Web Development

Day 8: Even More JavaScript

Arrays & Loops

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Icebreaker!

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Today's Schedule

Morning:

- JavaScript So Far...
- Arrays
- Loops
- Project: Todo List

Afternoon:

- Field Trip!

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JavaScript So Far

- Comments
- Variables
- Data Types
- Operating on Variables
- Template Literals
- Booleans
- Functions
- If Statements

Arrays

Sometimes you need a list of related values, such as inventory for sale or grades.

Arrays are a type of variable that are able to store multiple values. The values can be strings, numbers, Booleans, or any other data type.

var produce = [“apples”, “bananas”, “carrots”, “potatoes”];

var quizScores = [90, 88, 95];

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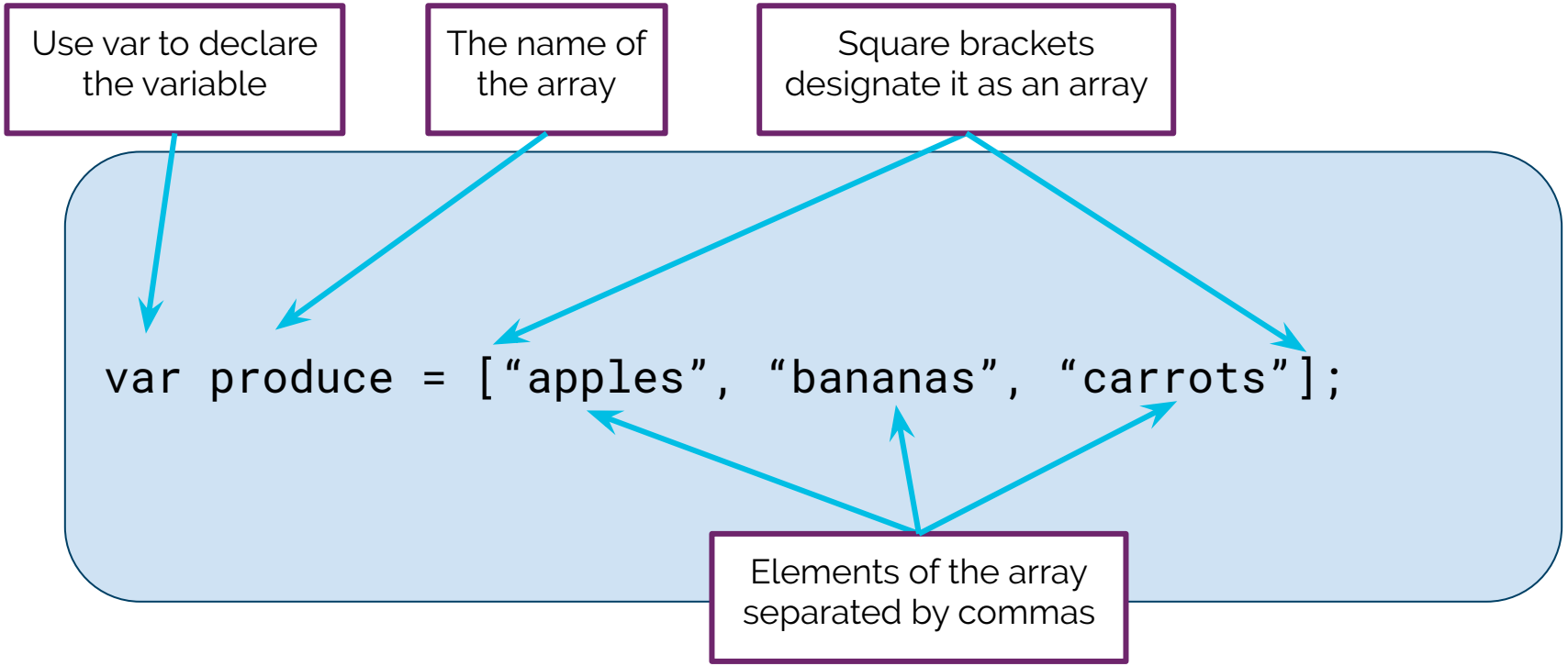
Anatomy of an Array



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Accessing Array Elements

Array elements can be accessed through their **index number**.

But, what is an **index**?

In programming, an **index** is a number used to indicate position in a list. Each item in an array has an index number based on its position.

