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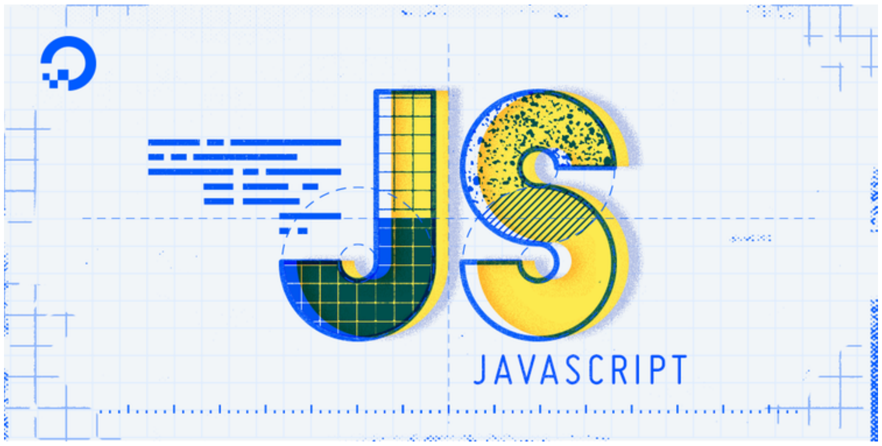

"Now that we have the keyword class we can use JS like any OOP language"—Someone that needs to read what's below

My last story was about '*class vs interface*' in Typescript and I'm happy to say I had a lot of feedback. In those feedback I saw some people lost when talking about classes in Javascript.
Then a sentence triggered the will to write this story today :

> *" plain javascript has had proper classes since the ECMAScript 2015 standard "*

Well … no, and I'll show you why.

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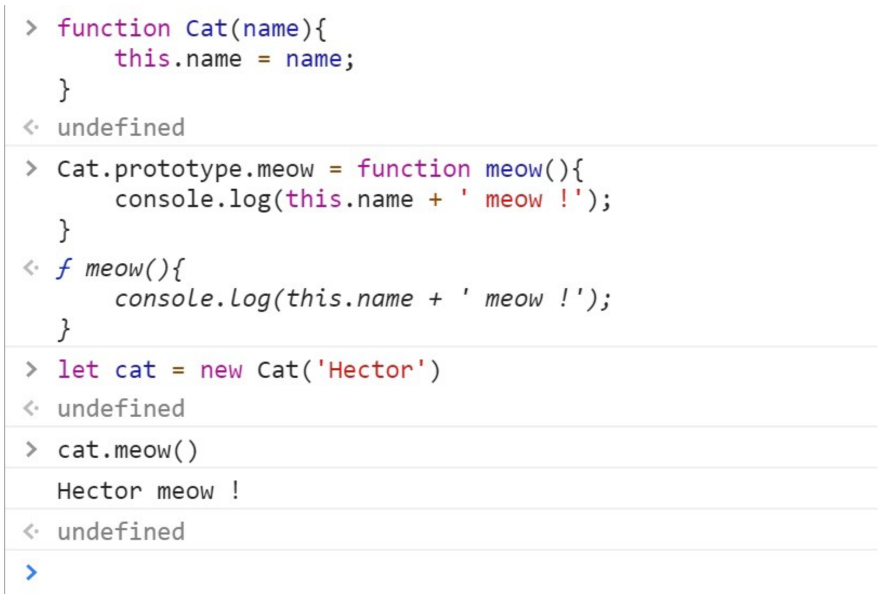
Before the 'class' keyword

