

JavaScript Objects

ITP 301
Spring 2021

Arrays

Great for storing simple, closely related data:

	0	1	2	3	4
favoriteNums =	1	2	3	5	8

	0	1	2	3
courses =	itp104	itp301	itp300	itp460

Not great for complex, varied data:

	0	1	2	3
person =	Tommy	Trojan	ttrojan@usc.edu	123-456-7890

```
var favoriteNums = [1, 2, 3, 5, 8];
```

```
var courses = ['itp104', 'itp301', 'itp300', 'itp460'];
```

```
var person = ['Tommy', 'Trojan', 'ttrojan@usc.edu', '123-456-7890'];
```

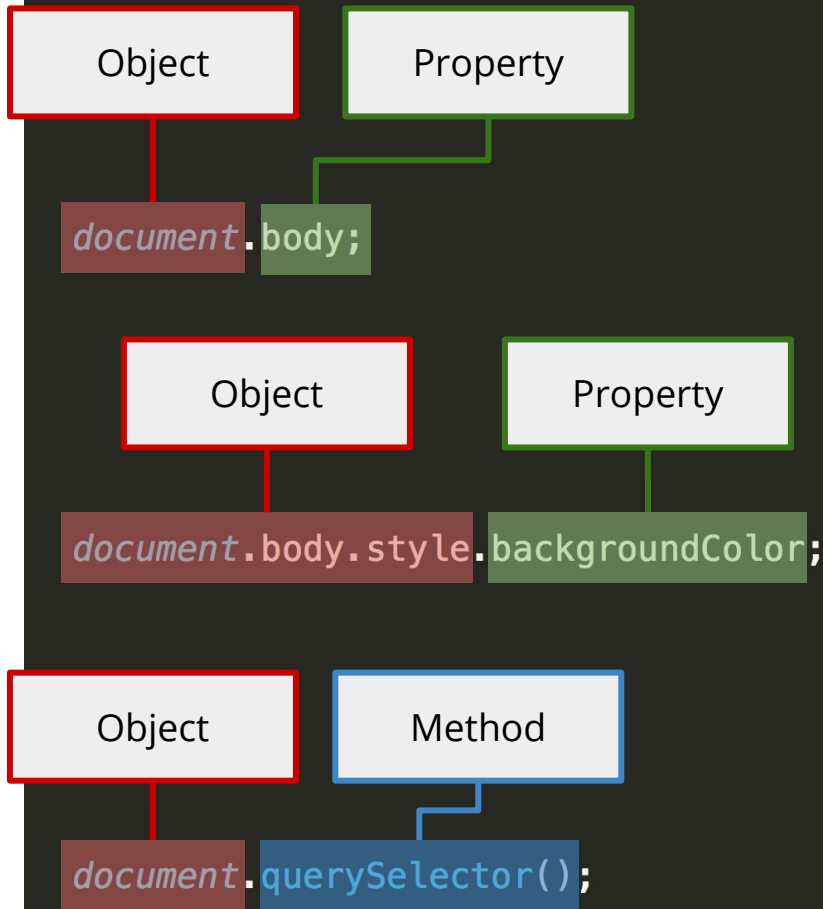
JavaScript Objects

JavaScript is an Object-Oriented Programming (OOP) Language.

Object – collection of closely related variables (**properties**) and functions (**methods**).

Why OOP?

- Modeled after the real world,
- Each object keeps track of its own behavior and state,
- They help break down complex problems into independent entities.



Creating Objects

Two ways to create objects:

1. Literal Syntax
2. Class Declaration Syntax

Rectangle	
width	10
height	20
getArea()	function(){...}

```
var rectangle = {  
  width: 10,  
  height: 20,  
  getArea: function() {  
    return (this.width * this.height);  
  }  
}
```

```
class Rectangle {  
  width;  
  height;  
  constructor(nWidth, nHeight) {  
    this.width = nWidth;  
    this.height = nHeight;  
  }  
  getArea() {  
    return (this.width * this.height);  
  }  
}
```

```
var rectangle = new Rectangle(10, 20);
```

Accessing Objects

Rectangle	
width	10
height	20
getArea()	function(){...}

```
rectangle.width;
```

Accessing Objects

Rectangle	
width	10
height	20
getArea()	function(){...}

```
rectangle.width;
```

```
rectangle.height;
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Accessing Objects

Rectangle	
width	10
height	20
getArea()	function(){...}

