

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 beginners.

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

Debugging

- [illegible]

== 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

```
function Student(name, id) {  
    this.name = name;  
    this.id = id;  
    this.printStudent = function() {  
        console.log("student %s: id = %d", this.name, this.id);  
    }  
}  
Student.prototype.printStudent2 = function(){  
    console.log("student %s: id = %d", this.name, this.id);  
}  
var student = new Student("Java", 123);  
student.printStudent3 = function() {  
    console.log("student %s: id = %d", this.name, this.id);  
}  
student.printStudent2(); //->student Java: id = 123  
student.printStudent3(); //->student Java: id = 123  
var student2 = new Student("Script", 456);  
student2.printStudent(); //->student Script: id = 456  
student2.printStudent3();  
//->Uncaught TypeError: student2.printStudent3 is not a function
```

JavaScript Help

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

The screenshot shows the w3schools.com website with the JavaScript Tutorial page. The browser's address bar displays 'www.w3schools.com/js/'. The website's navigation bar includes links for HTML, CSS, JAVASCRIPT (highlighted), SQL, PHP, BOOTSTRAP, JQUERY, ANGULAR, and XML. A left sidebar lists the tutorial's contents, starting with 'JS Tutorial' and 'JS HOME', followed by a detailed list of topics like '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 features a 'NEW YEAR NEW SAVINGS SALE' banner for Caesars Atlantic City, with a 'BOOK NOW' button. Below the banner, the title 'JavaScript Tutorial' is followed by a link to 'W3Schools Home'. A green JavaScript logo is shown next to the text: '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.' Under the heading 'Examples in Each Chapter', a paragraph states: 'With our "Try it Yourself" editor, you can change all examples and view the results.' An example titled 'My First JavaScript' is shown with a button that says 'Click me to display Date and Time'. Below the example is a green 'Try it Yourself »' button. At the bottom, the browser's developer tools are visible, showing the 'Console' tab with a message log.

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?