

Prototype-based OOP In Javascript And Reading jQuery

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Introduce Myself

- SCUT, graduated from 2014.07
- Web developer, mainly Ruby on Rails, from Beansmile, work from 2013.01
- Github: <https://github.com/Martin91>



Overview

- Javascript
 - Constructor
 - Prototype-based Inheritance
- jQuery
 - jQuery objects
 - prototype in jQuery and its application in plugins
 - jQuery Event binding and its alias
- Implement a simple jQuery plugin — Editable div

Javascript OOP

- Recommend Readings:
 - https://developer.mozilla.org/en-US/docs/Web/JavaScript/Introduction_to_Object-Oriented_JavaScript
 - <http://segmentfault.com/blog/nightire/11900000000349878>
 - <http://segmentfault.com/blog/nightire/11900000000400182>

Constructor

- A **normal** method called **at the moment of instantiation of an object**. It usually has the same name as that of the class containing it.
- Every object has a constructor property.

Constructor

- `var dog = new Dog();`
- `dog.constructor === Dog ?`
- Think about:
 - What about `var dog = Dog();`,
and `var dog = new Dog`?
 - What does **this** represent in a constructor?

Constructor

- How to automatically call `new` in a constructor?
 - use instanceof operator to determine if the `this` reference to a instance of the constructor
 - or, use constructor property to determine if the `this` reference to a instance of the constructor
- If not, return `new Constructor`.

Prototype-based Inheritance

- What Is Prototype Inheritance In Javascript?
- Special Properties: `prototype` V.S. `__proto__`
- Let's Draw A Prototype Inheritance Diagram!
- Prototype Chain

What Is Prototype Inheritance In Javascript?

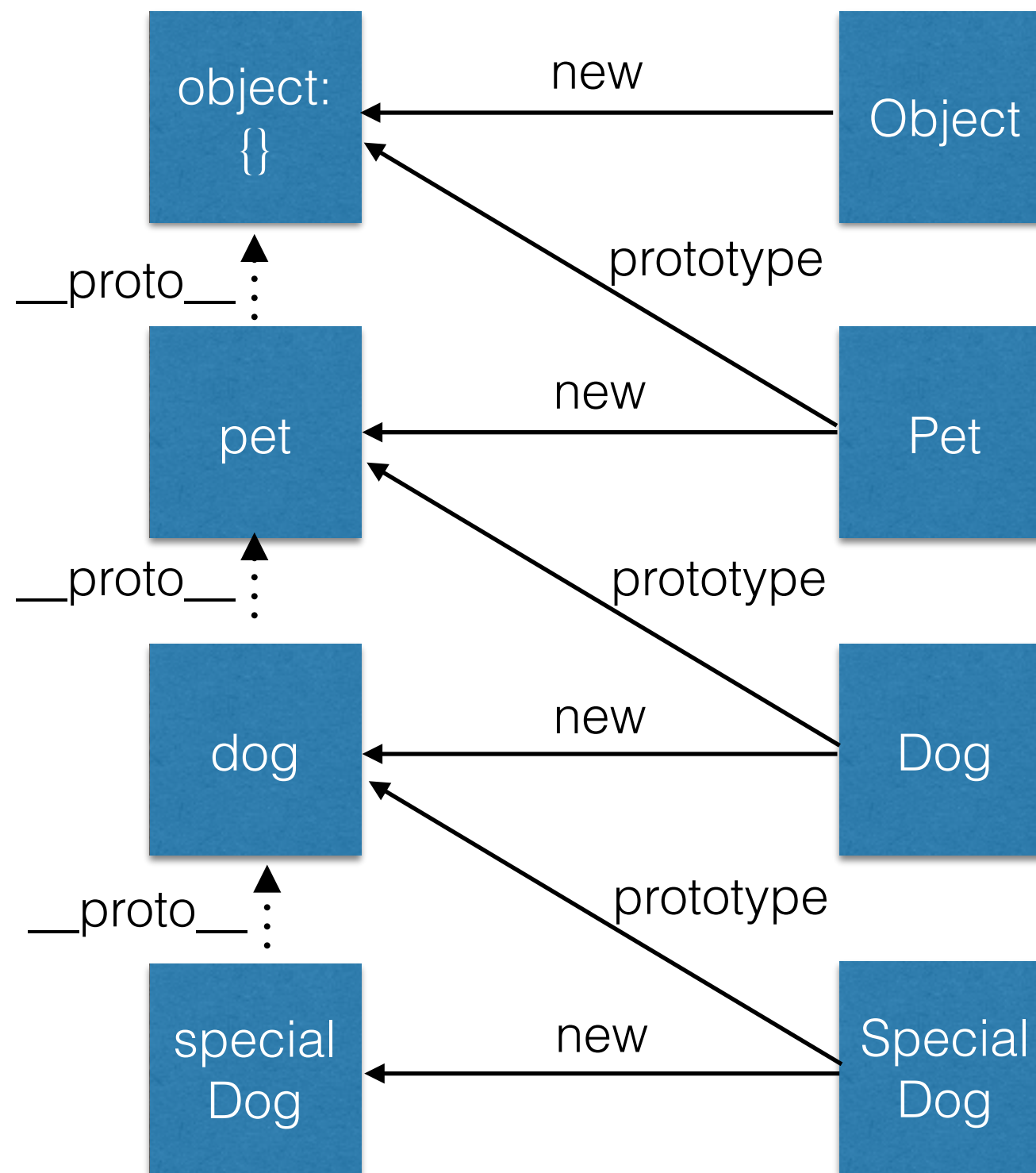
- inherited reusable components from the prototype of constructor
- class-less, instance-based
- **Q:** What is the relation between prototype and created instance?

