JavaScript Prototype in Plain Language

JAN. 25 2013 147

Prototype is a fundamental concept that every JavaScript developer must understand, and thi article aims to explain JavaScript's prototype in plain, detailed language. If you don't understai JavaScript's prototype after reading this blog post, please ask questions in the comments belo I will personally answer all questions.

menu

To understand prototype in JavaScript you must understand objects in JavaScript. If you aren't already familiar with objects, you should read my post *JavaScript Objects in Detail*. Also, know that a *property* is simply a variable defined on a function.

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There are two interrelated concepts with **prototype** in JavaScript:

1. First, every JavaScript function has a **prototype property** (this property is empty by default), and you attach properties and methods on this prototype property when you want to implement inheritance. This prototype property is not enumerable; that is, it isn't accessible in a for/in loop. But Firefox and most versions of Safari and Chrome have a __proto__ "pseudo" property (an alternative syntax) that allows you to access an object's prototype property. You will likely never use this __proto__ pseudo property, but you should know that it exists and it is simply a way to access an object's prototype property in some browsers. The prototype property is used primarily for inheritance; you add methods and properties on a function's prototype property to make those methods and properties available to instances of that function.

Consider this simple example of inheritance with the prototype property (more on inheritance later):

```
function PrintStuff (myDocuments) {
this.documents = myDocuments;
}

// We add the print () method to PrintStuff prototype property so that other instances (objects) ca
PrintStuff.prototype.print = function () {
console.log(this.documents);
}

// Create a new object with the PrintStuff () constructor, thus allowing this new object to inherit Pri
var newObj = new PrintStuff ("I am a new Object and I can print.");

// newObj inherited all the properties and methods, including the print method, from the PrintStu
newObj.print (); //I am a new Object and I can print.
```

2. The second concept with prototype in JavaScript is the **prototype attribute**. Think of the prototype attribute as a characteristic of the object; this characteristic tells us the object's "parent". In simple terms: An object's prototype attribute points to the object's "parent"—the object it inherited its properties from. The prototype attribute is normally referred to as the *prototype object*, and it is set automatically when you create a new object.To expound on this: Every object inherits properties from some other object, and it is this other object that is the object's prototype attribute or "parent." (You can think of the *prototype attribute* as the lineage or the parent). In the example code above, *newObj*'s prototype is PrintStuff.prototype.
Note: All objects have attributes just like object properties have attributes. And the object attributes are *prototype, class,* and *extensible* attributes. It is this prototype attribute that we are discussing in this second example.

   Also note that the __proto__ "pseudo" property contains an object's prototype object (the parent object it inherited its methods and properties from).

Constructor

Before we continue, let's briefly examine the constructor. A **constructor** is a function used for initializing new objects, and you use the new keyword to call the constructor. For example:

```
function Account () {
}
// This is the use of the Account constructor to create the userAccount object.
var userAccount = new Account ();
```

Moreover, all objects that inherit from another object also inherit a *constructor* property. And this constructor property is simply a property (like any variable) that holds or points to the constructor of the object.

```
//The constructor in this example is Object ()
var myObj = new Object ();
// And if you later want to find the myObj constructor:
console.log(myObj.constructor); // Object()

// Another example: Account () is the constructor
var userAccount = new Account ();
// Find the userAccount object's constructor
console.log(userAccount.constructor); // Account()
```

Prototype Attribute of Objects Created with new Object () or Object Literal

All objects created with object literals and with the Object constructor inherits from **Object.prototype**. Therefore, Object.prototype is the prototype attribute (or the prototype object) of all objects created with new Object () or with {}. Object.prototype itself does not inherit any methods or properties from any other object.

```
// The userAccount object inherits from Object and as such its prototype attribute is Object.prototype.
var userAccount = new Object ();

// This demonstrates the use of an object literal to create the userAccount object; the userAccou
```

```
var userAccount = {name: “Mike”}
```

Prototype Attribute of Objects Created With a Constructor Function
Objects created with the new keyword and any constructor other than the Object () constructor, get their prototype from the constructor function.

For Example:

```
function Account () {

}
var userAccount = new Account () // userAccount initialized with the Account () constructor and as such
```

Similarly, any array such as var myArray = new Array (), gets its prototype from Array.prototype and it inherits Array.prototype’s properties.

So, there are two general ways an object’s prototype attribute is set when an object is created:

1. If an object is created with an object literal (var newObj = {}), it inherits properties from Object.prototype and we say its prototype object (or prototype attribute) is Object.prototype.
2. If an object is created from a constructor function such as new Object (), new Fruit () or new Array () or new Anything (), it inherits from that constructor (Object (), Fruit (), Array (), or Anything ()). For example, with a function such as Fruit (), each time we create a new instance of Fruit (var aFruit = new Fruit ()), the new instance’s prototype is assigned the prototype from the Fruit constructor, which is Fruit.prototype.Any object that was created with new Array () will have Array.prototype as its prototype. An object created with new Fruit () will have Fruit.prototype as its prototype. And any object created with the Object constructor (Obj (), such as var anObj = new Object()) inherits from Object.prototype.

It is important to know that in ECMAScript 5, you can create objects with an Object.create() method that allows you to set the new object’s prototype object. We will cover ECMAScript 5 in a later post.

Why is Prototype Important and When is it Used?
These are two important ways the prototype is used in JavaScript, as we noted above:

1. **Prototype Property: Prototype-based Inheritance**
   Prototype is important in JavaScript because JavaScript does not have classical inheritance based on Classes (as most object oriented languages do), and therefore all inheritance in JavaScript is made possible through the prototype property. JavaScript has a prototype-based inheritance mechanism.Inheritance is a programming paradigm where objects (or Classes in some languages) can inherit properties and methods from other objects (or Classes). In JavaScript, you implement inheritance with the prototype property. For example, you can create a Fruit function (an object, since all functions in JavaScript are objects) and add properties and methods on the Fruit prototype property, and all instances of the Fruit function will inherit all the Fruit's properties and methods.

   Demonstration of Inheritance in JavaScript:

```
function Plant () {
this.country = "Mexico";
this.isOrganic = true;
}

// Add the showNameAndColor method to the Plant prototype property
Plant.prototype.showNameAndColor =  function () {
console.log("I am a " + this.name + " and my color is " + this.color);
}

// Add the amIOrganic method to the Plant prototype property
Plant.prototype.amIOrganic = function () {
if (this.isOrganic)
console.log("I am organic, Baby!");
}

function Fruit (fruitName, fruitColor) {
this.name = fruitName;
this.color = fruitColor;
}

// Set the Fruit's prototype to Plant's constructor, thus inheriting all of Plant.prototype methods an
Fruit.prototype = new Plant ();

// Creates a new object, aBanana, with the Fruit constructor
```

```
var aBanana = new Fruit ("Banana", "Yellow");

// Here, aBanana uses the name property from the aBanana object prototype, which is Fruit.protot
console.log(aBanana.name); // Banana

// Uses the showNameAndColor method from the Fruit object prototype, which is Plant.prototype.
console.log(aBanana.showNameAndColor()); // I am a Banana and my color is yellow.
```

Note that the *showNameAndColor* method was inherited by the *aBanana* object even though it was defined all the way up the prototype chain on the Plant.prototype object.

Indeed, any object that uses the Fruit () constructor will inherit all the Fruit.prototype properties and methods and all the properties and methods from the Fruit's prototype, which is Plant.prototype. This is **the principal manner in which inheritance is implemented in JavaScript** and the integral role the prototype chain has in the process.

