Using Prototype Objects

This lesson teaches us how to add properties and methods to an object prototype.

We'll cover the following

Adding Properties

We already discussed why properties should be added to the *prototype* object of a *constructor* function. Now let's look at the method to do so.

Syntax

Here is how *properties* can be added to a *constructor function* using the *prototype* property:

```
ConstructorFunctionName.prototype.PropertyName = PropertyValue
```

Syntax for adding properties using Prototype object

Since the property is being defined on the *prototype* of the *constructor function*, the double dot notation has to be used to set property values. First, the prototype property is accessed using the dot notation, then the property is defined on it using the dot operator.

Similarly, the double dot notation has to be used to get the property values defined on the prototype object as well.

```
//accessing the constructor property of a Prototype Object
ConstructorFunctionName.prototype.constructor
```

Accessing "constructor" property of a Prototype Object

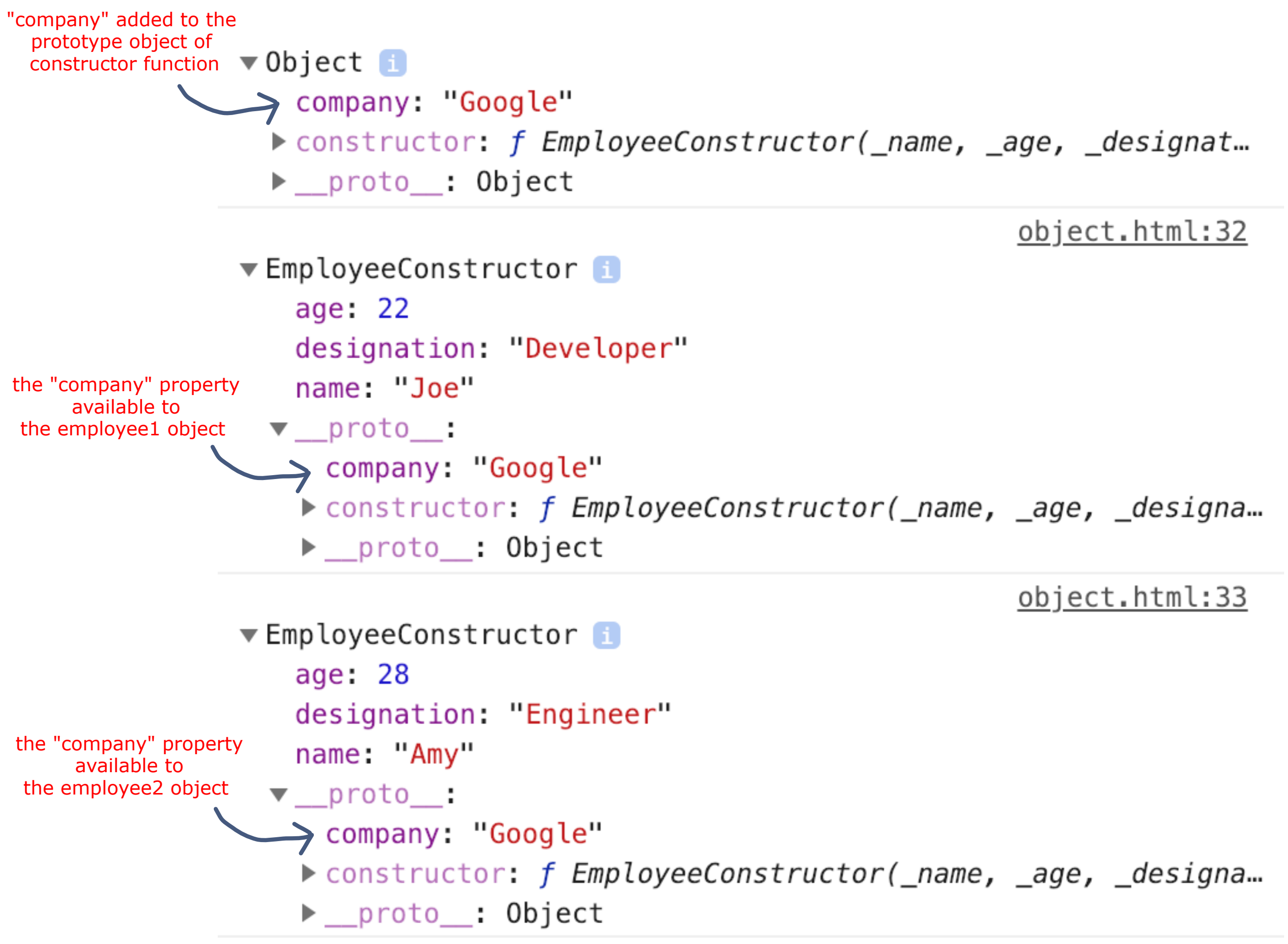
Example

Let's take a look at an example below:

```
//constructor function called EmployeeConstructor
function EmployeeConstructor(_name, _age, _designation){
  this.name = _name
  this.age = _age
  this.designation = _designation
}

//adding a property company to the constructor
EmployeeConstructor.prototype.company = 'Google'

//creating an object called employeeObj1
var employeeObj1 = new EmployeeConstructor('Joe', 22, 'Developer')

//displaying properties of employeeObj1
console.log("Name of employee:",employeeObj1.name)
console.log("Age of employee:",employeeObj1.age)
console.log("Designation of employee:",employeeObj1.designation)
console.log("Employee works in the company:",employeeObj1.company)

//creating another object called employeeObj2
