MODULE THREE - OBJECTS

PROTOTYPES & INHERITANCE & JSON

TODAY'S SCHEDULE

1. Cool Things
2. Review Constructor Functions
3. Prototypes & Inheritance
4. A Classier Way ...
5. Do You Know JSON?
6. Recap, Weekly Tasks, Next Week

LEARNING OBJECTIVES

1. Explore and demonstrate understanding of object prototypes, the prototype chain, using the prototype property and inheritance
2. Explore and use ECMAScript 2015 class syntax
3. Employ the most common functions and methods used with current client-side JavaScript techniques;
4. Optimize code for increased functionality, performance, readability, and reusability


require File.expand_path(
Prevent database
abort("The Rails
require 'spec_helper'
require 'rspec/rails'
require 'capybara/rspec'
require 'capybara/rails'
Capybara.javascript_driver
Category.delete_all;
Shoulda::Matchers.
config.integrate
end
Add additional
Requires supporting
spec/support/ and its
run as spec files by
in _spec.rb will
run twice. It is
end with _spec.rb.
No results found for 'mongoid'
COOL THINGS!

RESOURCES, LINKS TUTORIALS AND OTHER COOL THINGS…

- https://www.freecodecamp.org/news/is-vanilla-javascript-worth-learning-absolutely-c2c67140ac34/
- https://medium.com/better-programming/9-projects-to-inspire-front-end-developers-in-2020-a404545f6369
- https://learnvanillajs.com/
- https://dzone.com/articles/hiring-my-cat-as-a-software-developer

LET'S REVIEW OOJS

!IMPORTANT OOP CONCEPTS

- **Abstraction** : creating a simple model of a more complex thing
- **Encapsulation** : our object becomes a container or capsule for properties and methods
- **Instantiation**: creating an object instance from a class
- **Polymorphism**: the ability for multiple objects to implement the same functionality

OOP + JS = OOJS

```
function Kitty(first, last, age, gender, interests) {
  this.name = {
     first : first,
     last : last
  };
  this.age = age;
  this.gender = gender;
  this.interests = interests;
  this.bio = function() {
    alert(this.name.first + ' ' + this.name.last + ' is ' + this.age + ' years old. He likes ' + this.interests[0] + ' and '
    + this.interests[1] + '.');
  };
  this.greeting = function() {
    alert('Hi! I\'m ' + this.name.first + '.');
  };
}
```

```
let bart = new Kitty('Bart', 'Meowser', 16, 'male', ['catnip', 'chasing strings', 'snoozing'] );
let stevie = new Kitty('Stevie', 'Nicks', 9, 'female', ['strings', 'sleeping', 'eating']);
```

WHAT'S GOING ON HERE?

- constructor functions help us to create object templates
- we can instantiate new object instances by calling the constructor function, using the new keyword & passing through the required arguments

CONSTRUCTOR FUNCTIONS

The constructor function allows us to create a class.

It's pretty much like a standard function, except we aren't creating an empty object or returning it.

CONSTRUCTOR FUNCTIONS

Constructors help to give our code order. We can create constructors in one place, then create object instances when we need them.

COOL, BUT...

- one small drawback is that every time we call our constructor function, we are defining greeting( ) every time

- Don't worry, we'll improve on this when we talk about prototypes and inheritance.

PROTOTYPES & INHERITANCE

A PROTOTYPE-BASED LANGUAGE

- JavaScript is often described as a prototype- based language
- prototypes are the mechanism by which objects inherit features from one another in JS

HOW DOES THIS WORK?

- objects have a prototype object (acts a template object that it inherits methods and properties from)
- an object's prototype object may also have a prototype object, creating a prototype chain

PROTOTYPAL INHERITANCE

- a link is made between the object instance and it's prototype, which is derived from the prototype property on the constructor
- the properties and methods are found by walking up the chain of prototypes

PROTOTYPAL INHERITANCE

SOURCE : https://developer.mozilla.org/en-US/docs/Learn/JavaScript/Objects/Object_prototypes