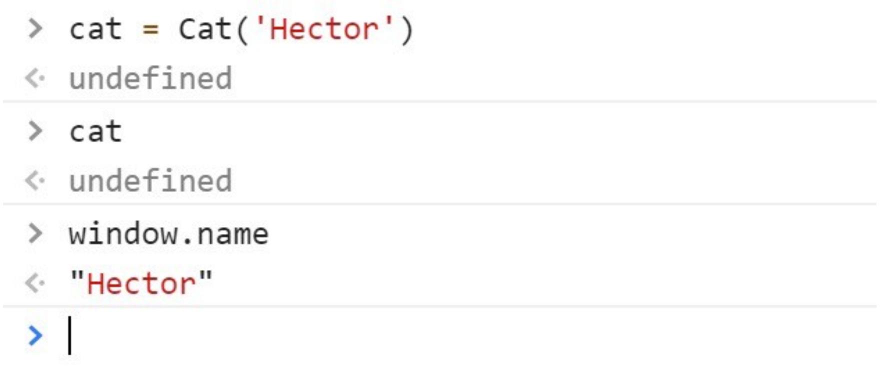
Here is an exemple of how we implemented '*classes*' in Javascript not so long ago. The first function would be kind of a **constructor**, so we have a Cat class and we have a function in this class that will meow :



```
> function Cat(name){
      this.name = name;
  }
<· undefined
> Cat.prototype.meow = function meow(){
      console.log(this.name + ' meow !');
  }
<· ƒ meow(){
      console.log(this.name + ' meow !');
  }
> let cat = new Cat('Hector')
<· undefined
> cat.meow()
  Hector meow !
<· undefined
>
```

You create cat with the keyword **new**

Quicknote : what if you forget the **new** keyword ? Well it doesn't throw any error … and you just renamed your window.

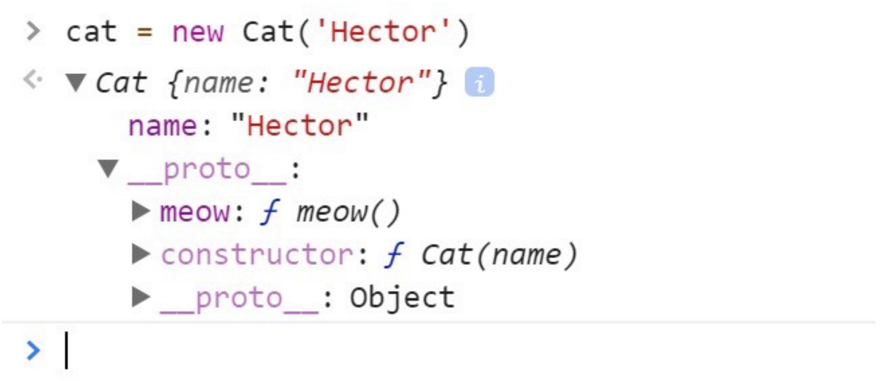


```
> cat = Cat('Hector')
<· undefined
> cat
<· undefined
> window.name
<· "Hector"
> |
```

It's all about what **this** is referring to

Where is the prototype

In the console you can clearly see the prototypal chain:



```
> cat = new Cat('Hector')
<· ▼Cat {name: "Hector"}
      name: "Hector"
     ▼__proto__:
       ▶meow: ƒ meow()
       ▶constructor: ƒ Cat(name)
       ▶__proto__: Object
>
```

Here's what your cat contains

Your cat is an object with a name, it has an object **__proto__** that contains a function meow and the Cat constructor, this object/prototype also contains an object **Object** (which is the base object, kind of like Java, that is the base prototype of all javascript objects). You can see why it is called a prototypal **chain.**

Now one of the things that differs a lot from how it would work with 'classical' classes is that prototypes are references. Which means that if you create a lot of cats and do that on one of them

```
delete cat.__proto__.meow
```

You just removed the capacity to meow to all your cats, because they all share the same reference to the Cat prototype.