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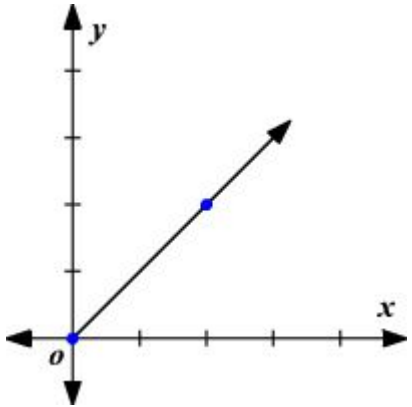
Accessing Array Elements

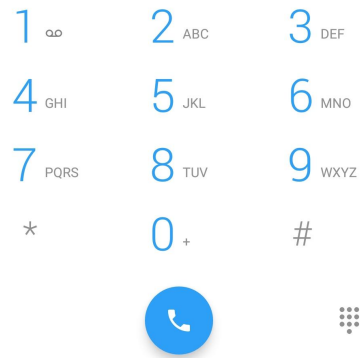
In programming, 0 is the first number.

Arrays follow the same convention, so their first element is at the zeroth (0th) index.

Where else do you see 0 as the starting number?

Zeroes





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Accessing Array Elements

Use the array name with square brackets to get an array element, like this:

```
var produce = [“apples”, “bananas”, “carrots”];

console.log(produce[0]); // returns ‘apples’
```

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Arrays

Arrays are great for holding related values, plus arrays include methods to operate on those values!

Methods are built-in functions that belong to specific objects and can only be used by those objects.

Array methods let us find elements within an array; add, remove, or replace elements; convert an array to a string; and much more.

Array Methods

We'll only focus on a few methods to start:

- Getting the number of elements in an array (**.length**)
- Remove the last element (**.pop**)
- Add a new element to the end (**.push**)
- Add or replace an element at a specific point (**.splice**)
- Merging arrays (**.concat**)

Methods

You've already been using one method already without knowing it:

```
console.log();
```

Anatomy of a Method

Arguments for the method, if required.

In this case, console.**log** will print the argument to the console.

The array that owns the method.

Notice, the

```
var produce = [“apples”, “bananas”, “carrots”];

produce.length();
```

The method. In this case, **length** is the method.

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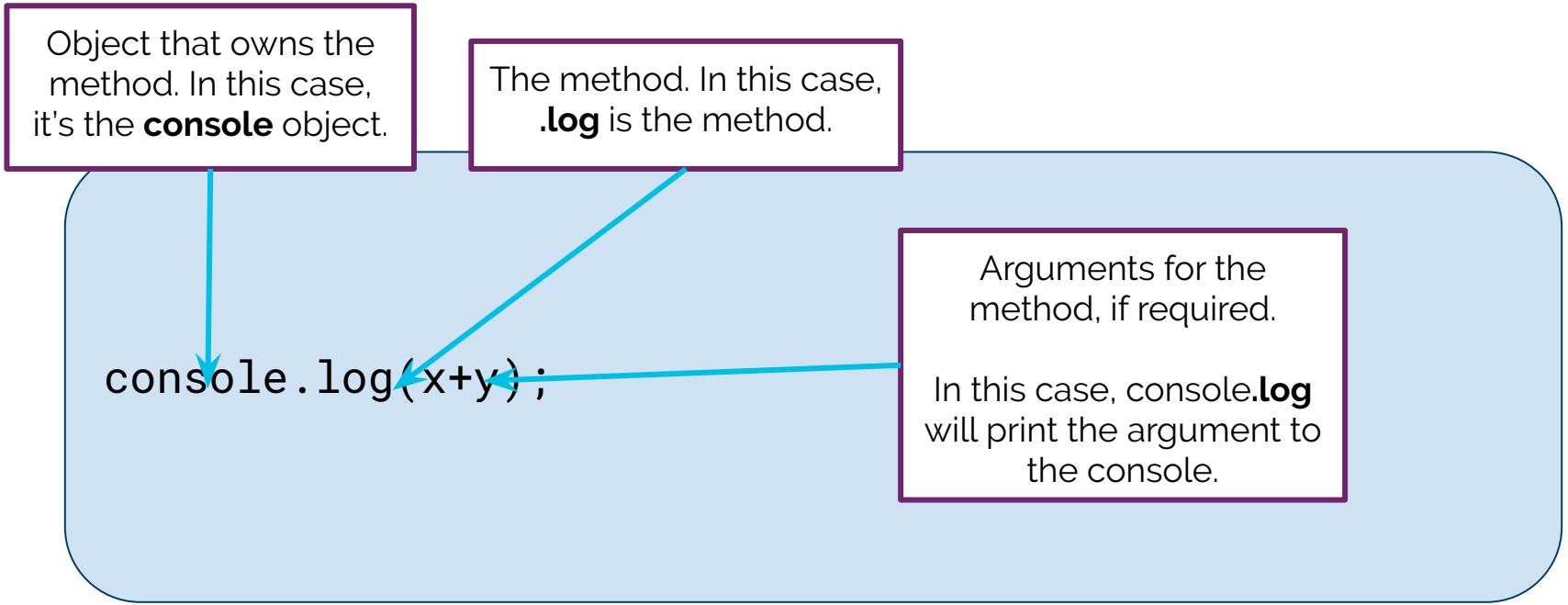
Anatomy of an Array Method



