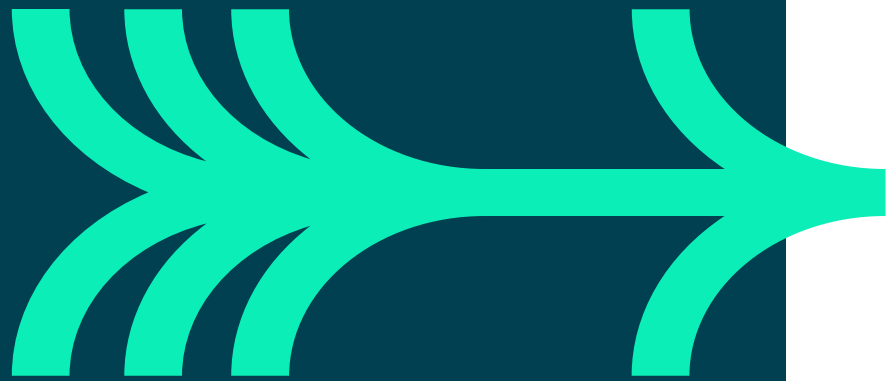
POWERING POTENTIAL

Objects

JavaScript Fundamentals

Introduction



Objects

- Creating objects
- Accessing objects
- Object functions
- Destructuring objects and arrays

Objects – data structures

- Objects in JavaScript are key – value pairs
  - Where standard arrays are index – value pairs
  - Keys are very useful for providing semantic data

```
const student = new Object();
student["name"] = "Caroline";
student["id"] = 1234;
student["courseCode"] = "LGJAVSC3";
```

- The object can have new properties added at any time
  - Known as an expando property

```
student.email = "caroline@somewhere.com";
```

Objects – accessing properties

- The key part of an object is often referred to as a property
  - It can be directly accessed

```
student.email ;
student["email"];
```

- When working with objects, the for in loop is very useful
  - key holds the string value of the key
  - student is the object
  - So it loops for each property in the object

```
for (let key in student) {
    console.log(`${key}:${student[key]}`);
}
```

Objects – literal notation

- There is an alternative syntactic approach to defining objects

```
let student2 = { name: "David", id: 1235, courseCode: "LGJAVSC3" };
```

- This can be combined into more complex arrays
  - Below is an indexed array containing two object literals
  - Note the comma separator

```
let classRoom = [
    { name: "David", id: 1235, courseCode: "LGJAVSC3" },
    { name: "Caroline", id: 1234, courseCode: "LGJAVSC3" }
]
```

Quick exercise – objects and arrays

- If we define the following data

```
let classRoom = [
    { name: "David", id: 1235, courseCode: "LGJAVSC3" },
    { name: "Caroline", id: 1234, courseCode: "LGJAVSC3" }
]
```

- What would we have to add to this code to
  - Access the inner object
  - Display the key value pair

```
for (let i = 0; i < classRoom.length; i++) {
    for (let key in classRoom[i]) {
        console.log(`${key} : ${classRoom[i][key]}`);
    }
}
```

Enhanced Object Literals

- A shorthand for foo:foo assignments – when the property name is the same as the variable you wish to use for the property's value.

- Defining methods

```
let power = 200;
let myCar = {
    power
}
```

- Maker super calls

```
let myCar = {
    speed : 0,
    power,
    accelerate() { this.speed = this.power / 2 },
}
```

```
let myCar = {
    …
    toString() { return `Car: ${super.toString()}` }
}
```

Dynamic Property Names

- Dynamic property names

```
let power = 200;
n = 0;

let myCar = {
    power,
    ["prop_" + ++n]: n
};
```

QA Object.assign()

- The assign() method has been added to copy enumerable own properties to an object
- Can use this to merge objects

```
let obj1 = {a: 1};
let obj2 = {b: 2};
let obj3 = {c: 3};

Object.assign(obj1,obj2,obj3);
console.dir(obj1); //{a: 1, b: 2, c: 3}
```

- Or copy objects

```
let obj1 = {a: 1};

let obj2 = Object.assign({},obj1);
console.dir(obj2);
```