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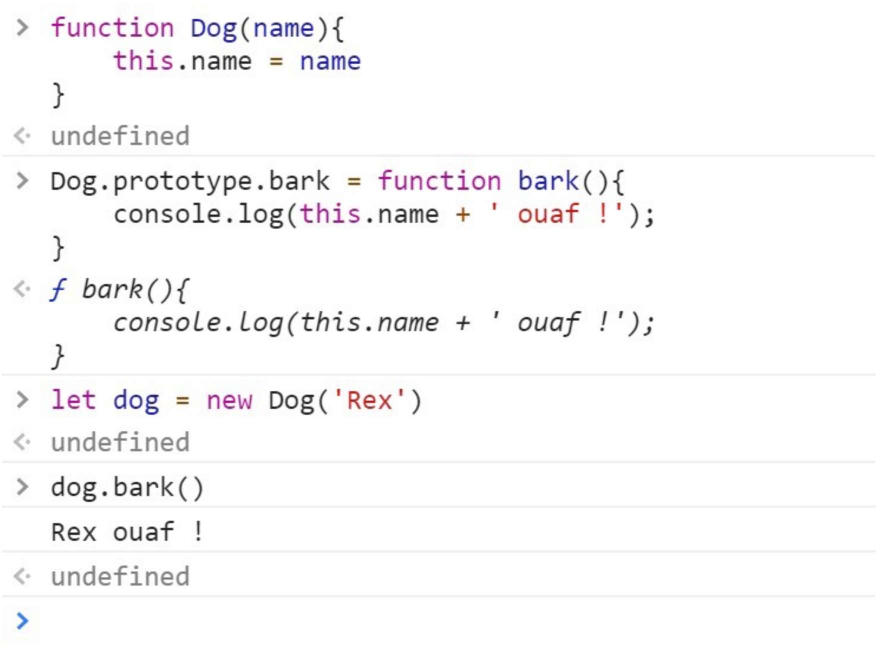
Now let's create a Dog class, the same as the cat but instead of meowing, it's barking :



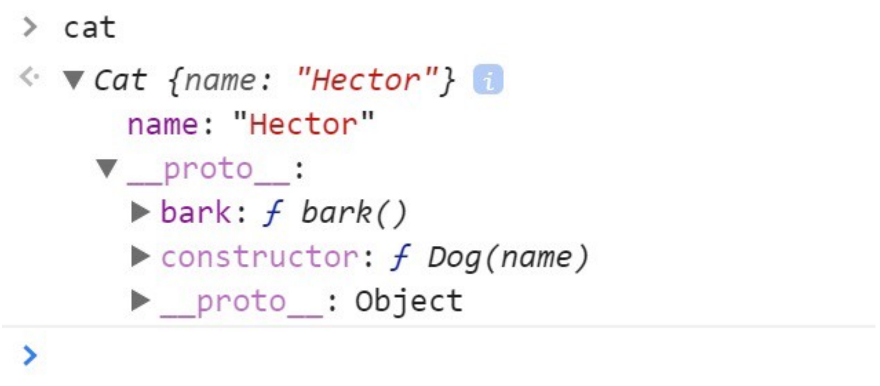
```
> function Dog(name){
      this.name = name
  }
<· undefined
> Dog.prototype.bark = function bark(){
      console.log(this.name + ' ouaf !');
  }
<· ƒ bark(){
      console.log(this.name + ' ouaf !');
  }
> let dog = new Dog('Rex')
<· undefined
> dog.bark()
  Rex ouaf !
<· undefined
>
```

Who’s a good boy ?!

Now you got a dog and a cat, let’s do something really bad, forbidden, seriously never try this at ho … work :

```
cat.__proto__ = dog.__proto__;
```

Now what is inside our cat :



```
> cat
<· ▼Cat {name: "Hector"}
      name: "Hector"
    ▼__proto__:
      ▶bark: ƒ bark()
      ▶constructor: ƒ Dog(name)
      ▶__proto__: Object
>
```

OMG the cat can bark now ! He is still a Cat, but his prototype is one of a Dog … and if I tell you that

```
cat instanceof Dog === true
```

You can begin to understand how everything is connected to object's prototype in JS.

. . .

See ? That's what's crazy with Javascript : you can do everything you want even make your cat bark just by switching its prototype. The problem is obviously that with that much freedom, a lot of mistakes can happen.