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Array Methods: .length

Sometimes you want to know how many items are in an array, known as the **length** of the array. It takes no arguments.

```
var produce = [“apples”, “bananas”, “carrots”];

console.log(produce.length()); // returns 3
```

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Array Methods: .pop

To remove the last element in the array, use the **pop** method. It takes no arguments.

```
var produce = [“apples”, “bananas”, “carrots”];

produce.pop();

console.log(produce); // returns [“apples”, “bananas”]
```

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Array Methods: .push

To add an element to the end of the array, use the **push** method. It takes **one argument**: the value being added to the array.

```
var produce = [“apples”, “bananas”, “carrots”];

produce.push(‘grapes’);

console.log(produce);
// returns [“apples”, “bananas”, “carrots”, “grapes”]
```

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Array Methods: .splice

Splice can add an element at a specific point. It takes three arguments: the **index** to change, the **number** of elements to overwrite, and the **value** to add.

```
var produce = [“apples”, “carrots”];

produce.splice(1, 0, ‘bananas’);

console.log(produce);
// returns [“apples”, “bananas”, “carrots”]
```

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Array Methods: .splice

Splice can also replace an element. It takes the same three arguments: the **index** to change, the **number** of elements to overwrite, and the **value** to add.

```
var produce = [“apples”, “bananas”, “carrots”];

produce.splice(2, 1, ‘grapes’);

console.log(produce);
// returns [“apples”, “bananas”, “grapes”]
```

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Mozilla Docs on Splice

While learning JavaScript, reading the official docs can be really challenging but still worthwhile.

It's just like learning a new language -- exposure to the language and syntax will help you learn faster.

https://developer.mozilla.org/en-US/docs/Web/JavaScript/Reference/Global_Objects/Array/splice#Examples

Mozilla Docs on Splice

```
array.splice(start[, deleteCount[, item1[, item2[, ...]]]])
```

start

The index at which to start changing the array.

[redacted]

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Mozilla Docs on Splice

```
array.splice(start[, deleteCount[, item1[, item2[, ...]]]])
```

`deleteCount` Optional

An integer indicating the number of elements in the array to remove from `start`.

If `deleteCount` is omitted, or if its value is equal to or larger than `array.length - start` (that is, if it is equal to or greater than the number of elements left in the array, starting at `start`), then all the elements from `start` to the end of the array will be deleted.

If `deleteCount` is 0 or negative, no elements are removed. In this case, you should specify at least one new element (see below).

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Mozilla Docs on Splice

```
array.splice(start[, deleteCount[, item1[, item2[, ...]]]])
```

`item1, item2, ...` Optional

The elements to add to the array, beginning from `start`. If you do not specify any elements, `splice()` will only remove elements from the array.

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Practice with Arrays

Work through the Day 7 “Arays” exercises on JS Bin.

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Loops

https://www.flocabulary.com/unit/coding-for-loops/

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For Loops

When you want to run something for a specific number of times, use a **for** loop.

```
for (var i = 0; i < 10; i++) {
    console.log("=^.^=");
}
```