For more in-depth coverage on Objective Oriented Programming in JavaScript, get Nicholas Zakas's Principles of Object-Oriented Programming in JavaScript (it is only $14.99).

2. **Prototype Attribute: Accessing Properties on Objects**
Prototype is also important for accessing properties and methods of objects. The **prototype attribute** (or prototype object) of any object is the "parent" object where the inherited properties were originally defined.This is loosely analogous to the way you might inherit your surname from your father—he is your "prototype parent." If we wanted to find out where your surname came from, we would first check to see if you created it yourself; if not, the search will move to your prototype parent to see if you inherited it from him. If it was not created by him, the search continues to his father (your father's prototype parent).

Similarly, if you want to access a property of an object, the search for the property begins directly on the object. If the JS runtime can't find the property there, it then looks for the property on the object's prototype—the object it inherited its properties from.
If the property is not found on the object's prototype, the search for the property then moves to prototype of the object's prototype (the father of the object's father—the grandfather). And this continues until there is no more prototype (no more great-grand father; no more lineage to follow). **This in essence is the prototype chain:** the chain from an object's prototype to its prototype's prototype and onwards. And JavaScript uses this prototype chain to look for properties and methods of an object.

If the property does not exist on any of the object's prototype in its prototype chain, then the property does not exist and *undefined* is returned.

This prototype chain mechanism is essentially the same concept we have discussed above with the prototype-based inheritance, except we are now focusing specifically on how JavaScript accesses object properties and methods via the prototype object.

This example demonstrates the prototype chain of an object's prototype object:

```
var myFriends = {name: "Pete"};

// To find the name property below, the search will begin directly on the myFriends object and will
console.log(myFriends.name);

// In this example, the search for the toString () method will also begin on the myFriends' object, b

// And since all objects created with the object literal inherits from Object.prototype, the toString r

myFriends.toString ();
```

Object.prototype Properties Inherited by all Objects
All objects in JavaScript inherit properties and methods from Object.prototype. These inherited properties and methods are *constructor, hasOwnProperty (), isPrototypeOf (), propertyIsEnumerable (), toLocaleString (), toString (), and valueOf ()*. ECMAScript 5 also adds 4 accessor methods to Object.prototype.

Here is another example of the prototype chain:

```
function People () {
this.superstar = "Michael Jackson";
}
// Define "athlete" property on the People prototype so that "athlete" is accessible by all objects th
People.prototype.athlete = "Tiger Woods";

var famousPerson = new People ();
```

```
famousPerson.superstar = "Steve Jobs";

// The search for superstar will first look for the superstar property on the famousPerson object, ar
console.log (famousPerson.superstar); // Steve Jobs

// Note that in ECMAScript 5 you can set a property to read only, and in that case you cannot over

// This will show the property from the famousPerson prototype (People.prototype), since the athl
console.log (famousPerson.athlete); // Tiger Woods

// In this example, the search proceeds up the prototype chain and find the toString method on O
console.log (famousPerson.toString()); // [object Object]
```

All built-in constructors (Array (), Number (), String (), etc.) were created from the Object constructor, and as such their prototype is Object.prototype.

Check back on February 7th for a quiz on JavaScript Prototype.

Additional Information
For more on JavaScript Objects, read Chapter 6 of *JavaScript: The Definitive Guide (6th Edition, May 2011)* by David Flanagan.

Be good. Sleep well. And enjoy coding.

Posted in: 16 Important JavaScript Concepts, JavaScript / Tagged: Constructor, Learn JavaScript, Prototype

Richard

Thanks for your time; please come back soon. Email me here: javascriptissexy at gmail email, or use the contact form.

147 Comments

keke

February 10, 2013 at 7:28 pm / Reply

well, very great, I was stuck by prototype half years ago, which made me stop learning programming. After learning so basic Python , checking the OOP concept that sparked me a litter ,now I restart my JS way. Not until after reading your article can I have so good understanding about the Prototype and OO concept . Thank you very much

Alex

February 11, 2013 at 5:05 pm / Reply

In the prototype example where you add the "amIOrganic" method to the Plant prototype, aren't you in fact actually clobbering the first prototype object that had the showNameAndColor method with a new prototype object? To read the code it would seem you actually create and assign two distinct object literal objects and then assign them to the prototype property of Plant. Wouldn't the second assignment clobber the first assignment in this case rather than actually adding a method to it?

Amanda

December 23, 2013 at 5:13 pm / Reply

When he created amIOrganic like so:

Plant.prototype.amIOrganic = function() {…};

then the "amIOrganic" property of the prototype was set to the function defined after the = sign. However, this did not affect the showNameAndColor property because that is a separate property on the prototype. They are both part of the Plant prototype, but I think you are mistakenly assuming only one or the other can be the Plant prototype.

In the example Fruit.prototype = new Plant(), whatever properties previously existed on the Fruit prototype were overridden. In that case, the entire Fruit prototype was explicitly set to the Plant prototype.

To override(or initialize) a specific prototype property, you would specifically set that property like so:
Plant.prototype.amIOrganic = function() {…};

Owen

February 13, 2013 at 2:02 pm / Reply

I've got pretty much the same question as Alex.

I put your plant example in jsFiddle, and amIOrganic seems to be overwriting showNameAndColor.

When I delete your bottom console.log, and replace it with:
aBanana.amIOrganic();
aBanana.showNameAndColor();
amIOrganic() works fine, but there is no function called showNameAndColour();

How do you add both of these functions to Plant prototype?

alfin

April 29, 2015 at 5:39 am / Reply

you can do it this way:

```
Plant.prototype = {
showNameAndColor: function () {
console.log('I am a ' + this.name + ' and my color is ' + this.color);
},
amIOrganic: function() {
if(this.isOrganic) {
console.log('I am organic, baby!');
}
}
}
```

Owen

February 13, 2013 at 2:15 pm / Reply

Well I learnt something new today, I managed to get the plant code working:

```
function Plant () {
this.country = "Mexico";
this.isOrganic = true;
}

Plant.prototype.showNameAndColor = function () {
console.log("I am a " + this.name + " and my color is " + this.color);
}

Plant.prototype.amIOrganic = function () {
if (this.isOrganic)
console.log("I am organic, Baby!");
}

function Fruit (fruitName, fruitColor) {
this.name = fruitName;
this.color = fruitColor;
}
```

```
Fruit.prototype = new Plant ();

var aBanana = new Fruit ("Banana", "Yellow");

console.log(aBanana.name);
aBanana.amIOrganic();
aBanana.showNameAndColor();
```

Ben

February 20, 2013 at 10:02 am / Reply

First off, your site is awesome. I've been using javascript for five years, but have never grasped it as much as I have now. That being said, I am still wholly confused.

I came here after reading chapter six of "Professional Javascript" (following the track suggested in the other post on JiS). That chapter confused me to no end – not about the above material – but rather the sections concerning "Combination Constructor/Prototype Pattern" and "Prototypal Inheritance". Pretty confusing, as well as a LOT of typing to define objects. I can tell this is a stumbling block for many programmers because there are SO many inheritance libraries out.

Ah – going to re-read the chapter I suppose.

Ramon Royo

March 1, 2013 at 2:21 pm / Reply

Indeed it's a confusing theme, I printed a summary of that chapter (and another for inheritance) and I keep them both close for re-reading now and then.

Richard Bovell (Author)

March 1, 2013 at 5:43 pm / Reply

Ben and Ramon,
You guys don't have to worry too much with Combination Constructor/Prototype Pattern topics. In the new, updated "Learn JS Properly" roadmap, we are skipping some of that stuff, since they are not necessary.

