you learning programming? What can you do with it? Programming is great for [solving problems that have a lot of computation or repetition in them](#). For example, what if you wanted to manipulate the images on your web page? Since images are made up of pixels, to manipulate the images on your web page, you would need to look at all the pixels in them. If you had an image that was 100 by 100 pixels, relatively small image, you would still need to look at 10,000 pixels. This is hard for humans, but easy for computers. If you tried to look at all 10,000 pixels by hand, you might get bored, you might make mistakes, and it would definitely take you a long time. A computer could finish looking at all 10,000 pixels in just a few seconds. One common application of image processing using programming is using green screens to change the background of an image. If you take a photo in front of a green screen, you could write a program to change every green pixel on the image so that you replace the green screen with another image. This is the example you'll focus on in this module. You'll learn our seven step process for solving Problems, the basics of JavaScript, and the programming concepts you'll need to be able to solve the green screen problem and many more. Now, let's start by looking at one important idea behind programming, that everything is a number.

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