software studio

objects, literals & constructors

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literals

› easiest way to make an object

{property: value, ...}

```
> yellow = {red: 255, green: 255, blue: 0}
Object
> toCSS = function (c) {
      return "rgb("
         + c.red + "," + c.green + "," + c.blue
         + ")"}
function...
> document.body.style.backgroundColor = toCSS(yellow)
"rgb(255,255,0)"
```

getting & setting properties

› first setting creates slot

```
> cyan = {}
Object
> cyan.red
undefined
> cyan.red = 0; cyan.green = 255; cyan.blue = 255
255
> cyan
Object
 1.blue: 255
 2.green: 255
 3.red: 0
 4.__proto__: Object
```

box notation

- like dot, but treats argument as expression, not symbol
- good for programmatic access to slots

```
> cyan[green]
ReferenceError
> green = "green"
"red"
> cyan[green]
255
```

eval: a (bad) alternative

```
<html>
<head>
  <script>
    legoColor = [];
    legoColor['blue'] = '#0D69AB';
    legoColor['green'] = '#287F46';
    ...

    $(document).ready(function () {
      $('#button').click(function () {
        var choice = $('#choice').val();
          // BAD, BAD, BAD!
        var color = eval('legoColor.' + choice);
        if (color)
          $('#display').css('backgroundColor', color);
        else
          alert('No such Lego color');
          });
      })
    </script>
</head>
<body>
<div id=display></div>
Enter name of Lego color:
<input id=choice></input>
<button id=button>Show</button>
</body></html>
```

what's wrong with this?

constructors, with literals

```
var Color = function (r, g, b) {
  return {red: r, green: g, blue: b};
  }
yellow = Color(255, 255, 0);
document.body.style.backgroundColor = toCSS(yellow)
```

› just a regular function

constructors, with this

```
var Color = function (r, g, b) {
  this.red = r; this.green = g; this.blue = b;
  }
red = new Color(255, 0, 0);
document.body.style.backgroundColor = toCSS(red)
```

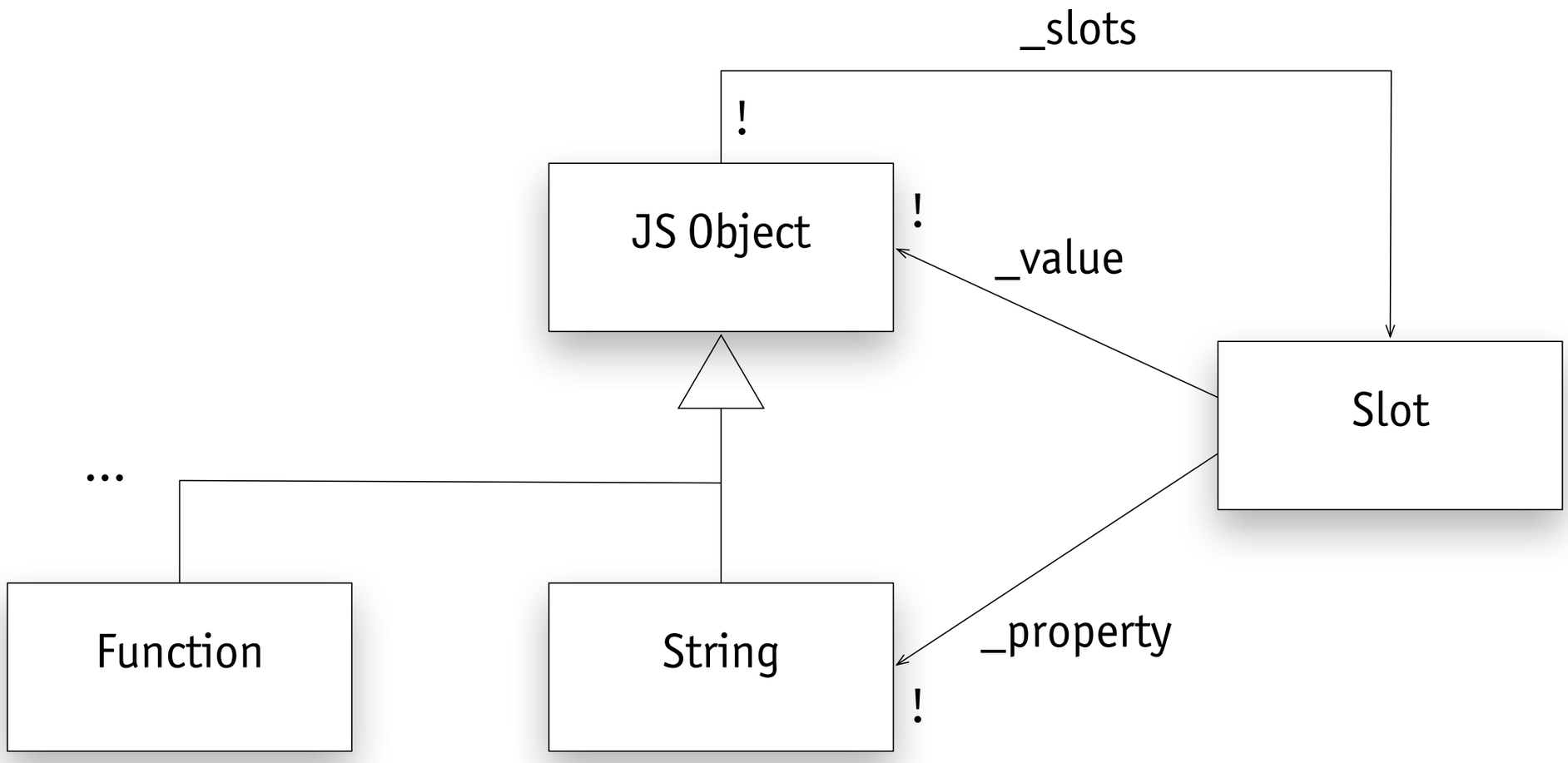
also just a regular function, but when called with new

- allocates fresh object
- binds to variable this
- returns this at end of call

what happens if you forget 'new'?

- binding of this unchanged
- default binding is to top level environment!

an object model of objects



› slot value can be anything, including function

methods

```
var Color = function (r, g, b) {
    this.red = r; this.green = g; this.blue = b;
    this.toCSS = function () {
      return "rgb(" + this.red + "," + this.green
          + "," + this.blue + ")"};
    }
red = new Color(255, 0, 0);
document.body.style.backgroundColor = red.toCSS()
```

- just put function in object slot!
- how is *this* bound in method call?
  in evaluating e.m(), *this* is bound to value of e inside m

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