Those topics are covered in the advanced JavaScript roadmap.

Aarsh Patel

February 21, 2013 at 1:18 am / Reply

I got the plant example working on my computer.

```
function Plant(){
this.country = “Mexico”;
this.isOrganic = true;
}
Plant.prototype = {
showNameAndColor : function(){
console.log(“I am a ” + this.name + ” and my color is ” + this.color);
},
AmIOrganic : function(){
if(this.isOrganic){
console.log(“I am organic, baby”);
}
}
};
function Fruit(fruitName, fruitColor){
this.name = fruitName;
this.color = fruitColor;
}
Fruit.prototype = new Plant();
//fruit inherist all methods and properties of plant

var aBanana = new Fruit(“Banana”,”Yellow”);
console.log(aBanana.name);
```

console.log(aBanana.showNameAndColor());

I just put the two methods in on one Plant.prototype statement. Am i allowed to do that?

Shesh

May 12, 2015 at 7:57 pm / Reply

Great Aarsh, we can mix and match a lot of things.

we have to remember grouping with prototype uses JSON like : syntax and ends statements with , except last statement,
and the function style use usual = and semicolons at the end of statement.
A complete example with function overriding, which I hope is right.
Tested and works in jsbin

```
function Plant(){

}

Plant.prototype = {

country: "Mexico",
isOrganic:true,

showNameAndColor: function(){
console.log("I am a "+ this.name + " and my color is" + this.color);
},

amIOrganic : function(){
if(this.isOrganic){
console.log("I am organic, baby");
}
}
};
```

```
function Fruit(fruitName, fruitColor){
this.name = fruitName;
this.color = fruitColor;

//remove comments to this function to test function overriding.
/*this.amIOrganic = function (){
console.log("I am not organic, baby");
};*/

}

//fruit inherits all methods and properties of plant
Fruit.prototype = new Plant();

//create fruit object and test various variables and calls.
var aBanana = new Fruit("Banana","Yellow");
console.log(aBanana.name);
console.log(aBanana.country);
console.log(aBanana.amIOrganic());
console.log(aBanana.showNameAndColor());
```

Noah Jerreel Guillen

March 18, 2013 at 12:14 am / Reply

This is great. I want to Master JS, and your site is my primary road map. Thanks. This really helps a lot.

@Aarsh Patel. I think so. I also did it. I think it is because it overwrites the previous prototype.

Phan Thanh

April 23, 2013 at 10:49 am / Reply

Thanks a lot for your site!

I used your example Fruit on my computer(I use Chrome console to test) but I cannot call the function showNameAndColor. I don't understand why. What may be problems?

Richard Bovell (Author)

April 25, 2013 at 8:37 pm / Reply

Phan, That was my mistake, I had a typo in the code, which I just fixed.

I am very happy you have brought this to my attention so that I can fix it. You should be able to run the code now without any problems.

Phan Thanh

April 23, 2013 at 10:51 am / Reply

The result of showNameAndColor function is Undefined.

Please help me for this. Thank you!

Noah Jerreel Guillen

April 25, 2013 at 12:34 pm / Reply

Hello Phan Thanh, If you will notice the example above, Plant.prototype was declared twice, this means that the first declaration was overriden by the second declaration What you need to do is to put the 2 functions in one declaration and separate it with comma. 😀

Richard Bovell (Author)

April 25, 2013 at 8:47 pm / Reply

Noah,

I really appreciate your comment to Phan. I am happy that you responded to him to help him. And you are spot on: I mistakenly overwrote the Prototype twice, which was not my intent—it was a typo.

I just fixed the code.

Noah Jerreel Guillen

August 1, 2013 at 8:54 pm / Reply

Richard,

No problem. No worries, we all have sometimes commit a typo error. But overall, you're blogs are really amazing. This really helped me a lot, the prototyping, closures and objects.

Somm

February 9, 2015 at 4:43 am /

this is ok

Phan Thanh

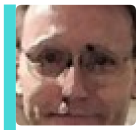
April 25, 2013 at 11:41 pm / Reply

Thank you very much, Rechard and Noah!

This site is very useful and wonderful because it provided a clear roadmap to learn JS with much resources. I am studying with this roadmap efficiently :). Once again many thanks!

Regards,

Phan Thanh



Vic

April 29, 2013 at 5:42 am / Reply

Hi Richard,

I'm confused! (It's not hard to confuse me).

I was working through your excellent "JavaScript Objects in Detail" and soon reached 2. Prototype Pattern which told me "you should already understand JavaScript's prototype. If you don't, read my post JavaScript Prototype in Plain, Detailed Language". So I broke off and came here, but found in the second paragraph "If you aren't already familiar with objects, you should read my post JavaScript Objects in Detail."

Is it best to complete "JavaScript Objects in Detail" first, or carry on with "JavaScript Prototype in Plain, Detailed Language"? I've already worked through the Codecademy part that included prototypes.

Thanks for all your work on these posts, and for the effort to answering dumb questions like this one.

Vic

Richard Bovell (Author)

April 29, 2013 at 6:41 am / Reply

Thanks for bringing this to my attention, Vic. You are correct, I do have those two paradoxical statements. I will update both posts today and fix the issue.

Nam

January 4, 2014 at 7:41 am / Reply

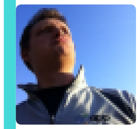
And You didnt fix it, now im stuck in a loop!

Richard Of Stanley (Author)

January 6, 2014 at 11:55 pm / Reply

Thanks, nam. I just updated the post.

The answer to the question, which I just realized I did not answer, is this: Study "JavaScript Objects in Detail" first.



Pete

April 30, 2013 at 11:29 pm / Reply

Started with reading about node, kept finding more and more outstanding articles.

3 hours later I find myself full of way more knowledge than I started and it's thanks to this amazing website.

Thank you Richard for taking the time to not only detail things, but link back to previous articles you've written.

out-freaking-standing.

Richard Bovell (Author)

April 30, 2013 at 11:32 pm / Reply

Pete,

Thank you very much. You brought a huge smile to my face with your ama-freaking-zing comment 🙂

Connor

May 4, 2013 at 11:20 am / Reply

Several paragraphs in:
"You will likely never used this __proto__". *use

Hopefully, this is more helpful than annoying. Your content is the best I've seen on JS.

Richard Bovell (Author)
May 5, 2013 at 1:33 am / Reply

Thank you very much, Connor. I am very happy and thankful that you have reported this typo, so definitely not annoying.

I look forward to your finding and reporting more 🙂

Willson
May 14, 2013 at 3:22 pm / Reply

Hi Richard,

In your example: console.log (famousPerson.athlete), you seemed to explain that famousPerson.athlete returned "Tiger Woods" because the athlete property was defined in People.prototype. However, is that accurate? Based on what you wrote, I would think that the famousPerson object itself has the athlete property defined on it.

On the other hand, the toString method makes sense since toString wasn't defined on the famousPerson object itself. It will then look at People.prototype and since it's not defined there either, it will finally look at Object.prototype.

Thanks,
Willson

Richard Bovell (Author)
May 14, 2013 at 11:23 pm / Reply

HIi Wilson,

Thanks for your comment.

In your example: console.log (famousPerson.athlete), you seemed to explain that famousPerson.athlete returned "Tiger Woods" because the athlete property was defined in People.prototype. However, is that accurate? Based on what you wrote, I would think that the famousPerson object itself has the athlete property defined on it.

You are absolutely correct, and I am very glad you found this mistake, so I can fix it before it confuses other readers.

