JS Arrays

Composite Data Types

What are they?

- Composite Data Types are types that are built from other types
- More complex than primitive data types
- Think of them as:
    - Data structures
    - Data with distinguishable parts
    - More than just one piece of data

What types do we have?

In JavaScript, we have two main composite data types:

- **Arrays**
    - Ordered and you access data with an *index*
- **Objects**
    - Unordered and you access data with a *key*

Arrays

What are arrays?

- They are lists that can be filled with any data type
    - Both primitive and composite
- Ordered and you access data with an index
    - An index is a number and it is zero-based
    - The first item is always index 0
- They are able to be iterated through (meaning looped through)
- Think of them as todo lists

Creating Arrays

```
var emptyArray = [];

var randomNumbers = [ 12, 42, 1, 3, 92 ];

var dataTypes = [ true, null, 14, "string" ];
```

```
var weirdInstruments = [
  "Badgermin",
  "The Great Stalacpipe Organ",
  "Stylophone",
  "Ondes Martenot",
  "Sharpischord",
  "Hydraulophone",
  "Pyrophone"
];
```

Accessing Array Elements

```
var weirdInstruments = [
  "Badgermin",
  "The Great Stalacpipe Organ",
  "Stylophone",
  "Ondes Martenot",
  "Sharpischord",
  "Hydraulophone",
  "Pyrophone"
];

weirdInstruments[0];
weirdInstruments[5];
weirdInstruments[ weirdInstruments.length - 1 ];
```

Reassigning Array Elements

```
var weirdInstruments = [
  "Badgermin",
  "The Great Stalacpipe Organ",
  "Stylophone",
  "Ondes Martenot",
  "Sharpischord",
  "Hydraulophone",
  "Pyrophone"
];

weirdInstruments[0] = "Roli Seaboard";
weirdInstruments[5] = "Makey Makey Banana Piano";
weirdInstruments[ weirdInstruments.length - 1 ] = "OP1";
```

Looping through Arrays

```
var ordinals = [
  "Zeroth",
  "First",
  "Second",
  "Third"
];

ordinals[0];
ordinals[1];
ordinals[2];
ordinals[3];

// Fair bit of consistency there!
```

Looping through Arrays

```
var ordinals = [
  "Zeroth",
  "First",
  "Second",
  "Third"
];

for ( var index = 0; index <= 3; index += 1 ) {
  var currentElement = ordinals[index];
  console.log( currentElement );
}
```

Looping through Arrays

```
var ordinals = [
  "Zeroth",
  "First",
  "Second",
  "Third"
];

for ( var index = 0; index <= ordinals.length; index += 1 ) {
  var currentElement = ordinals[index];
  console.log( currentElement );
}
```

Properties & Methods: Arrays

```
var ordinals = [
  "First",
  "Second",
  "Third"
];

ordinals.length; // => 3
```

Properties & Methods: Arrays

```
var ordinals = [
  "First",
  "Second",
  "Third"
];

ordinals.pop(); // Remove the last element

ordinals.push( "Third" ); // Add "Third" to the end
```

Properties & Methods: Arrays

```
var ordinals = [
  "First",
  "Second",
  "Third"
];

ordinals.shift(); // Remove the first element

ordinals.unshift( "First" ); // Add "First" to the start
```

Properties & Methods: Arrays

```
var ordinals = [
  "First",
  "Second",
  "Third"
];

ordinals.indexOf( "Second" ); // Get the index of "Second" => 1

ordinals.includes("Third"); // true
```

Properties & Methods: Arrays

Lots of others! Some common ones:

- `.join`
- `.slice`
- `.includes`
- `.reverse`
- `.forEach`
- `.reduce`
- `.filter`
- `.map`

In-class Exercises / Homework

Do the exercises found here

- Codecademy
- MDN
- Speaking JavaScript
- Eloquent JavaScript
- JavaScript.info