Lesson 3: **Stop Motion**

Big Idea   Programming languages use special characters to express different kinds of information. (syntax)

Module   Make a Stop Motion https://app.vidcode.io/project/stopmotion

Make a stop-motion animation out of individual pictures by creating an array. Learn to initialize and count with arrays.

Standards   CCSS.MATH.PRACTICE.MP2 Reason abstractly and quantitatively.
CCSS.MATH.PRACTICE.MP6 Attend to precision.
NGSS Engineering Practice 5 Using mathematics and computational thinking

Background

Arrays are lists that hold your data. They always start and end with square brackets, and the things in the array are separated by commas.

They look like this:

```
["rock", "paper", "scissors"]
```

The things inside the array are called **items**. We count array items starting from 0, so "rock" is the 0th item in the array, "paper" is the 1st, and "scissors" is the 2nd.

Review: What data type are these items? (strings)
Predict: Do you think order will matter in an array? (it will!)

Code Challenge

A stop motion animation is an animation created by putting together a series of still pictures together so they seem like they're moving. This can make it seem like objects are moving on their own.

Have students follow the "Make a Stop Motion" tutorial. Read the instructions on the left and do what they say. When you've followed all the instructions, click the button to move on to the next part.

Optional: Instead of using the provided stills, take pictures with your computer or your phone. Import them using the menu on the left.
Example subjects include:
- Cut shapes out of paper and move them a little bit in each picture.
- Take pictures of a poster in the classroom that tells the steps of a process, display them in order like a slide show.
- Draw a picture, then rip it up. Put the pictures in reverse order so it looks like you're magically putting them together.

Sample Solution

```
movie.frames = ["desert-1.jpg", "desert-2.jpg", "desert-3.jpg"];
movie.interval = 500;
```

Sharing

Publish the completed projects to the Vidcode gallery.
Take turns presenting the stop-motion animations to the class. Applaud.

Reflection

What is an array? (a list of items)
Does the order of an array matter? (yes)
How do we count the items? (starting at zero)

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