Willson

May 14, 2013 at 11:31 pm / Reply

Thanks for confirming Richard! Awesome blog and learning tons from you!

Richard Bovell (Author)

May 14, 2013 at 11:46 pm / Reply

I just fixed the issue. I had forgotten to add the athlete property on the People Prototype:

```
People.prototype.athlete = "Tiger Woods";

```

I am glad you like the blog. Thanks.

Tige

May 23, 2013 at 6:41 pm / Reply

Richard,

I agree with previous posts. I have been developing javascript code for a decade now. As a java developer, I never really understood how to apply the OO techniques I use there and apply them to javascript until this post. I have found success relying on js frameworks (Sencha, Dhtmlx) and on memorizing some of the prototype concepts without really understanding how/why it works. Thanks alot for the much needed clarity.

Richard Bovell (Author)
May 27, 2013 at 10:35 am / Reply

You are welcome, Tige.

Nivla
July 13, 2013 at 1:20 pm / Reply

My dude is this.
which is the diferrence if i do this.
function Person(name,sex){
this.name=name;
this.sex=sex;
}
Person.prototype.getName= function() { return this.name}
var Juan = new Person("Juan"; "M");
Juan.getName(); //Juan

If i can do this too.
function Person(name,sex){
this.name=name;
this.sex=sex;
this.getName = .getName= function() { return this.name};
}

var Juan = new Person("Juan"; "M");
Juan.getName(); //Juan
which is the adventaje of use prototype in this case?

Thanks!

Richard Bovell (Author)
July 17, 2013 at 3:15 pm / Reply

I answered this exact question in the "OOP in JavaScript" post. I repost my answer below, but you can read more "here.

Here is my answer to another user with the same question from the OOP in JS post:

Good question, Jurgen.

The two examples will function exactly the same with your test code. But they are fundamentally different.

In the former, all the properties and methods are defined on the instance, so the values will be unique to each instance. You can see the issue better if we use a reference type (Array or Objects). I changed your code and made variable2 an array.

```

// Constructor Pattern
function Test(theVariable) {
    this.variable = theVariable;
    this.variable2 = ["Mike", "Anil"];
    this.someMethod = function () {
        console.log(this.variable2 + this.variable);
    }
}

var aTest = new Test ("-- Testing");
aTest.variable2.push("Richard");
aTest.someMethod(); // Mike,Anil,Richard -- Testing

var anotherTest = new Test ("-- Testing");
anotherTest.variable2.push("Jurgen");
// Array is unique to the anotherTest instance
```

```
anotherTest.someMethod(); //Mike,Anil,Jurgen-- Testing

// variable2 was not changed by the anotherTest instance:
aTest.someMethod(); // Mike,Anil,Richard-- Testing

```

In your latter example, however, only this.variable is an instance variable, so it will be unique always. All the properties and methods defined on the prototype will be inherited by all instances of Test, and all instances will have the same values (for reference types) for those. For example:

```

function Test(theVariable) {
    this.variable = theVariable;
}

Test.prototype = {
    constructor:Test,
    variable2:["Mike", "Anil"],
    someMethod:function () {
        console.log(this.variable2 + " " +  this.variable);
    }
}


var aTest = new Test ("-- Testing");
aTest.variable2.push("Richard");
aTest.someMethod(); // Mike,Anil,Richard -- Testing

var anotherTest = new Test ("-- Testing");
anotherTest.variable2.push("Jurgen");

// Uses the same array from the prototype (Richard is included)
anotherTest.someMethod(); // Mike,Anil,Richard,Jurgen -- Testing


// variable2 changed on ALL instances:
```

```
aTest.someMethod(); // Mike,Anil,Richard,Jurgen -- Testing

```

Nivla

July 18, 2013 at 7:41 am / Reply

Thank a lot! Very usefull, I understand.

Pravin Waychal

January 18, 2014 at 10:14 am / Reply

Thanks a Lot! Even I had same question

Nick

July 13, 2013 at 4:11 pm / Reply

Great article! Very helpful. Now I really understand the concept.

Thank you.

Richard Bovell (Author)

July 17, 2013 at 3:16 pm / Reply

Thanks, Nick.

JavaScriptLearner

August 8, 2013 at 2:14 am / Reply

Thanks for the great article!!

One thing.

In the last example:

function People () {
this.superstar = “Michael Jackson”;
}
// Define “athlete” property on the People prototype so that “athlete” is accessible by all objects that use the People () constructor.

People.prototype.athlete = “Tiger Woods”;

var famousPerson = new People ();
famousPerson.superstar = “Steve Jobs”;

Superstart and athlete(prototype.athlete). Whats the difference between these two as both could be inherited.
Both could be used by the object created by the People() constructor?

Richard Bovell (Author)
August 9, 2013 at 8:03 pm / Reply

That is a good question.

Whenever a property or method is defined with “this,” as in the this.superstar = “Michael Jackson” example, the property is literally created every time a new instance is created.

For example:

```

function People () {
this.superstar = "Michael Jackson";
}

// When we create a new instance of People, as in this example below.
// The "superstar" property is created as a new property on the famousPer
var famousPerson = new People ();

```

And for every instance of People you create, a new superstar property will be created.

Ordinarily, it is not best to define a property using *this* like we have it on the People constructor. Instead, this is how you would normally define use "this":

```
function People (superstarName) {
this.superstar = superstarName;
}
```

On the other hand, any property defined on the prototype is indeed inherited and not created as a new property on the instance.

For a more detailed explanation of the difference between the use of *this* and the prototype to define properties and methods, see my answer above that to Nivla.

Bob

August 19, 2013 at 6:39 pm / Reply

Hi Richard

I have some PHP under my belt from working with several popular CMS's. I decided to tackle learning JavaScript in more depth and went through ALL of CodeAcademy's JS courses, but really didn't have a handle on objects & constructors until I found this.

Thanks so much! Can't wait to dig into the rest of your stuff here.

Richard Bovell (Author)

August 21, 2013 at 12:55 pm / Reply

You are welcome, Bob.

I am glad to hear this roadmap will be helpful for you.

Dattatray Walunj

September 12, 2013 at 6:27 am / Reply

Hi Richard,
Great post. You have mentioned in the above post that " the compiler will then search for it on the myFriends prototype", I think it's a typo or something as JavaScript is interpreted language.

Correct me if I am wrong.

Richard Bovell (Author)

September 16, 2013 at 1:54 am / Reply

Well, this is a bit more complicated than it appears.
First, JavaScript is widely known as an interpreted language for the most part, probably because conventionally this was how the browsers executed the code.

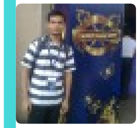
However, many modern JavaScript Host Environments (such as V8 in Chrome) in fact compile JavaScript. I have to research this some more to find out which specific implementations compile as opposed to interpret, but the crux of the matter is that we sometimes use "JavaScript Compiler" or "JavaScript Engine" or even "JavaScript Host Environment."

The most common usage I have seen is "JavaScript Engine," when referring to the browsers.

Dattatray Dnyaneshwar Walunj

September 16, 2013 at 3:11 am / Reply

Hi Richard,
Thanks for the explanation. This clarifies my doubt.



archit

October 4, 2013 at 2:10 am / Reply

as you mentioned all function in javascripts are object
what i want to know is what object itself mean , means when I can say it is(var or function) object.

normal definition of object is , for example in c++ or java when some instance of particular class call constructor and allocates memory that it is called an object and now it can access all things of class.

if you say object is object , var is also object an and function is also an object so what common things they have so that we call function an object?