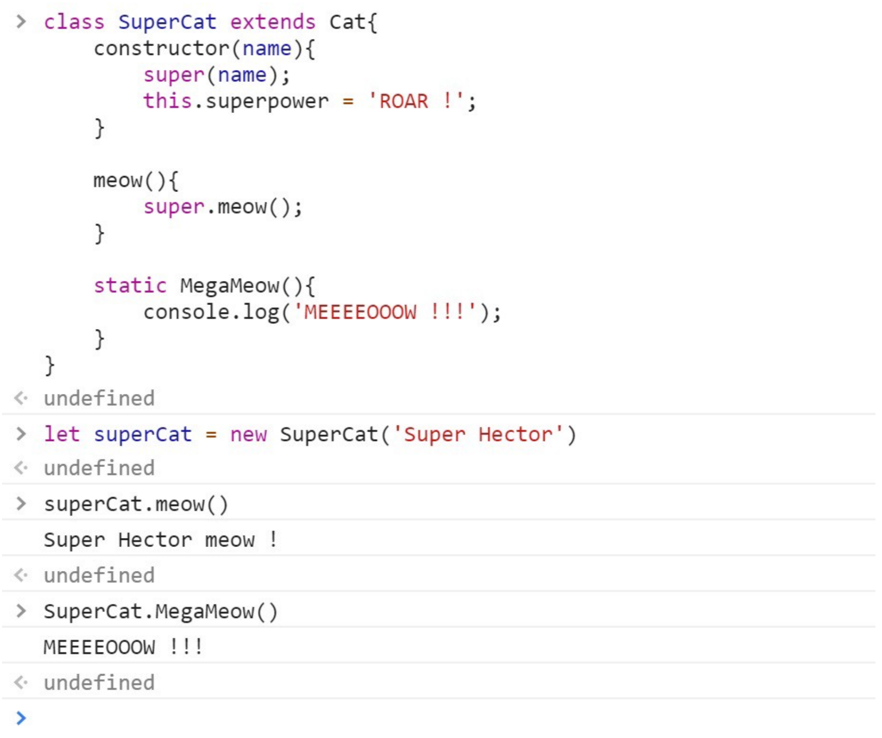
We got class now

Let's begin by a reminder of the definition of class in Javascript according to MDN :

> *JavaScript classes, introduced in ECMAScript 2015, are primarily* ***syntactical sugar*** *over JavaScript's existing prototype-based inheritance. The class syntax* ***does not*** *introduce a new object-oriented inheritance model to JavaScript.*

If it isn't clear enough, let me show you how much it doesn't introduce new OO model in JS.

Let's continue our example of cats and dogs using the class syntax :

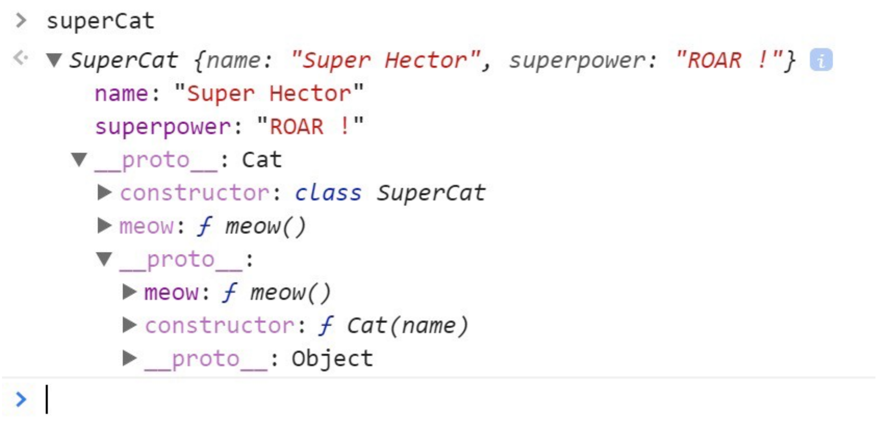


```
> class SuperCat extends Cat{
      constructor(name){
          super(name);
          this.superpower = 'ROAR !';
      }

      meow(){
          super.meow();
      }

      static MegaMeow(){
          console.log('MEEEEOOOW !!!');
      }
  }
<· undefined
> let superCat = new SuperCat('Super Hector')
<· undefined
> superCat.meow()
  Super Hector meow !
<· undefined
> SuperCat.MegaMeow()
  MEEEEOOOW !!!
<· undefined
>
```

We got everything written like any OOP language : **class**, **constructor**, **super**, **extends** and I even added a **static** function for fun. But what does our supercat looks like ?