var employeeObj2 = new EmployeeConstructor('Amy', 28, 'Engineer')

//displaying properties of employeeObj2
console.log("Name of employee:",employeeObj2.name)
console.log("Age of employee:",employeeObj2.age)
console.log("Designation of employee:",employeeObj2.designation)
console.log("Employee works in the company:",employeeObj2.company)
```

Creating Object Instances

The property `company` is added to the prototype object of the `EmployeeConstructor` *constructor function*. Due to this, it automatically becomes available to both `employeeObj1` and `employeeObj2` when they are created. Hence, it can directly be accessed by both object instances.


"company" added to the prototype object of constructor function
the "company" property available to the employee1 object
the "company" property available to the employee2 object

```
▼ Object ℹ
    company: "Google"
  ▶ constructor: f EmployeeConstructor(_name, _age, _designat…
  ▶ __proto__: Object
                                              object.html:32
▼ EmployeeConstructor ℹ
    age: 22
    designation: "Developer"
    name: "Joe"
  ▼ __proto__:
      company: "Google"
    ▶ constructor: f EmployeeConstructor(_name, _age, _designa…
    ▶ __proto__: Object
                                              object.html:33
▼ EmployeeConstructor ℹ
    age: 28
    designation: "Engineer"
    name: "Amy"
  ▼ __proto__:
      company: "Google"
    ▶ constructor: f EmployeeConstructor(_name, _age, _designa…
    ▶ __proto__: Object
```

EmployeeConstructor's Prototype object shared by both "employeeObj1" and "employeeObj1"

Adding Methods

Just like properties, *methods* can also be added to a *constructor function*'s *prototype* object.

Syntax

Here is how *methods* can be added to a *constructor function* using the *prototype* property:

```
ConstructorFunctionName.prototype.MethodName = function () {
    //function body
}
```