Dattatray Dnyaneshwar Walunj

October 12, 2013 at 1:49 am / Reply

HI Archit,
Like other languages with Classical inheritance the hierarchy in JavaScript is as follows:

See String, Date, Function, Number all are objects that means all are inherited from 'Object' class. Object is base class. Object has some properties which could be methods or variables.

For example: Object has a method toString() and a variable i.e. "length", now String is inherited from Object so String also has these two properties i.e. toString() and length, in addition String has some extra methods which Object doesn't like "toUpperCase()" and "toLowerCase()".

Richard Of Stanley (Author)

October 15, 2013 at 8:26 pm / Reply

Good question, Archit.

And thanks much for helping out, Dattatray. You are spot on.

Archit, the reason functions are objects in JavaScript is because functions are actually derived from the Object Class (for purposes of a Java comparison).

So you could say that function is an instance of the Object Class. Function inherits properties and methods from the Object. But technically, JavaScript doesn’t have Classes, so the it is the Object constructor, not Class.

Read more here:
JavaScript Prototype in Plain Language

Shubham

October 22, 2013 at 2:39 pm / Reply

Hi, I am just starting out on Object Oriented Javascript. Just had a quick question.
Although i am able to see the results in my console. I am also getting an “undefined” along with the desired results.

Richard Of Stanley (Author)

October 23, 2013 at 3:25 pm / Reply

Oh, good question, Shubham. Undefined is normally returned by the browser’s console when you are not executing a function that returns a value or when you just type a statement in the console.

It is normal. Just ignore it.

The only time it is important is when you expect your function to return some value and it returns undefined instead.

For example, this function should return "sweet".

function sweetFun () { return "sweet"}

After typing that function in the browser's console, you will see "undefined" because we simply just declared a function—write a statement. We didn't actually call the function yet, and that is normal behavior for the console, which I tend to disagree with, btw.

Now, when you actually call the function:
sweetFun ()
it will output "sweet" and you should not see undefined.

Shubham

October 22, 2013 at 2:44 pm / Reply

Forgot to mention that the Above Question is related to the Plant, Fruit and a Banana example for Prototype.

Shubham

October 22, 2013 at 3:57 pm / Reply

It was a Typo from my side.
Apologies.

Richard Of Stanley (Author)

October 23, 2013 at 3:26 pm / Reply

Oops, I answered your question before I read these last two comments. No problem.

Shubham

October 23, 2013 at 4:19 pm / Reply

Well actually what you explained was exactly the cause of the Undefined coming in my program. Thanks for explaining

Richard Of Stanley (Author)

October 29, 2013 at 2:36 pm /

Good to know. You are welcome.

Evan Hobbs

November 5, 2013 at 8:36 am / Reply

This is truly excellent. I've set myself the challenge of working through one of the '16 Javascript Concepts' each morning before work…

One thing that I'm confused by is the difference between the constructor prototype obj and the prototype property. For instance (in Chrome console):

```
Obj = function() {};
Obj.prototype.name = 'test';
var instance = new Obj();

console.log(Obj.prototype) // {name: 'test'}
console.log(instance.prototype) // undefined
```

Should the instance prototype attribute point to the Obj constructor? Maybe I'm reading that wrong but I'm not sure why instance.prototype would be undefined…

Thanks for any help!

Richard Of Stanley (Author)

November 10, 2013 at 2:30 am / Reply

Very good question, Evan.

As I noted in the article, the prototype property is not accessible, although some browsers allow you to access it via the __proto__ property. In fact, if you do this:
console.log(instance.__proto__) you can see the results of your instance obj's prototype property.

Read this for more:

> *First, there is a prototype property that every JavaScript function has (it is empty by default), and you attach properties and methods on this prototype property when you want to implement inheritance.Note that this prototype property is not enumerable: it is not accessible in a for/in loop. But Firefox, and most versions of Safari and Chrome, have a __proto__ "pseudo" property (an alternative way) that allows you to access an object's prototype property. You will likely never use this __proto__ pseudo property, but know that it exists and it is simply a way to access an object's prototype property in some browsers.*

diavel

November 12, 2013 at 6:25 am / Reply

I guess this tutorial is the only one where i came across the clear diff between prototype property and attribute.. its only den everything was clear.. awesome post.. Thank u very much for this write up

Serge

December 5, 2013 at 8:22 am / Reply

Hi! Thanks for nice explanation of prototype. I wonder why in this example call() to print is not working:

```
function PrintStuff(myDocuments){
this.documents = myDocuments;
}
PrintStuff.prototype.print = function(){
console.log(this.documents);
}
var newObject = new PrintStuff("I am a nw Object and I can print.");
newObject.print.call();
```

Pravin Waychal

January 18, 2014 at 10:32 am / Reply

I guess, instead of newObject.print.call(); you need to write newObject.print(); to call function

Tanvi P

December 13, 2013 at 2:17 am / Reply

Kudos! Excellent tutorials

devi lal

January 5, 2014 at 12:59 am / Reply

great example to clear prototype. i am gratitude to you share meaningful knowledge.

Seung Lim

February 7, 2014 at 11:04 am / Reply

Thank you for the tutorial. You make it so easy to understand.
I think there will be more programmers in this world, if we have full of teachers like you who can really teach!!

UKONN

February 19, 2014 at 12:29 am / Reply

is this??
"All built-in constructors (Array (), Number (), String (), etc.) were created from the Object constructor, and as such their prototype is Object.prototype."

because…

Array.constructor === Function.prototype.constructor; //true
Array.__proto__ === Function.prototype; //true
Array.prototype === Object.prototype; //false
typeof Array.prototype; //"object"

Celine

February 24, 2014 at 8:19 pm / Reply

Would you have any resources to elaborate on the quote "since all functions in JavaScript are objects" in your text please ?

Also you mention about a creating a post on ECMAScript 5 in a few of your articles but I was not able to retrieve one. Would you have a good resource on this too (web link or book).

They are two topics I am trying to get a better gage on. Much appreciated and thank you for all your great posts !

Celine

Danny

March 26, 2014 at 11:52 am / Reply

```
var foo={
name:'foo',
display:function(){
console.log(this.name);
}
};
var foo2 ={
name:'foo2'
};
```

Here are two objects that are created with the object literal, i want foo2 inherits display method from foo, then invoke like foo2.display(), how can i implement?
Thank you in advance.

Ruben

April 13, 2014 at 1:00 pm / Reply

```
var foo={
name:'foo',
display:function(){
console.log(this.name);
}
};

var foo2 = Object.create(foo, {
name: {
configurable: true,
enumerable: true,
value: 'foo2',
writable: true
}
});

foo2.display();
```

Vipin

April 23, 2014 at 8:45 am / Reply

brilliant !

bill

May 23, 2014 at 6:41 pm / Reply

If you still don't understand this "prototype" concept, just think of the "prototype" word as "parent". For example, like Richard's example about the Plant constructor and Fruit Constructor which creates the aBanana object, Richard said the aBanana' s prototype attribute(or prototype object) is Fruit.prototype and Fruit inherits that prototype property from Plant constructor, you could have put it this way, aBanana's parent is Fruit and Fruit inherits all the properties and methods from its parent also which is Plant() constructor. P/S :I didn't know what a property was, but after reading this, I understand this concept and just want to explain it in plainer language to you guys, all credit going towards Richard still.

Vandana

June 15, 2014 at 12:11 pm / Reply

Hi Richard:

Thanks for writing the basic concepts of prototype for us.