```
rectangle.width;
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rectangle.height;
```

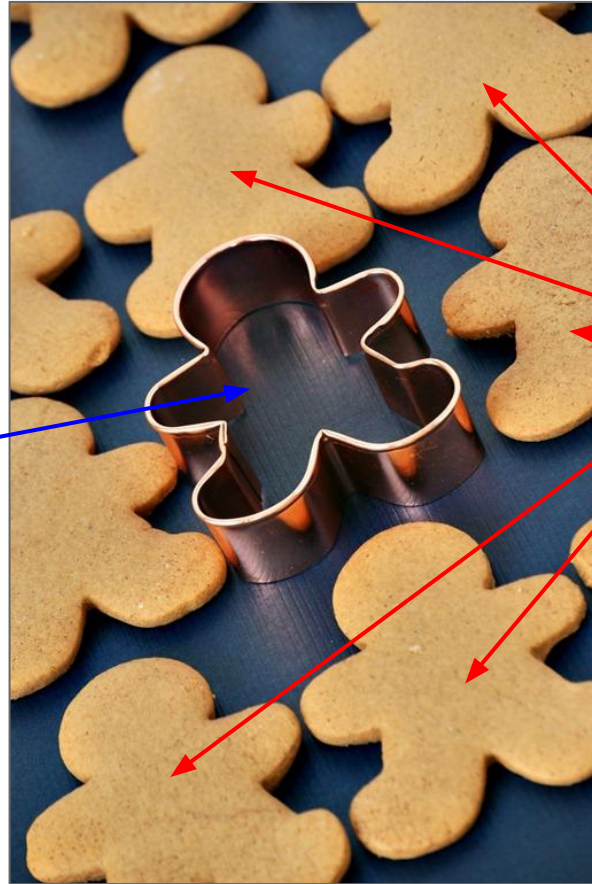
```
rectangle.getArea();
```

Classes vs. Objects

Class is a **template** for objects.

Objects are **instances** of a class.

Class



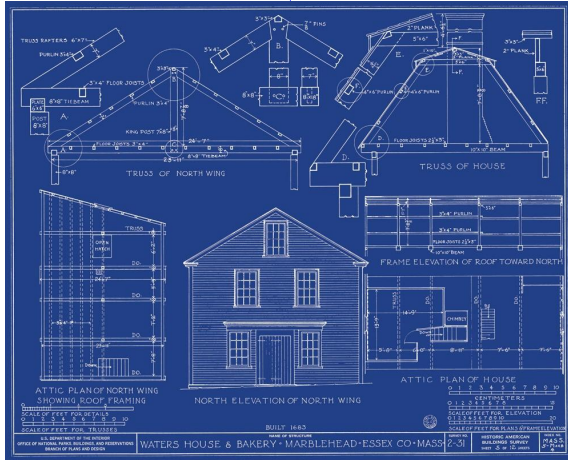
Objects

Classes vs. Objects

Class is a **template** for objects.

Objects are **instances** of a class.

Class



Objects



Creating Objects

Person					
firstName	Tommy				
lastName	Trojan				
contact	<table><tr><td>email</td><td>ttrojan@usc.edu</td></tr><tr><td>phone</td><td>123-123-1234</td></tr></table>	email	ttrojan@usc.edu	phone	123-123-1234
email	ttrojan@usc.edu				
phone	123-123-1234				
hobbies	<table><tr><td>Web Dev</td><td>Bruin Hunting</td></tr></table>	Web Dev	Bruin Hunting		
Web Dev	Bruin Hunting				
intro	function() {...}				

```
var person = {
  firstName: 'Tommy',
  lastName: 'Trojan',
  contact: {
    email: 'ttrojan@usc.edu',
    phone: '123-123-1234'
  },
  hobbies: ['Web Dev', 'Bruin Hunting'],
  intro: function(){
    return 'Hello! My name is ' + this.firstName + ' ' + this.lastName;
  }
}
```

