

# COS 426: Precept 1

## JavaScript

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# Outline

- Outline
  - Programming tips for JavaScript
  - Python server
  - GUI

# JavaScript

- JavaScript is
  - an interpreted language.
  - object-based.
  - case sensitive.
  - widely used and supported.
  - accessible to the beginner.

# Variables

- A variable can be:

```
var a = 0;  
console.log(typeof a);    // → number
```

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

```
var a = ["Hello", "COS", 426];  
console.log(typeof a);    // → object
```

```
var a = true;  
console.log(typeof a);    // → boolean  
// can also be null or undefined
```

# Variables

- 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 variables

- Function variables act as names for a specific piece of the program

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

- **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

# 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





# == VS ===

=== will return false for them all, however == will:

- `' ' == '0'` // → false
- `' ' == 0` // → true
- `0 == '0'` // → true
- `false == 'false'` // → false
- `false == '0'` // → true
- `false == undefined` // → false
- `false == null` // → false
- `null == undefined` // → true
- `' \t\r\n ' == 0` // → true

# Objects

- **PROTOTYPE**

```
Array.prototype.myUpperCase = function() {  
    for (i = 0; i < this.length; i++) {  
        this[i] = this[i].toUpperCase();  
    }  
};  
var fruits = ["Banana", "Orange", "Apple", "Mango"];  
fruits.myUpperCase();  
document.write(fruits);  
// → BANANA, ORANGE, APPLE, MANGO
```

# Objects

```
var testOne = function () {};  
testOne.prototype = function () {  
  var me = {}, privateVar = 2;  
  me.aMethod = function () {  
    return privateVar;  
  };  
  me.publicVar = "foo bar";  
  me.bMethod = function () {  
    return this.publicVar;  
  };  
  return me;  
};  
for (var i = loopCount; i>0; i--)  
{  
  new testOne();  
}
```

```
var testTwo = function() {  
  var me = {}, privateVar = 2;  
  me.aMethod = function () {  
    return privateVar;  
  };  
  me.publicVar = "foo bar";  
  me.bMethod = function () {  
    return this.publicVar;  
  };  
  return me;  
};  
for (var i = loopCount; i>0; i--)  
{  
  new testTwo();  
}
```

**loopCount=1,000,000:**

**TestOne takes 17ms, while test Two test 43ms. WHY?**

# JavaScript Demo

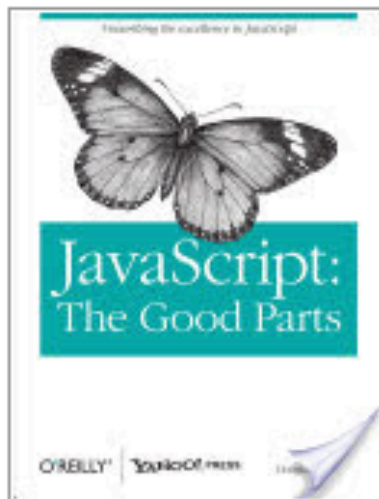
# JavaScript Help

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

The screenshot shows a web browser window displaying the W3Schools JavaScript Tutorial page. The browser's address bar shows the URL [www.w3schools.com/js/](http://www.w3schools.com/js/). The page features a navigation menu with categories like HTML, CSS, JAVASCRIPT (highlighted), SQL, PHP, BOOTSTRAP, JQUERY, ANGULAR, and XML. A sidebar on the left lists various JavaScript topics, including JS Tutorial, JS HOME, JS Introduction, JS Where To, JS Output, JS Syntax, JS Statements, JS Comments, JS Variables, JS Operators, JS Arithmetic, JS Assignment, JS Data Types, JS Functions, JS Objects, JS Scope, JS Events, JS Strings, JS String Methods, JS Numbers, JS Number Methods, JS Math, JS Dates, JS Date Formats, JS Date Methods, JS Arrays, JS Array Methods, JS Booleans, JS Comparisons, and JS Conditions. The main content area is titled "JavaScript Tutorial" and includes a "NEW YEAR NEW SAVINGS SALE" banner for Caesars Atlantic City. Below the banner, there is a "JavaScript Tutorial" section with a "W3Schools Home" link and a brief introduction: "JavaScript is the programming language of HTML and the Web. Programming makes computers do what you want them to do. JavaScript is easy to learn. This tutorial will teach you JavaScript from basic to advanced." The page also features a section titled "Examples in Each Chapter" with a sub-section "Example" containing a "My First JavaScript" example. The example shows a button that says "Click me to display Date and Time" and a "Try it Yourself" button. The browser's developer tools are visible at the bottom, showing the "Console" tab with the message "<top frame>" and options for "Preserve log" and "Show all messages".

# JavaScript Help

## JavaScript: The Good Parts: The Good Parts



Douglas Crockford

"O'Reilly Media, Inc.", May 8, 2008 - [Computers](#) - 172 pages



[99 Reviews](#)



Most programming languages contain good and bad parts, but JavaScript has more than its share of the bad, having been developed and released in a hurry before it could be refined.

This authoritative book scrapes away these bad features to

[More »](#)

# 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 graphical user interface for changing variables in JavaScript.
- Link for tutorial (no need to learn how to use it)  
<http://workshop.chromeexperiments.com/examples/gui>

**QUESTIONS?**