I have a very basic doubt here. I don't understand the purpose of assigning a method or property to a prototype when we can directly assign it to the function. For example:

```
function check (){
this.a = 4;
this.b = true;
this.get = function get(){
alert(this.a);
```

}
}

//now i assign a method to the prototype

check.prototype.see = function(){
alert(this.b);
}

//now if i create a new object of the type check

var obj = new check();
check.see(); //assigned to prototype
check.get(); //assigned directly to function

what is the difference in assigning a property to a function directly and to its prototype? Any new object created from check can access both the methods.

Can you please help me with this doubt?

Thanks

Noah Jerreel Guillen

June 23, 2014 at 3:04 am / Reply

Hello Vandana,

The difference between is that when you assign a method on a function, you are like just creating a static method, which means the method attached to this function will get re-declared for every new instance we create, while when you create a method using the prototype, the method will be declared once and shared to all instances.

Cheers!

shanmughasunder

August 5, 2014 at 10:31 am / Reply

Hi Noah,
And to add is'nt that the objects initialized from check cannot use the methods defined on this check object.
For Example:

```
function check (){
this.a = 4;
this.b = true;
this.get = function get(){
alert(this.a);
}
}
var test = new check();
```

Is now "test" object can use the methods of check object.

Am I right.

Noah Jerreel Guillen

August 25, 2014 at 9:28 pm / Reply

Hello Vandana,

No, the objects initialized to check is still usable when you add new methods.

ritika

August 12, 2014 at 2:30 am / Reply

hi,

awesome and well written blog

ritika

August 12, 2014 at 2:35 am / Reply

in the below piece of code,Could you please explain why i am not able to access the secondclass prototype property,even on creating new instances?

```
function FirstClass()
{
this.first = "FirstProperty: you have chosen firstclass";
this.second = "SecondProperty: you have chosen firstclass";
}

FirstClass.prototype.extendone = function()
{
document.getElementById("demo_o").innerHTML = "inside FirstClass prototype : "+this.first+ " "+ this.second;
}

function SecondClass(myfirst,mysecond)
{
this.first = myfirst;
this.second = mysecond;
this.myproperty ="this is the poperty of second class";
}

SecondClass.prototype.extendtwo = function ()
{
document.getElementById("demo_dR").innerHTML ="new property of secondclass prototype";
}

SecondClass.prototype = new FirstClass(); //INHERITING METHODS AND PROPERTIES
var obj_first = new SecondClass("passing myfirst","passing mysecond");
var new_obj = new SecondClass();
```

obj_first.extendone();
obj_first.extendtwo();
new_obj.extendtwo();

Feng Wang

August 20, 2014 at 2:13 pm / Reply

Hi Ritika,

It is the order of the definition of SecondClass.prototype.extendtwo and SecondClass.prototype = new FirstClass().

In JavaScript, prototype property is just an another object. When you define SecondClass.prototype = new FirstClass(), you basically replaced the prototype which hold the extendtwo function to a simple object that constructed by New FirstClass(), which simply does not have the extendtwo function at all.

Reverse the order will make things work as you expected.

I used the following code to test what I said above:

function FirstClass()
{
this.first = “FirstProperty: you have chosen firstclass”;
this.second = “SecondProperty: you have chosen firstclass”;
}

FirstClass.prototype.extendone = function()
{
document.getElementById(“demo_o”).innerHTML = “inside FirstClass prototype : “+this.first+ ” “+ this.second;
}

```
function SecondClass(myfirst,mysecond)
{
this.first = myfirst;
this.second = mysecond;
this.myproperty ="this is the poperty of second class";
}

SecondClass.prototype = new FirstClass(); //INHERITING METHODS AND PROPERTIES

SecondClass.prototype.extendtwo = function ()
{
document.getElementById("demo_dR").innerHTML ="new property of secondclass prototype";
}

window.onload = function(){
var obj_first = new SecondClass("passing myfirst","passing mysecond");
var new_obj = new SecondClass();
obj_first.extendone();
obj_first.extendtwo();
//new_obj.extendone();
//new_obj.extendtwo();
}
```

Hope this is helpful and happy coding!

ritika

August 21, 2014 at 12:40 am / Reply

thanks feng!!! it works 🙂

Josh

September 16, 2014 at 8:36 pm / Reply

Just wanted to say a very big thank you. Had an awful moment tonight where I began to question everything I ever learnt about JavaScript objects and prototypes….your blog cleared everything up and put me back on track!

Your ability to convey difficult technical concepts in an easily understood way is incredible. Well done!

คลิปโป๊

October 7, 2014 at 5:29 am / Reply

I'm really enjoying the theme/design of your blog. Do you ever
run into any internet browser compatibility problems? A few
of my blog audience have complained about my blog not operating correctly in Explorer but looks great in Chrome.

Do you have any solutions to help fix this issue?

kan

October 17, 2014 at 5:19 am / Reply

Hi,

Sometimes we add properties with use prototype keyword and sometimes add properties without prototype keyword. I want know, how to decide to use keyword protoype when adding the pro[erties and method.
Have a any criteria to use prototype?

People.prototype.athlete = "Tiger Woods";
famousPerson.superstar = "Steve Jobs";

You can also see the same senario at below link:
http://www.w3schools.com/js/js_object_prototypes.asp

Please suggest me.
thanks in advance
kan

NicT

November 1, 2014 at 8:12 am / Reply

Hi and thanks for the article. Hope my questions make sense:

1. Why Fruit.prototype = new Plant (); and not Fruit.prototype = Plant.prototype; ?

2. With Fruit.prototype = new Plant (); When you add more prototype properties to Fruit eg Fruit.prototype.pest='fly';, is the pest property on the Plant prototype or the Fruit prototype ?

Thanks !

Noah Jerreel

November 2, 2014 at 11:46 pm / Reply

Hello NicT,

1. Fruit.prototype = new Plant(); means that your are assigning a new plant instance on the fruit prototype and inheriting all the attributes and methods from the Plant class. While Fruit.prototype = Plant.prototype; you are just assigning the Plant prototype and not the whole Plant instance on the Fruit Prototype.

2. The pest property will be both on the Plant and Fruit prototype since you assign the Plant prototype to the Fruit prototype and changing the Fruit prototype will also change the Plant the prototype.

I don't know If these answers your questions.

NicT

November 3, 2014 at 5:01 am / Reply

Thanks Noah. Yes you've understood and answered very well. The inheritance is of the whole class including non prototype members. Was thinking only the prototype was inheritable. Cheers.

Noah Jerreel

November 4, 2014 at 3:34 am / Reply

I'm glad I was able to help NicT. Cheers! 🙂

Binh Nguyen

November 3, 2014 at 7:56 am / Reply

Thanks, nice explanation.

Jason

November 28, 2014 at 2:42 pm / Reply

I believe

console.log(aBanana.showNameAndColor()); // I am a Banana and my color is yellow.

should be

aBanana.showNameAndColor(); // I am a Banana and my color is yellow.

(The logging is handled in said function.)

kan

December 9, 2014 at 5:43 am / Reply

You cannot add property or method on existing object like below:-
function Person(first) {

this.firstName = first;
}
Person.nationality = “English”;
console.log(Person.nationality): undefined;

If you want to add property or method then you have to create new object like below:-
var famousPerson = new Person ();
famousPerson.superstar = “Steve Jobs”;
console.log(Person.nationality): Steve Jobs;

OR

THROUGH prototype

function Person(first) {
this.firstName = first;
}

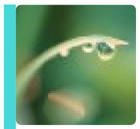
Person.prototype.nationality = “English”;
console.log(Person.nationality): English;

Javier
December 23, 2014 at 9:47 am / Reply

Thanks, it was usefull for me this post.