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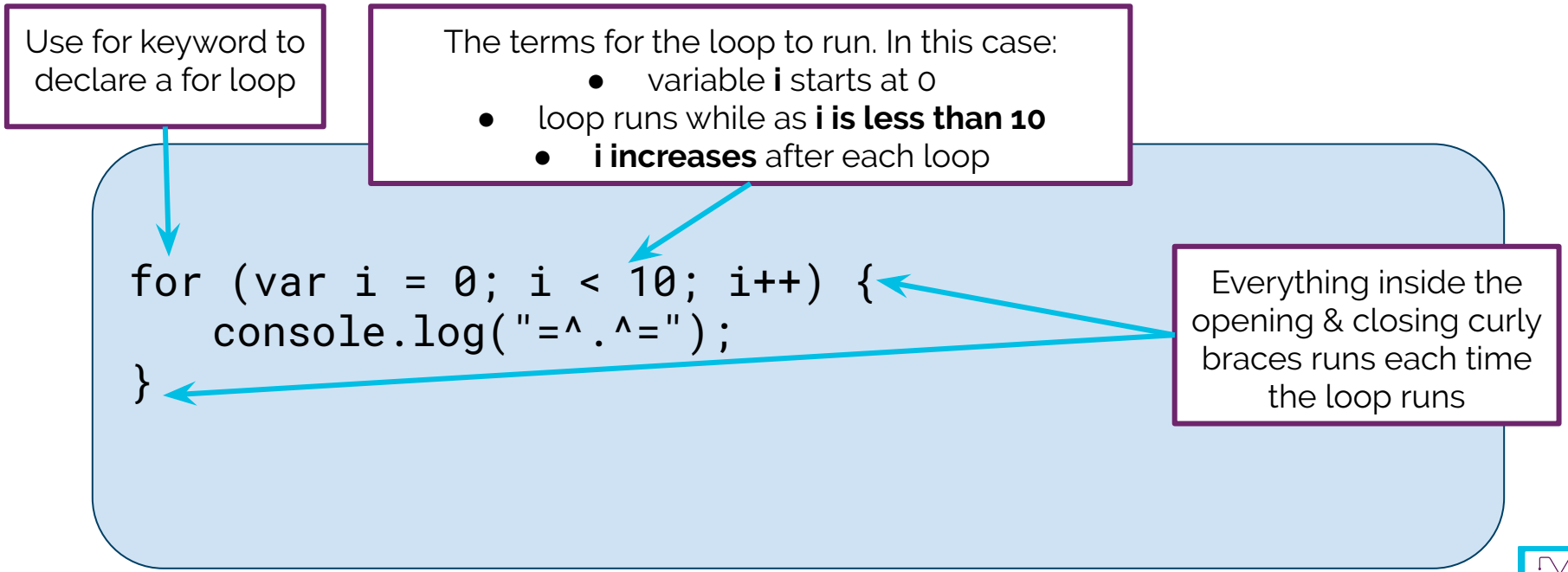
Anatomy of a For Loop



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Practice with For Loops

Work through the Day 8 “For Loops” exercises on JS Bin.

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For Loops

When might a for loop be useful?

While Loops

Sometimes you don't know how many times you need a statement to execute. You need it to run while a certain condition is true. Use a while loop:

```
while (hungry === true) {
    eatBurrito();
    hungry = false;
}
```

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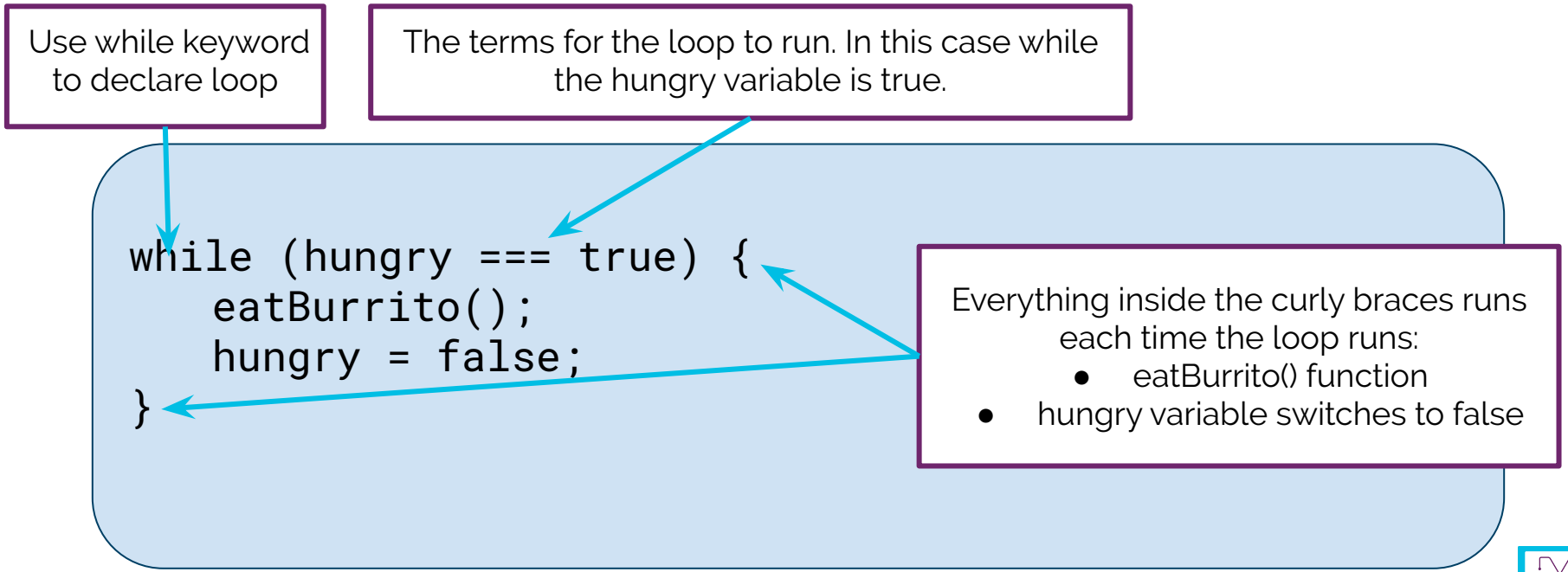
Anatomy of a While Loop