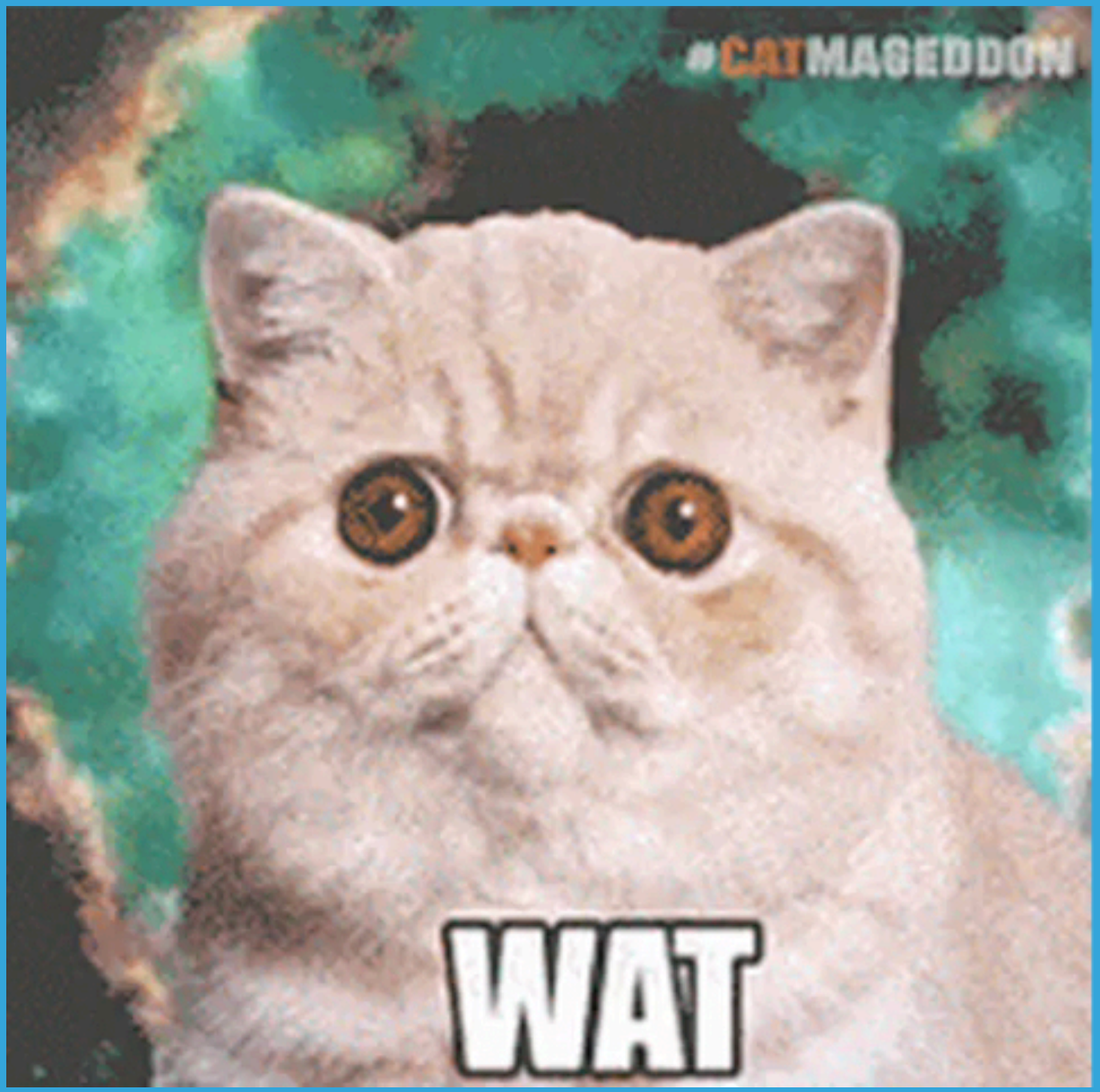
THE PROTOTYPE CHAIN

- When it comes to object prototypes, properties and methods are defined on the prototype property of the Object's constructor function, not the object instances themselves.

- Methods and properties are not copied from one object to another in the prototype chain.

MODIFYING PROTOTYPES

- We can modify the prototype property on our constructor function
- Good idea to add our methods to the prototype property object of our constructor function instead of inside the constructor function itself


#CATMAGEDDON
WAT

Weekly Learning > Week 9 >

Code Examples >

Week 9 Start > Example One

A CLASSIER WAY

JAVASCRIPT GOT CLASSY!