One detail, in the last code you show, under “Here is another example of the prototype chain:” the comment says ‘from which the Fruit object inherited’, but it should be say ‘from which the People object inherited’.

// In this example, the search proceeds up the prototype chain and find the toString method on Object.prototype, from which the Fruit object inherited—all objects ultimately inherits from Object.prototype as we have noted before.
console.log (famousPerson.toString()); // [object Object]



Gurjit singh

January 8, 2015 at 1:50 pm / Reply

Hi Richard,
Great tutorial man thanks(actually earlier one are more great ones 😛 just kidding) !
I have a little confusion on one thing you have mentioned __proto__ pseudo property twice both in prototype property and prototype attribute. How can one thing be pointing to 2 different things ? Surely I am getting it very wrong , plz make me correct here.
Thanks .

jddd

January 27, 2015 at 8:18 am / Reply

got emm

Gerard

February 22, 2015 at 1:17 pm / Reply

I think that in the last comment of your function People() example you wrote Fruit where you intended to write People.prototype.

cody

April 17, 2015 at 8:49 am / Reply

How come when you call a new instance of another already defined prototype it doesn't inherit the names assigned to the property or method? Or does it in certain situations.

This is the example.
function PrintStuff (myDocuments) {
this.documents = myDocuments;
}

// We add the print () method to PrintStuff prototype property so that other instances (objects) can inherit it:
PrintStuff.prototype.print = function () {
console.log(this.documents);
}

// Create a new object with the PrintStuff () constructor, thus allowing this new object to inherit PrintStuff's properties and methods.
var newObj = new PrintStuff ("I am a new Object and I can print.");

// newObj inherited all the properties and methods, including the print method, from the PrintStuff function. Now newObj can call print directly, even though we never created a print () method on it.
newObj.print (); //I am a new Object and I can print.

How come that doesn't inherit the this.documents from that prototype? Is it because of the new Keyword in front of it?
What would the PrintStuff prototype look like as a new instance being called like this if it was written in full instead?

Thanks

massimo

May 22, 2015 at 7:48 am / Reply

Thanks so much, the way you describe this concepts makes me able to understand them.

amit

May 29, 2015 at 10:25 am / Reply

great ..

Jason

June 1, 2015 at 9:22 am / Reply

Is there a way that you can set up constructors with object literals? Also can you use prototype on object literals? If so, what would this/these look like?

CodedContainer

Zinc

June 4, 2015 at 6:46 pm / Reply

I have a simple question, looking forward to your answer:
please see the two code snippets

What are the difference of these two ways of declaring a "class" in javascript? From my perspective, they are the same. For any instances that instantiate the PrintStuff and PrintStuffs, print() are available. One is not using prototype. Anyway, I am just confused what the benefit of using the second method.

Thanks a lot.

```
// no inheritance
function PrintStuff(doc) {
this.name = doc;
this.print = function() {
console.log("Printing " + this.name);
};
}

var obj = new PrintStuff('without inheritance');
obj.print();

// use prototype
function PrintStuffs(doc) {
this.name = doc;
}
```

```
PrintStuffs.prototype.print = function() {
console.log("Printing " + this.name);
};
var obj = new PrintStuff('with inheritance');
obj.print();
```

ABh

June 21, 2015 at 3:11 pm / Reply

same here i have also started reading NODE js and navigated to this article to learn basics of javascrip.
really helpfull article. earlier i had little idea about Prototype, but now i am confident about it, just need to do some real time example.

JaredN

June 26, 2015 at 1:55 pm / Reply

"a property is simply a variable defined on a function"

I'm sorry, but what does this mean? It is completely unclear to me.

I understand that JavaScript functions are objects. Do you mean that a property is an instance variable of that function?

Jeff Nixon

July 20, 2015 at 7:31 pm / Reply

Hello, your description helped me make sense of prototypes and I just passed my assignment. Thank you. Based on your description, I noted that a prototype is "The inherent values (properties and methods) that a Constructor is comprised of." Not sure if that helps anyone else, but it makes sense for me moving on. Thanks again. Cheers.

Ravindra

July 23, 2015 at 11:32 am / Reply

I am unable to execute this code by simply copy & paste. Due to some encoding issue, I am getting below error

Uncaught SyntaxError: Unexpected token ILLEGAL

One invisible special characters has been added at the first character for every line. Even dos2unix is unable to fix the issue. Please let me know how to fix this issue

M. Junaid

July 31, 2015 at 6:45 am / Reply

Yes. Had the same issue & here is the solution I found.

> Copy Code u want to execute.
> Paste it in a notepad
> Just select any of the invisible char and cut (ctrl+x) it.
> Open replace (ctrl+r) window and then in find input box ctrl+v init.
> Select Replace all.

Done. 🙂
Your code is clean now.

Steve

August 6, 2015 at 7:08 pm / Reply

Hi,

Not sure if you'll see this as this is an old post. But I just wanted to find out why – after I tried out isPrototypeOf – there is a difference in results as shown down below. I was studying the Plant.prototype and Fruit.prototype code, and testing for myself that Fruit.prototype inherits from Plant.prototype because of this

assignment:
Fruit.prototype = new Plant ();

Plant.prototype.isPrototypeOf(aBanana);
true
Fruit.prototype.isPrototypeOf(aBanana);
true
>> Confusion begins here <<
Plant.prototype.isPrototypeOf(Fruit);
// false (Why does this syntax result in false vs. the syntax below just by appending ".prototype"?)
Plant.prototype.isPrototypeOf(Fruit.prototype);
// true

I've been trying to understand prototypes better from reading this and other sources. Please help me if I'm incorrect in thinking this: that appended .prototype is needed because Fruit is just a constructor function, whereas Fruit.prototype is the property that is sought out in the inheritance chain.

Thanks!

André Pinto

August 8, 2015 at 6:01 pm / Reply

Hi,
Excelent blog!
"// In this example, the search proceeds up the prototype chain and find the toString method on Object.prototype, from which the Fruit object inherited—all objects ultimately inherits from Object.prototype as we have noted before.
console.log (famousPerson.toString()); // [object Object]"
It is famousPerson instead of Fuit?

Kurt

August 13, 2015 at 10:23 pm / Reply

Hello Richard,
Thank you very much for that tutorial. It helped a lot to understand prototyping. But there's still one thing I don't get. Let's use this example:

```
function Car(speed){
this.speed = speed;
}
console.log(Car.prototype); //prototype is Car

var c = new Car(40);
console.log("toString" in c); //returns true
```

How can JavaScript find the toString() method? I didn't define it in Car and Car has no prototype (it is it's own). If inheritance in javascript is based on searching through the prototype chain, it shouldn't find toString() in this example. Where is my mistake? Any help would be much appreciated.

Cheers,
Kurt

Abhinav

August 31, 2015 at 12:21 am / Reply

Thanks a lot for this amazing tutorial.

Duy Khanh

September 23, 2015 at 5:52 am / Reply

Hi Kurt,
In your question

```
function Car(speed){
this.speed = speed;
}
console.log(Car.prototype); //prototype is Car
var c = new Car(40);
console.log("toString" in c); //returns true
```

I think toString method is default for all Object in javascript.
Correct me if I'm wrong

Abdul Hakim

October 1, 2015 at 10:11 pm / Reply

// Here, aBanana uses the name property from the aBanana object prototype, which is Fruit.prototype:
console.log(aBanana.name); // Banana

Based on the explanations you have provided i believe the above comment is not correct. name is not from aBanana's prototype.

