

Proposed Rev 15 Spec. Changes for Normative `__proto__`

8.3.2 `[[SetInheritance]]` (V)

When the `[[SetInheritance]]` internal method of O is called with argument V the following steps are taken:

1. Assert: Either `Type(V)` is `Object` or `Type(V)` is `Null`.
2. Let *extensible* be the value of the `[[Extensible]]` internal data property of O .
3. If *extensible* is **false**, then return **false**.
4. If V is not **null**, then
 - a. Let p be V .
 - b. Repeat, while p is not **null**
 - i. If `SameValue(p, O)` is **true**, then throw a **TypeError** exception.
 - ii. Let *nextp* be the result of calling the `[[GetInheritance]]` internal method of p with no arguments.
 - iii. ReturnIfAbrupt(*nextp*).
 - iv. Let p be *nextp*.
5. Set the value of the `[[Prototype]]` internal data property of O to V .
6. Return **true**.

8.4.1 Object Prototype Exotic Objects

An *Object prototype object* is an exotic object that is used as the `Object.prototype` built-in object. It uses alternative definitions of some of the essential internal methods to implement the special semantics of the `__proto__` property.

Object prototype objects have the same internal data properties as ordinary objects. In addition it has a `[[MutablePrototype]]` internal data property whose value initial value is **true**.

Exotic `Object.prototype` objects provide alternative definitions for the following internal methods. All of the other exotic `Object.prototype` object essential internal methods that are not defined below are as specified in 8.3.

8.4.1.1 `[[DefineOwnProperty]]` (P, Desc)

When the `[[DefineOwnProperty]]` internal method of an exotic `Object.prototype` object O is called with property P , and Property Descriptor *Desc* the following steps are taken:

1. If P is the string value `"__proto__"`, then
 - a. Set the value of O 's `[[MutablePrototype]]` internal data property to **false**.
2. Return the result of calling the default ordinary object `[[DefineOwnProperty]]` internal method on O passing P and *Desc* as arguments.

8.4.1.2 `[[Get]]` (P, Receiver)

When the `[[Get]]` internal method of an exotic `Object.prototype` object O is called with property key P and ECMAScript language value *Receiver* the following steps are taken:

1. Let *enabled* be the value of O 's `[[MutablePrototype]]` internal data property.
2. If P is the string value `"__proto__"` and *enabled* is **true**, then
 - a. Return the result of calling the `[[GetInheritance]]` internal method of O with no arguments.

3. Return the result of calling the default ordinary object `[[Get]]` internal method on O passing P and $Receiver$ as arguments.

8.4.1.3 `[[Set]] (P, V, Receiver)`

When the `[[Set]]` internal method of an exotic Object prototype object O is called with property key P , value V , and ECMAScript language value $Receiver$, the following steps are taken:

1. Let *enabled* be the value of O 's `[[MutablePrototype]]` internal data property.
2. If P is the string value `"__proto__"` and *enabled* is **true** and `SameValue(P , $Receiver$)` is **false**, then
 - a. If `Type(V)` is neither `Object` or `Null`, then return **false**.
 - b. Return the result of calling the `[[SetInheritance]]` internal method of O with argument V .
3. Return the result of calling the default ordinary object `[[Set]]` internal method on O passing P , V , and $Receiver$ as arguments.

8.4.1.4 `[[Delete]] (P)`

When the `[[Delete]]` internal method of an exotic Object prototype object O is called with property name P the following steps are taken:

1. If P is the string value `"__proto__"`, then
 - a. Set the value of O 's `[[MutablePrototype]]` internal data property to **false**.
2. Return the result of calling the default ordinary object `[[Delete]]` internal method on O passing P as the argument.

8.4.1.5 `[[Enumerate]] ()`

The `[[Enumerate]]` internal method of an Object Prototype exotic object O performs exactly as described for the ordinary object `[[Enumerate]]` internal method with the exception that if O 's `[[MutablePrototype]]` internal data property has the value **true**, then the String `"__proto__"` is not included in the set of values produced by the iterator that is returned.

The above restriction concerning `"__proto__"` also applies when an the ordinary object `[[Enumerate]]` algorithm is processing an Object Prototype exotic object as the prototype of another object.

8.4.1.6 `[[OwnPropertyKeys]] ()`

The `[[OwnPropertyKeys]]` internal method of an exotic prototype object O performs exactly as described for the ordinary object `[[OwnPropertyKeys]]` internal method with the exception that if O 's `[[MutablePrototype]]` internal data property has the value **true**, then the String `"__proto__"` is not included in the set of values produced by the iterator that is return.

Runtime Semantics: Property Definition Evaluation

With parameter *object*.

...

PropertyDefinition : *PropertyName* : *AssignmentExpression*

1. Let *propName* be `PropName` of *PropertyName*.
2. Let *exprValue* be the result of evaluating *AssignmentExpression*.
3. Let *propValue* be `GetValue(exprValue)`.

4. ReturnIfAbrupt(*propValue*).
 5. If *propName* is the string value "`__proto__`", then
 - a. If Type(*v*) is neither Object or Null, then throw a **TypeError** exception.
 - b. Return the result of calling the `[[SetInheritance]]` internal method of *object* with argument *propValue*.
 6. Let *desc* be the Property Descriptor{`[[Value]]`: *propValue*, `[[Writable]]`: **true**, `[[Enumerable]]`: **true**, `[[Configurable]]`: **true**}
 7. Return the result of DefinePropertyOrThrow(*object*, *propName* *desc*).
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15.2.4 Properties of the Object Prototype Object

The Object prototype object is an object prototype exotic object (8.4.1). The initial value of the `[[MutablePrototype]]` internal data property of the Object prototype object is **true**.

The value of the `[[Prototype]]` internal data property of the Object prototype object is **null** and the initial value of the `[[Extensible]]` internal data property is **true**.