- ECMAScript 2015 introduced classes to JavaScript
- cleaner and easier syntax, same old prototypal inheritance
- subclasses, getters and setters

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Code Examples >

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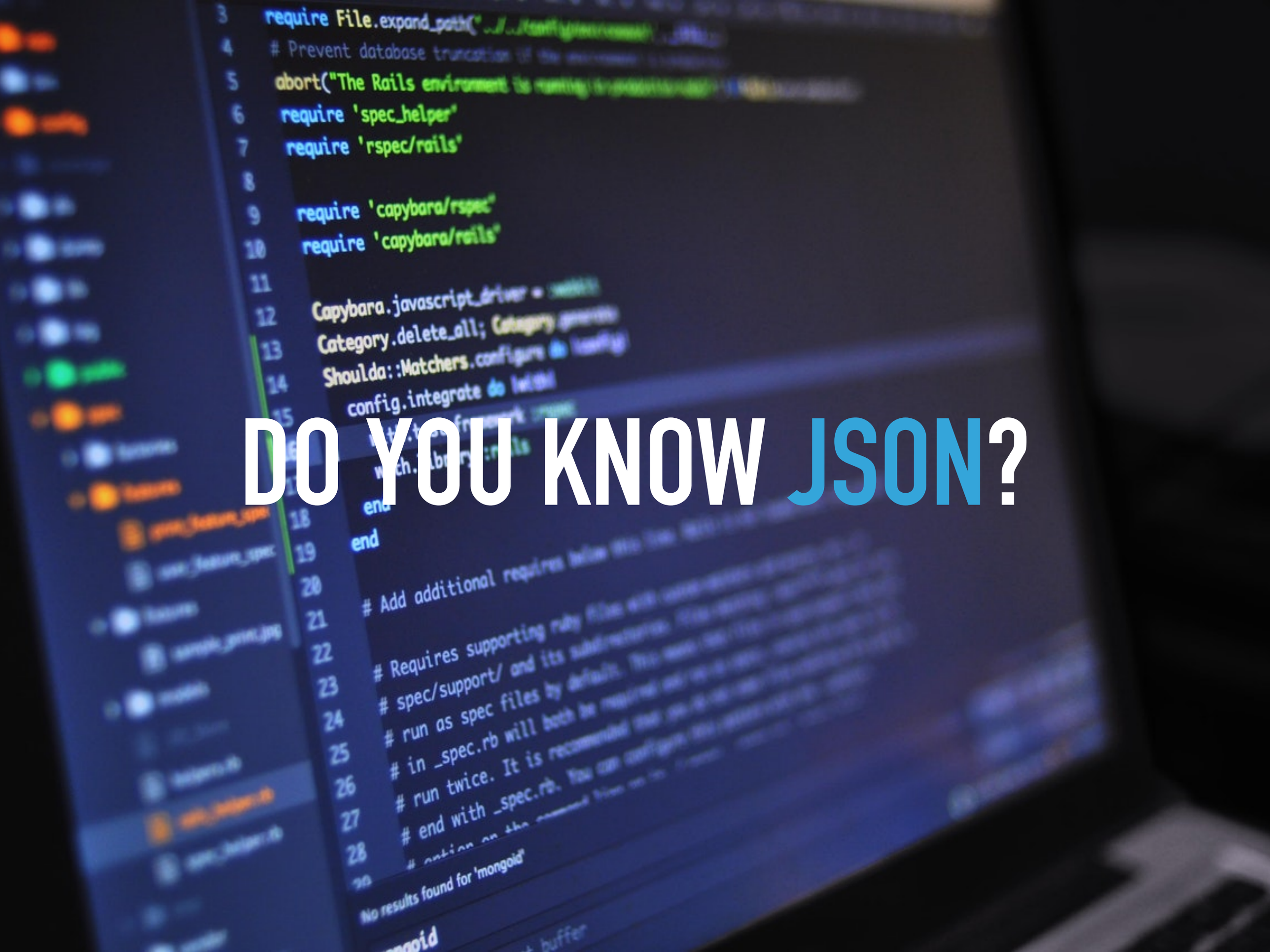
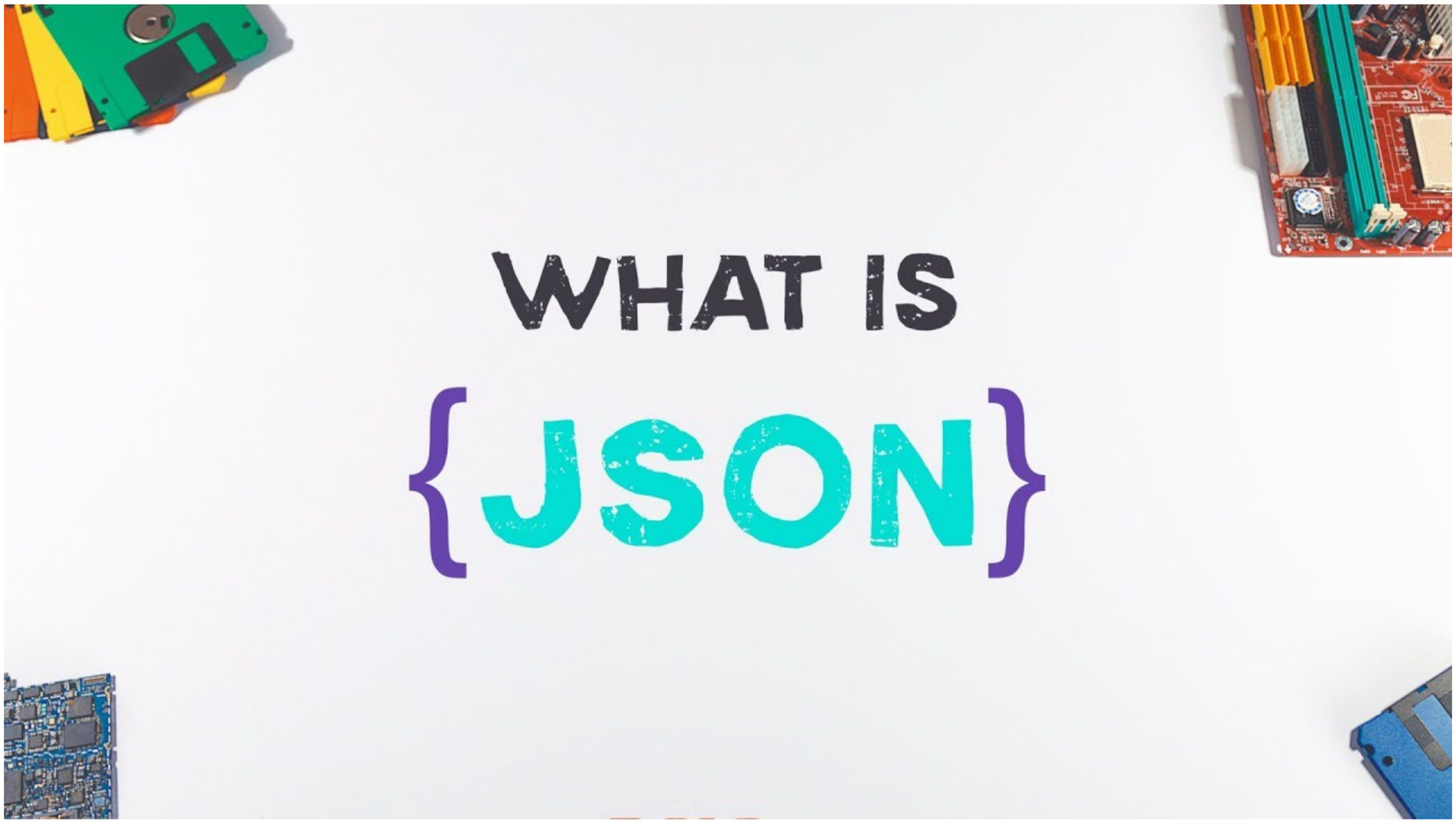