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While Loops

Sometimes the condition for a while loop always uses a comparison operator, like greater than, less than, or equal to.

```
while (hungryPeople > 0) {
    makeBurrito();
    hungryPeople--;
}
```

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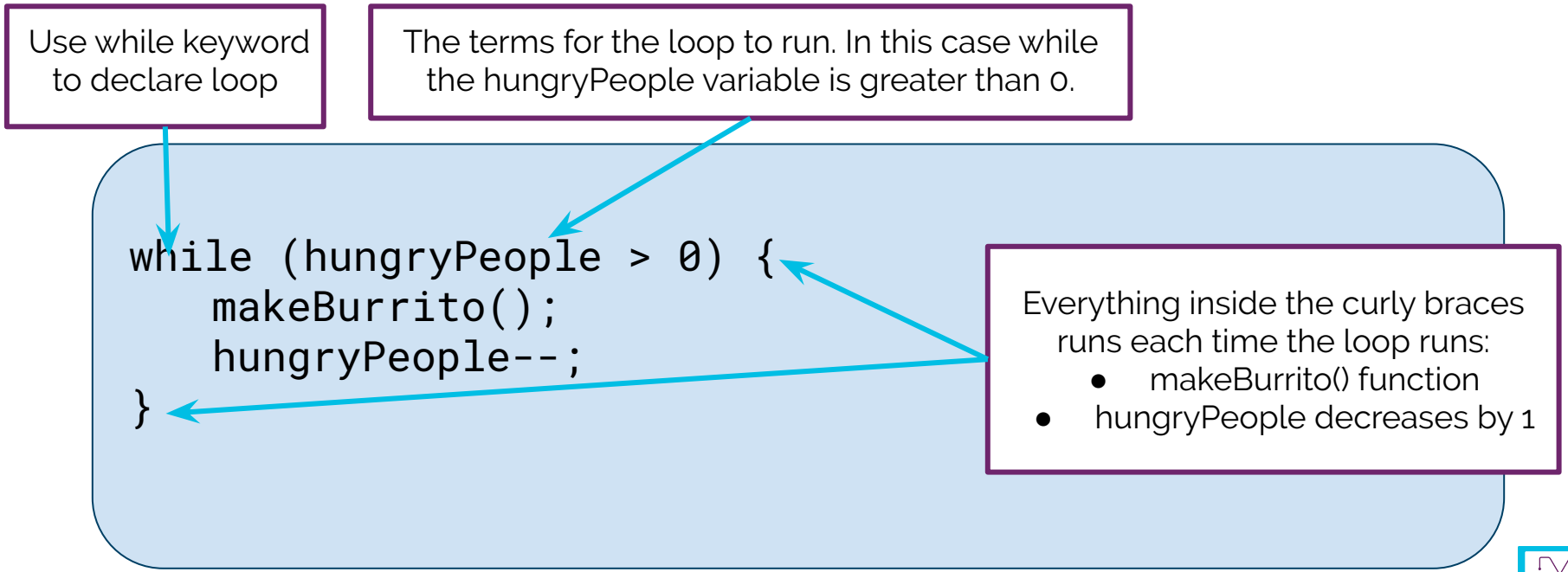
Anatomy of a While Loop



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Practice with While Loops

Work through the Day 8 “While Loops” exercises on JS Bin.

While Loops

When might a while loop be useful?

Project: Todo List

Open the “Todo List” starter code and fork the pen.

Just as before, we’ll read through the code together, starting with the HTML.

Reflection

Write in your journal about how you feel or what you learned today.

Prompts:

- What can you store in arrays? Why would you use an array?
- How are loops useful? Can you think of a way you use loops in everyday life?
- What was the most exciting thing you learned on the field trip? Was there a STEM job that interested you?

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