```
-----

class Person {
  firstName;
  lastName;
  contact = {};
  hobbies;

  constructor(fname, lname, nEmail, nPhone, hobbiesArray){
    this.firstName = fname;
    this.lastName = lname;
    this.contact = {
      email: nEmail,
      phone: nPhone
    };
    this.hobbies = hobbiesArray;
  }

  intro(){
    return 'Hello! My name is ' + this.firstName + ' ' + this.lastName;
  }
}

var person = new Person('Tommy', 'Trojan', 'ttrojan@usc.edu', '123-123-1234',
  ['Web Dev', 'Bruin Hunting']);
```

Creating Objects

Person					
firstName	Tommy				
lastName	Trojan				
contact	<table><tr><td>email</td><td>ttrojan@usc.edu</td></tr><tr><td>phone</td><td>123-123-1234</td></tr></table>	email	ttrojan@usc.edu	phone	123-123-1234
email	ttrojan@usc.edu				
phone	123-123-1234				
hobbies	<table><tr><td>Web Dev</td><td>Bruin Hunting</td></tr></table>	Web Dev	Bruin Hunting		
Web Dev	Bruin Hunting				
intro	function() {...}				

```
person.firstName;
```

Creating Objects

Person		
firstName	Tommy	
lastName	Trojan	
contact	email	ttrojan@usc.edu
	phone	123-123-1234
hobbies	Web Dev	Bruin Hunting
intro	function(){...}	

```
person.firstName;
```

```
person.contact;
```

Creating Objects

Person		
firstName	Tommy	
lastName	Trojan	
contact	email	ttrojan@usc.edu
	phone	123-123-1234
hobbies	Web Dev	Bruin Hunting
intro	function(){...}	

```
person.firstName;
```

```
person.contact;
```

```
person.contact.email;
```

Creating Objects

Person					
firstName	Tommy				
lastName	Trojan				
contact	<table><tr><td>email</td><td>ttrojan@usc.edu</td></tr><tr><td>phone</td><td>123-123-1234</td></tr></table>	email	ttrojan@usc.edu	phone	123-123-1234
email	ttrojan@usc.edu				
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hobbies	<table><tr><td>Web Dev</td><td>Bruin Hunting</td></tr></table>	Web Dev	Bruin Hunting		
Web Dev	Bruin Hunting				
intro	function() {...}				

```
person.firstName;
```

```
person.contact;
```

```
person.contact.email;
```

```
person.hobbies;
```

Creating Objects

Person					
firstName	Tommy				
lastName	Trojan				
contact	<table><tr><td>email</td><td>ttrojan@usc.edu</td></tr><tr><td>phone</td><td>123-123-1234</td></tr></table>	email	ttrojan@usc.edu	phone	123-123-1234
email	ttrojan@usc.edu				
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Web Dev	Bruin Hunting				
intro	function() {...}				

```
person.firstName;
```

```
person.contact;
```

```
person.contact.email;
```

```
person.hobbies;
```

```
person.hobbies[1];
```

Creating Objects

Person					
firstName	Tommy				
lastName	Trojan				
contact	<table><tr><td>email</td><td>ttrojan@usc.edu</td></tr><tr><td>phone</td><td>123-123-1234</td></tr></table>	email	ttrojan@usc.edu	phone	123-123-1234
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Web Dev	Bruin Hunting				
intro	function() {...}				

```
person.firstName;  
person.contact;  
person.contact.email;  
person.hobbies;  
person.hobbies[1];  
person.intro();
```


Class Example

Example contains an array of objects.

contactList =

	0	1	2																		
	<table><tr><th colspan="2">Person</th></tr><tr><td>firstName</td><td>Tommy</td></tr><tr><td>lastName</td><td>Trojan</td></tr><tr><td rowspan="2">contact</td><td><table><tr><td>email</td><td>ttrojan@usc.edu</td></tr><tr><td>phone</td><td>123-123-1234</td></tr></table></td></tr><tr><td>hobbies</td><td><table><tr><td>Web Dev</td><td>Bruin Hunting</td></tr></table></td></tr><tr><td>intro</td><td>function(){...}</td></tr></table>	Person		firstName	Tommy	lastName	Trojan	contact	<table><tr><td>email</td><td>ttrojan@usc.edu</td></tr><tr><td>phone</td><td>123-123-1234</td></tr></table>	email	ttrojan@usc.edu	phone	123-123-1234	hobbies	<table><tr><td>Web Dev</td><td>Bruin Hunting</td></tr></table>	Web Dev	Bruin Hunting	intro	function(){...}		
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