Syntax for adding methods using Prototype object

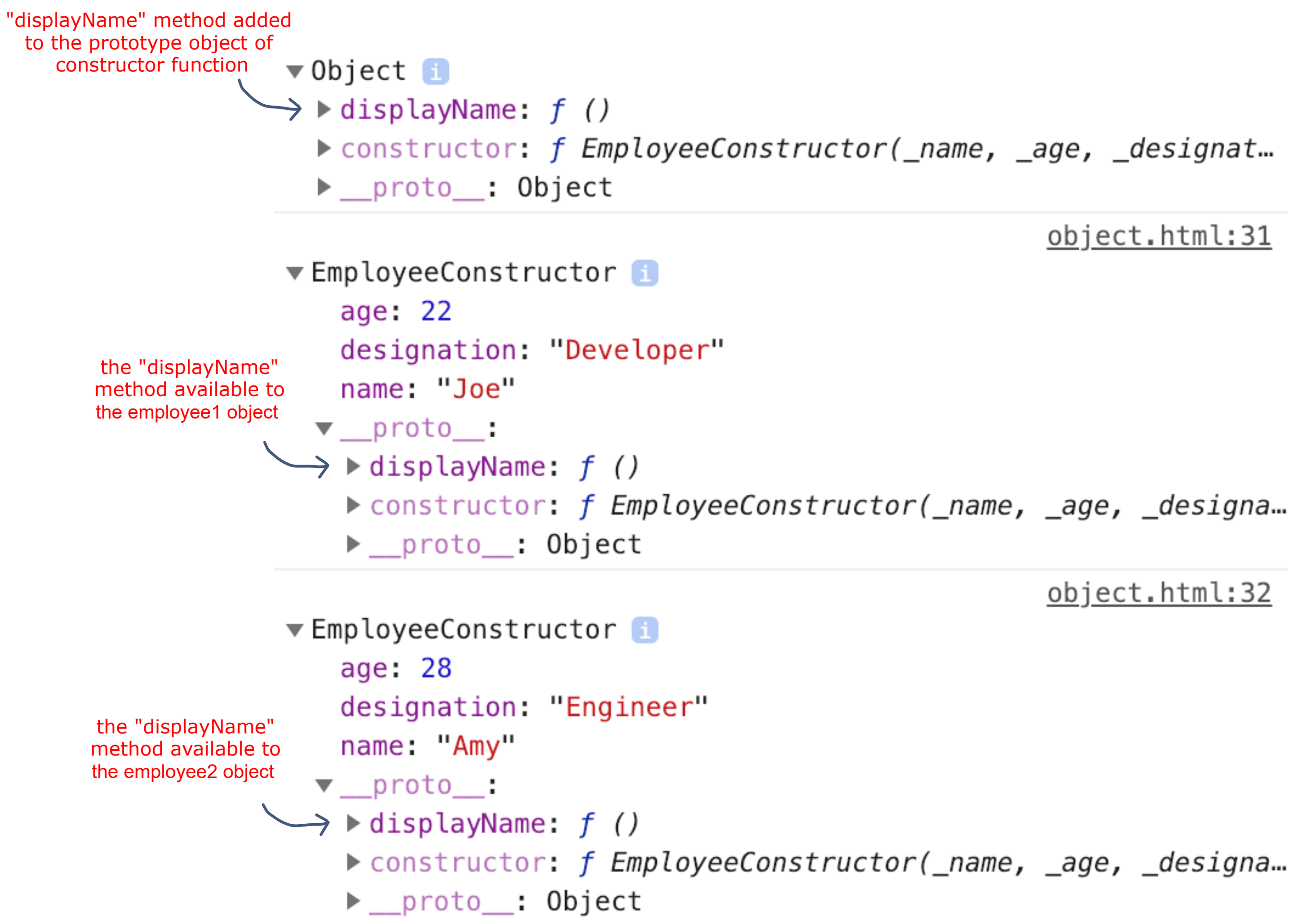
Example

Let’s take a look at an example below:

```
//constructor function called Employee
function EmployeeConstructor(_name, _age, _designation){
  this.name = _name
  this.age = _age
  this.designation = _designation
}

//adding a property company to the constructor
EmployeeConstructor.prototype.displayName = function () {
  return this.name
}

//creating an object called employeeObj1
var employeeObj1 = new EmployeeConstructor('Joe', 22, 'Developer')

//calling the function for employeeObj1
console.log("Name of employee is:",employeeObj1.displayName())

//creating another object called employeeObj2
var employeeObj2 = new EmployeeConstructor('Amy', 28, 'Engineer')

//calling the function for employeeObj2
console.log("Name of employee is:",employeeObj2.displayName())
```

Creating Object Instances

The method `displayName` is added to the prototype object of the `EmployeeConstructor` *constructor* function. Due to this, it automatically becomes available to both `employeeObj1` and `employeeObj2` when they are created. Now, the method can directly be accessed by object instances.


"displayName" method added to the prototype object of constructor function
the "displayName" method available to the employee1 object
the "displayName" method available to the employee2 object

```
▼ Object
  ▶ displayName: f ()
  ▶ constructor: f EmployeeConstructor(_name, _age, _designat…
  ▶ __proto__: Object
                                              object.html:31
▼ EmployeeConstructor
    age: 22
    designation: "Developer"
    name: "Joe"
  ▼ __proto__:
    ▶ displayName: f ()
    ▶ constructor: f EmployeeConstructor(_name, _age, _designa…
    ▶ __proto__: Object
                                              object.html:32
▼ EmployeeConstructor
    age: 28
    designation: "Engineer"
    name: "Amy"
  ▼ __proto__:
    ▶ displayName: f ()
    ▶ constructor: f EmployeeConstructor(_name, _age, _designa…
    ▶ __proto__: Object
```

EmployeeConstructor's Prototype object shared by both "employeeObj1" and "employeeObj2"

So far, whether we used object literals or constructor functions to create objects, all their properties were accessible outside them. This brings us to the question: is it possible to protect or hide the properties to prevent unauthorized access? Let’s discuss this in the next lesson!