Santhosh

October 26, 2015 at 6:20 am / Reply

nice article.. know got the idea of prototype thanx

Toby

November 5, 2015 at 3:28 am / Reply

Very nice explanation. Thank you.

Deepen

November 6, 2015 at 5:34 pm / Reply

Hi,

I am writing partial/curry function for my javascript code.

But I want to use javascript prototype

Can you guide me ? I have some sample example prepared

```
function func1(a,b) {
console.log(a+' '+b);
}

var waitFor = setTimeout.partial(undefined,100000);

var display = func1.partial(undefined,"mehta");

waitFor (function () {
console.log('Awesome')
});

print('deepen');

output:

Deepen Mehta

waiting for 1 sec

welcome
```

Deepen

November 6, 2015 at 5:37 pm / Reply

Hi,

I am writing partial/curry function for my javascript code.

But I want to use javascript prototype

Can you guide me ?

I have some sample example prepared.

```
function func1(a,b) {
console.log(a+' '+b);
}
```

var waitFor = setTimeout.partial(undefined,100000);

var display = func1.partial(undefined,"mehta");

waitFor (function () {
console.log('Awesome')
});

print('deepen');

output:

Deepen Mehta

waiting for 1 sec

welcome

Deepen

November 6, 2015 at 5:48 pm / Reply

Can I build something like this ?
If yes then How?
Function.prototype.partial = function () {

};

Si

December 1, 2015 at 7:04 am / Reply

Afternoon 🙂

Sorry if I've got confused, but in your last example (with the 'People' function) the following line and comment is present. The comment states that it finds the 'toString' method on Object.prorototype 'from which the Fruit object inherited' – If I have understood your article correctly, the 'Fruit object' is a typo and it is the 'People object' that inherits from Object.prototype in this example?

// In this example, the search proceeds up the prototype chain and find the toString method on Object.prototype, from which the Fruit object inherited—all objects ultimately inherits from Object.prototype as we have noted before.
console.log (famousPerson.toString()); // [object Object]

Karl

December 3, 2015 at 10:34 am / Reply

Object.prototype, from which the Fruit object inherited—all objects ultimately inherits from Object.prototype as we have noted before.
console.log (famousPerson.toString()); // [object Object]

Should be

Object.prototype, from which the 'Person' object inherited—all objects ultimately inherits from Object.prototype as we have noted before.
console.log (famousPerson.toString()); // [object Object]

searene

December 10, 2015 at 10:18 am / Reply

Amazing tutorial, thanks, it helps me a lot!

Sri Varshan

December 22, 2015 at 4:29 am / Reply

Brilliant way to explain things, you have made complex stuff pretty simple for everyone to understand. One of the best blogs that explain concepts in a clear and concise manner. Good job, will recommend this blog and bookmark it too.
Good Day

Manju

January 7, 2016 at 2:09 am / Reply

Thank you. It was a very nice article.

I have a following query,

If i create an object as an object function like below,

```
function company(){
this.name = ‘google';
}

company.prototype.getName = function(){alert(this.name)};

function employee(){
this.name = ‘Manju';
this.role = ‘Dev';
}

employee.prototype = new company();

employee.prototype.getRole = function(){
alert(this.role);
}
```

here company object inherits the prototype from Object.prototype and i have created one more object function called employee which inherits the prototype of company object. Since above created objects are object functions I’m able to inherit the parents prototype.

My question is: What if i create an object literal instead of object function as below. If so, how will i inherit the prototype of company object from employee and also retain the properties and methods of employee?

```
var company = {
name: ‘google’
}

company.getName = function(){alert(this.name)}
```

```
var employee = {
name: 'Manju',
role: 'Dev'
}
```

employee = Object.create(company); // Here whole of an employee object is getting replaced by company object and also I'm not able to use prototype property on either employee/company object. Is it like prototype property can be used only with the Objects which are functions?

Answer to the query would be really appreciated. Thanks is advance.

Mahavir

January 15, 2016 at 11:06 am / Reply

I have just tried this code and i am surprised with the output of code, can you please throw some light on it why it happens.

```
function PrintStuff (myDocuments) {
this.insideFunc=function(){
console.log("Inside Constructor");
}
}

PrintStuff.prototype.insideFunc=function(){
console.log("Inside Prototype");
}

var newObj = new PrintStuff();

//It outputs "Inside Constructor"
newObj.insideFunc();
```

So by seeing the output it is confirm that anything declared within constructor have higher priority than that of declared with "prototype", can you please add some value on this type of scenario.

Thanks 🙂
Mahavir

Riddik

January 22, 2016 at 1:09 am / Reply

Hi!
Can you please explain me code below?
function Fruit(){
var color=green;
this.size=undefined;
}
var f=new Fruit();

1) It is not about inheritance right? Since we just create an instance “f” of Fruit class.
2) From other side object f will get Fruit.prototype. And how should i consider that? is it inheritance or jsut simple instance creation where instance get its class members.
3) can you please explain me way “color” property is not available as f.color? it is also constructor property but i can’t get it from instance
4) Ihheritance is : “function Apple(){}; Apple.prototype=new Fruit(); var apple = new Apple()” it is clear for me.

ChelBot

February 10, 2016 at 1:40 pm / Reply

I have been reading ‘JavaScript: the Good Parts’ and I must admit that some of the sections are confusing. These articles have helped me out immensely! Good stuff and thanks.

vikas thakur

February 11, 2016 at 7:59 am / Reply

pls easy way to explain to protype....

sivaragu

March 14, 2016 at 1:13 am / Reply

this.country = “Mexico”; why this using

Paul

March 31, 2016 at 11:46 am / Reply

‘Uncaught TypeError: aBanana.showNameAndColor is not a function’

Sums up JavaScript for me.

Nasir Ahmed

April 5, 2016 at 8:16 am / Reply

Hi,

I am very new to JavaScript, kindly guide me how to become expert in javascript. Kindly send me if you are having pdf materials means.

Thanks in advance
Nasir Ahmed

Manoj

April 13, 2016 at 1:43 pm / Reply

how many diff ways we can create objects we know it is object literal and constructor function,

is using prototype another way of creating objects.

what is the diff between constructor and prototype

```
function Dog (breed) {
this.breed = breed;
// this.bark = function() {
// console.log("Woof");
// }

};

// here we make buddy and teach him how to bark
var buddy = new Dog("golden Retriever");
Dog.prototype.bark = function() {
console.log("Woof");
};
buddy.bark();
```

in the example both this and dog prototype gives the same output then what is the diff and when to use what

mohamed

October 17, 2016 at 9:04 am / Reply

I was amazed by the talent, this guy called Richard, has when it comes to explaining these complicated concepts that many every expensive books failed to crack. As i was reading your about page, you said that this is "a give back " of what you have learned from the internet but in my opinion it is more then that. You rely help me understand a lot. Thank you very much and keep up my dear friend

Andrew Santoli

October 31, 2016 at 10:55 pm / Reply

Create a an Object constructor function called MedRecord with the properties firstName, lastName, medRecord, medID, insuranceInfo.

Define a MedRecord prototype method called changeInsurance() that accep the name of a patient new insurance information and update object insuranceInfo property.

Owen

April 9, 2013 at 9:46 am / Reply

Isn't that the whole idea?

Fruit is always organic because it is a plant? And anything else that inherits from plant, grass or flowers or cacti, they'll all be organic too.

attila

August 19, 2013 at 6:29 am / Reply

exatly

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