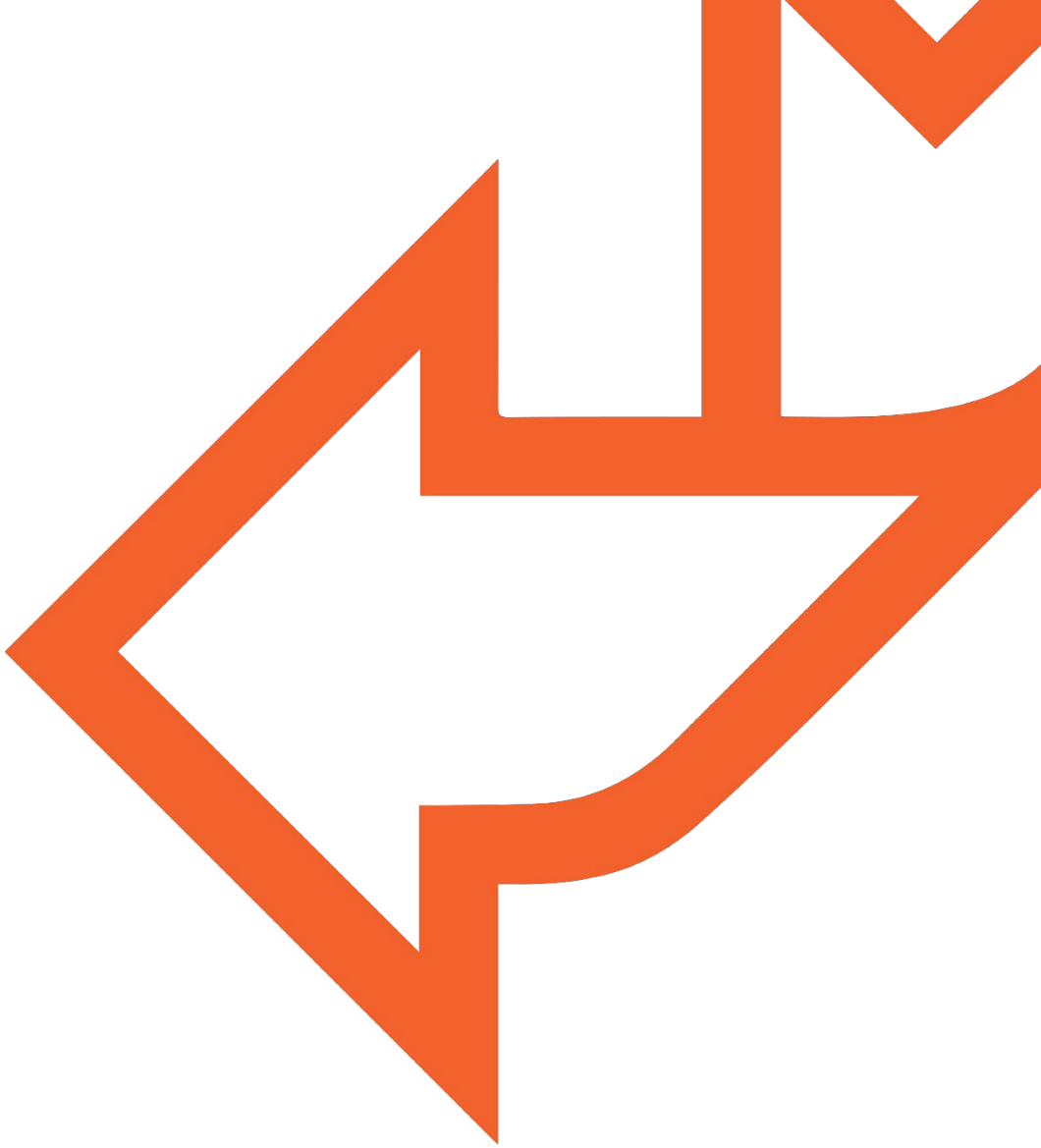
Everything is an object

- JavaScript is an object-based programing language
  - All types extend from it
  - Including functions
  - Function is a reserved word of the language
- Theoretically, we could define our functions like this
  - Then call it using **`doStuff();`**

```
let doStuff = new Function('alert("stuff was done")');
```

- In the above example, we have added all the functionality as a string
  - The runtime will instantiate a new function object
  - Then pass a reference to the **`doStuff`** variable
  - Allowing us to call it in the same way as any other function

POWERING POTENTIAL



Destructuring

JavaScript Fundamentals

Destructuring: Arrays

- Providing a convenient way to extract data from objects and arrays

```
let first,second,third
[first,second,third] = ["I","Love","JavaScript"]
console.log(first);            // I
console.log(second);           // Love
console.log(third);            // JavaScript
```

- We can also use default values

```
let [first,second=7] = [1];
console.log(first); //1
console.log(second); //7
```

Destructuring: Objects

- Basic object destructuring

```
let myObject = {first: "Salt", second: "Pepper"};
let {first,second} = myObject;

console.log(first);  //"Salt"
console.log(second); //"Pepper"
```

- We can rename the variables

```
let myObject = {first: "Salt", second: "Pepper"};
let {first: condement1,second: condement2} = myObject;

console.log(condement1); //"Salt"
console.log(condement2); //"Pepper"
```

Destructuring: Objects

- Default values

```
let myObject = {first: "Salt"};
let {first="ketchup",second="mustard"} = myObject;

console.log(first);  //"Salt"
console.log(second); //"Mustard"
```

- Gotcha! Braces on the lhs will be considered a block

```
let a,b
{a,b} = {a: 5, b: 7};          //syntax error
({a,b} = {a: 5, b: 7});        //okay!
```

QuickLab 8 - Objects

- Creating, managing, and destructuring Objects

REVIEW

Arrays and Objects are essential collections that allow us to gather data under one roof that can then be acted upon in a coherent and concise manner

JavaScript is an object-based language

- Everything is an object behind the scenes
- Many very useful objects built into JavaScript

We will revisit all three concepts through the course

- Every module in the course builds out of these concepts
- So please speak now if you are unsure on anything!