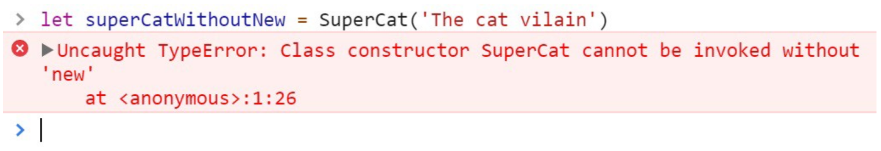


```
> superCat
<· ▼SuperCat {name: "Super Hector", superpower: "ROAR !"}
      name: "Super Hector"
      superpower: "ROAR !"
    ▼__proto__: Cat
      ▶constructor: class SuperCat
      ▶meow: ƒ meow()
      ▼__proto__:
        ▶meow: ƒ meow()
        ▶constructor: ƒ Cat(name)
        ▶__proto__: Object
> |
```

Clearly it's a bigger Cat

The fact that we used extends means we added a depth in the prototypal chain. Now we have our object having a name and a superpower, it has an object **__proto__** with the SuperCat constructor and your SuperCat function meow, which has a **__proto__** etc…

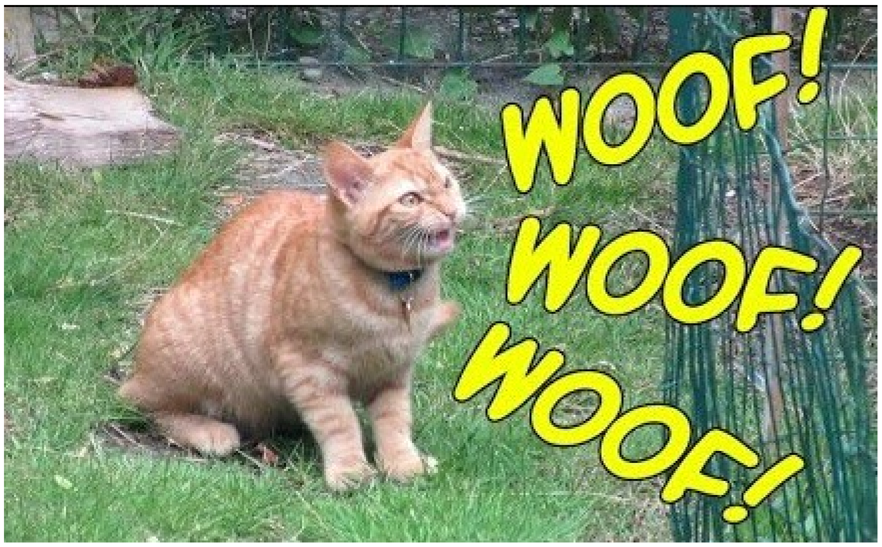
That means that like before, you can delete a property or a method of a prototype and it will destroy it for every instance you created.
Nothing has changed … well something has changed :



```
> let superCatWithoutNew = SuperCat('The cat vilain')
⊗ ▶Uncaught TypeError: Class constructor SuperCat cannot be invoked without
'new'
    at <anonymous>:1:26
>
```

We had to wait 20 years for that

You can try changing a proto the way we did before and have a barking SuperCat that still has a powerfull MEOW, or do other crazy things, the (prototypal) world is yours now.



Who's a …

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Now you see that, behind the class keyword, it is still the same prototypal approach as before. I hope you think about it when using it in your code.

I'd like to thanks Florian Orpelière (@florpeliere) who did a speech about this subject not so long before I wrote this article, it was so clear and well directed it inspired me a lot.