COS 426: Precept 1

Introduction to JavaScript

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Slides adapted from Nora Willett

What is JavaScript?

JavaScript is

- A scripting language added to make webpages more **interactive**
    - http://www.histography.io/

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- An interpreted language

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  - http://www.histography.io/
- An interpreted language
- Object-based
- Case sensitive

What is JavaScript?

JavaScript is

- A scripting language added to make webpages more **interactive**
    - http://www.histography.io/
- An interpreted language
- Object-based
- Case sensitive
- Widely used and supported
- Accessible to the beginner

Comments

Single line comment:

```
    // my comment goes here
```

Multi-line comment:

```
    /*  my comment goes here
        my comment goes here
        my comment goes here
    */
```

Variables

```
var my_variable6 = -14.5;
console.log(typeof my_variable6);    // → number
```

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var my_variable6 = -14.5;
console.log(typeof my_variable6);    // → number

var a = "Hello world!";
console.log(typeof a);               // → string

var a = true;
console.log(typeof a);               // → boolean
```

Variables

```
var my_variable6 = -14.5;
console.log(typeof my_variable6);    // → number

var a = "Hello world!";
console.log(typeof a);               // → string

var a = true;
console.log(typeof a);               // → boolean

var a = ["Hello", "COS", 426];
console.log(typeof a);               // → object
// can also be null or undefined
```

Objects

-

Objects

```
function professor(name, class) {
        this.name = name;
        this.class = class;
}
```

Objects

```
function professor(name, class_num) {
    this.name = name;
    this.class_num = class_num;
}

var prof1 = new professor(“Szymon”, 426);
var prof2 = new professor(“Tom”, 526);
```

Objects

```
function professor(name, class_num) {
    this.name = name;
    this.class_num = class_num;
}

var prof1 = new professor(“Szymon”, 426);
var prof2 = new professor(“Tom”, 526);

console.log(prof1.name);                // → Szymon
console.log(prof2.class_num);           // → 526
```

Objects

```
function professor(name, class_num) {
    this.name = name;
    this.class_num = class_num;
}

var prof1 = new professor(“Szymon”, 426);
var prof2 = new professor(“Tom”, 526);

console.log(prof1.name);                // → Szymon
console.log(prof2.class_num);           // → 526

prof1 = {name:“Szymon”, class_num:426};
```

Objects

```
prof1 = {name:“Szymon”, class_num:426};

prof1.num_students = 71;

console.log(prof1.num_students);            // → 71

prof1.status = function () {
   return this.name + “ is awesome”;
};

console.log(prof1.status());      // → Szymon is awesome
```

Objects

Can be an array of object:

```
var journal = [
    {events: ["work", "ice cream", "pizza", "running", "television"],
        squirrel: false},
    {events: ["weekend", "cycling", "break", "peanuts", "beer"],
        squirrel: true}
];
```

Objects

Can be an array of object:

```
var journal = [
    {events: ["work", "ice cream", "pizza", "running", "television"],
        squirrel: false},
    {events: ["weekend", "cycling", "break", "peanuts", "beer"],
        squirrel: true}
];
console.log(journal[0].events[1]);  // → ice cream
```

Objects

Can be an array of object:

```
var journal = [
    {events: ["work", "ice cream", "pizza", "running", "television"],
        squirrel: false},
    {events: ["weekend", "cycling", "break", "peanuts", "beer"],
        squirrel: true}
];
console.log(journal[0].events[1]);  // → ice cream
for ( var prop in journal[0] ) {
    console.log(prop);
    console.log(journal[0][prop])
}
// → events
// → ["work", "ice cream", "pizza", "running", "television”]
// → squirrel
// → false
```

Variable Scope

In JavaScript, instead of braces, functions are the only things that create a new scope

```
var a = 1;
{
    var a = 2;
}
console.log(a);       // → 2

-------------------------------

var a = "outside";
var f = function() {
    var a = "inside f";
};
f();
console.log(a);       // → outside
```

Function expression

Function declaration:

```
function sqr( x ) {return x * x; }
```

- not part of regular top-to-bottom flow of control
- can be used by all the code

Function expression act as names for a specific piece of the program:

```
var Sqr = function( x ) { return x * x; };
```

Special functions

- `alert()`	to display a message box
- `confirm()`	to display a confirmation box
- `prompt()`	to display a prompt box
- `open()`	to open a new window
- `close()`	to close a window
- `write()`	write a string to the Web page
- `console.log()`	outputs a message to the Web Console

Debugging

- `console.log()` is your friend
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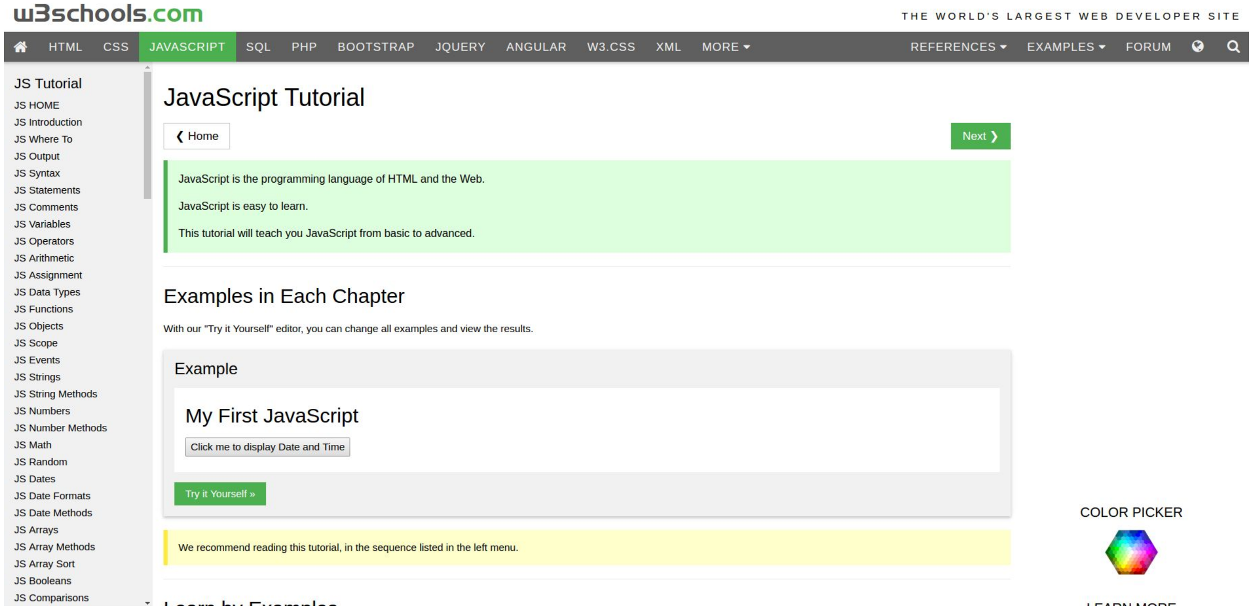
More JavaScript Help

http://www.w3schools.com/js/



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JS Tutorial

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JavaScript Tutorial

❮ Home Next ❯

JavaScript is the programming language of HTML and the Web.

JavaScript is easy to learn.

This tutorial will teach you JavaScript from basic to advanced.

Examples in Each Chapter

With our "Try it Yourself" editor, you can change all examples and view the results.

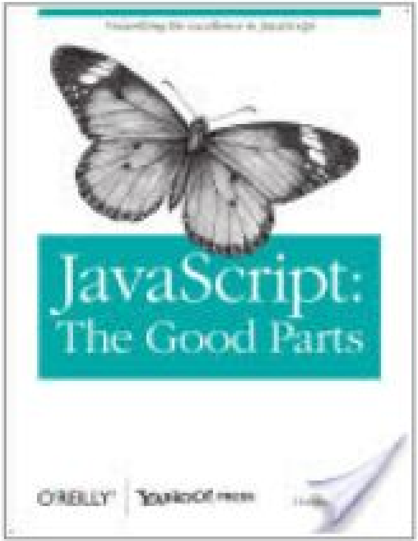
Example

My First JavaScript

Click me to display Date and Time

Try it Yourself »

We recommend reading this tutorial, in the sequence listed in the left menu.



Simple HTTP server

Open up a terminal and type:

```
-   $ cd /home/yourdir
-   $ python -m SimpleHTTPServer
```

That's it! Now your http server will start in port 8000. You will get the message:

```
Serving HTTP on 0.0.0.0 port 8000
```

You can access it via

http://127.0.0.1:8000/yourhtml.html

Dat.Gui

A lightweight graphic user interface for changing variables in JavaScript

Link for tutorial (no need to learn how to use it)

https://workshop.chromeexperiments.com/examples/gui/

Questions?