DO YOU KNOW JSON?


WHAT IS
{JSON}

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Code Examples >

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RECAP, THIS WEEK, NEXT WEEK

OOP

- we use objects to model real world things in our programs/ provide easy access to functionality
- objects contain related data and code which represent info or functionality

OOJS

- We can create define object templates using a constructor function (like a class in JS) or we can use class syntax
- Either way inheritance is prototype-based

PROTOTYPES & INHERITANCE

- prototypes and inheritance are complex, but they provide a lot of power and flexibility
- likely only use for larger projects
- don't have too many levels of inheritance and keep track of where you define your methods and properties

JSON

- stands for JavaScript Object Notation
- separate from JavaScript
- text-based data format following JavaScript object syntax
- used for transmitting data in web applications

NEXT WEEK – APIs!!!!!!

THANKS TO (SOURCES):

https://developer.mozilla.org/en-US/docs/Learn/JavaScript/Objects/Object_prototypes

https://developer.mozilla.org/en-US/docs/Learn/JavaScript/Objects/Inheritance

https://developer.mozilla.org/en-US/docs/Learn/JavaScript/Objects/JSON

https://developer.mozilla.org/en-US/docs/Learn/JavaScript/Objects/JSON#:~:text=JavaScript%20Object%20Notation%20(JSON)%20is,page%2C%20or%20vice%20versa).