What Is Prototype Inheritance In Javascript?

- `function Dog() { ... }`
- `function SpeacialDog() { ... }`
- `SpeacialDog.prototype = new Dog()`
- `SpeacialDog.prototype.constructor = SpeacialDog`
Discuss: Why need this line of code?

Special Properties: prototype V.S. __proto__

- prototype: a reference from a constructor to its prototype
- __proto__: a reference from an object to the prototype of its constructor
Replacement: Object.getPrototypeOf(f)
- An created object has a reference from itself to the prototype of its constructor, so it can inherit methods and properties from the latter



Why we need to set constructor of a prototype of a constructor to the constructor itself?

Prototype Chain

- What is a prototype chain?
- What can we make use of prototype chain?
- Code: Extend our dogs system!

Javascript Reviews

- Constructor is a method responsible for initialize an object, when `new` operator create new object
- javascript use Prototype-based OOP technology
- Prototype chain represents a direction for searching properties

Reading jQuery

- jQuery objects
 - The process to create jQuery objects
 - What are differences between DOM elements and jQuery objects
- prototype in jQuery and its application in plugins
- jQuery Event binding and event aliases

The process to create jQuery objects

- <https://github.com/jquery/jquery/blob/80022c81ce4a07a232afd3c580b0977555a2daec/src/core.js#L20-L24>
- <https://github.com/jquery/jquery/blob/80022c81ce4a07a232afd3c580b0977555a2daec/src/core/init.js#L17-L115>
- <https://github.com/jquery/jquery/blob/10399ddcf8a239acc27bdec9231b996b178224d3/src/traversing/findFilter.js#L55-L79>

What is a jQuery object?

- <http://stackoverflow.com/a/6445357/2547108>
- A jQuery object is **array-like** which means that it contains zero or more indexes (properties which names are positive integers starting with zero). Besides those indexes, a jQuery object contains these properties:
 - length
 - context
 - selector

What is a jQuery object?

- <http://learn.jquery.com/using-jquery-core/jquery-object/>
- When creating new elements (or selecting existing ones), jQuery returns the **elements in a collection**. It has a **zero-indexed** sequence of DOM elements, some familiar array functions, and a **.length** property

Selector Engine

- Element.querySelectorAll()
<https://developer.mozilla.org/en-US/docs/Web/API/Element.querySelectorAll>
- <http://sizzlejs.com/>
- **How jQuery selects elements using Sizzle**
<http://blog.bigbinary.com/2010/02/15/how-jquery-selects-elements-using-sizzle.html>

prototype OOP in jQuery

- <https://github.com/jquery/jquery/blob/80022c81ce4a07a232afd3c580b0977555a2daec/src/core/init.js#L118>

jQuery Event binding and event aliases

- Event binding:
- <https://github.com/jquery/jquery/blob/80022c81ce4a07a232afd3c580b0977555a2daec/src/event.js#L776-L828>
- <https://github.com/jquery/jquery/blob/80022c81ce4a07a232afd3c580b0977555a2daec/src/event.js#L42-L147>

jQuery Event binding and event aliases

- Event aliases:

<https://github.com/jquery/jquery/blob/80022c81ce4a07a232afd3c580b0977555a2daec/src/event/alias.js#L6-L17>

<https://github.com/jquery/jquery/blob/80022c81ce4a07a232afd3c580b0977555a2daec/src/event/alias.js#L24-L33>

Where are jQuery's instance methods from?

- <https://github.com/jquery/jquery/blob/80022c81ce4a07a232afd3c580b0977555a2daec/src/core/init.js#L118>

Explore jQuery.fn.extend()

- What is jQuery.extend()?
<https://github.com/jquery/jquery/blob/59232825aa87b941dd2418a6860b64017dfec0ae/src/core.js#L124-L189>
- What can jQuery.fn.extend() do?
Merge the contents of an object onto the jQuery prototype to provide new jQuery instance methods.
<http://api.jquery.com/jQuery.fn.extend/>
- `$('body').__proto__ == jQuery.fn` => true

How to implement a jQuery plugin

- <http://learn.jquery.com/plugins/>
A jQuery plugin is simply **a new method that we use to extend jQuery's prototype object.**
- Steps
<http://learn.jquery.com/plugins/basic-plugin-creation/>
 - Basic Plugin Authoring
 - Chaining

jQuery reviews

- We learned:
 - the process to create jQuery objects and differences and relations between jQuery objects and native DOM elements
 - how jQuery make use of prototype inheritance in plugins system
 - how jQuery binding events and set event aliases

Implement plugins

- editable div
<http://jsfiddle.net/Martin91/52rz9jpm/3/>