

Javascript

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Introduction

Why Javascript?

- web database applications provide dynamic server-side content
- Javascript provides
 - more responsive web user interface
 - client-side computation
 - communicate asynchronously with server
 - interact with user
 - dynamically change HTML being displayed by browser
- built into most browsers

Features

- interpreted
- dynamic typing (delays binding of types until they are used)
- first-class functions (can take functions as arguments and return functions)
- prototypes (objects based on prototypes instead of inheritance)

Examples

```
1 alert(" Hello world!");
```

Examples

```
1  function factorial(n) {  
2      if (n === 0) {  
3          return 1;  
4      }  
5      return n * factorial(n - 1);  
6  }
```

Examples

```
1  function displayClosure() {  
2      var count = 0;  
3      return function () {  
4          return ++count;  
5      };  
6  }  
7  var inc = displayClosure();  
8  inc(); // returns 1  
9  inc(); // returns 2  
10 inc(); // returns 3
```

Examples

```
1  <!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01//EN" "http://
    www.w3.org/TR/html4/strict.dtd">
2  <html>
3    <head>
4      <title>simple page</title>
5    </head>
6    <body>
7      <h1 id="header">This is JavaScript</h1>
8      <script type="text/javascript">
9        document.write('Hello World!');
10       // holds a reference to the <h1> tag
11       var h1 = document.getElementById("header");
12       // accessing the same <h1> element
13       h1 = document.getElementsByTagName("h1")[0];
14     </script>
15   </body>
16 </html>
```


Javascript vs Java

- JavaScript has no relationship to Java
- Javascript cannot draw, is not multi-threaded, cannot use network or other I/O
- Javascript is becoming what Java meant to be
 - lightweight, downloadable program that runs in browser and is compatible across many platforms
 - does much of what Java applets do, with a fraction of the resources

Variables

```
1  // local variable
2  var x = 12;
3  // global variable
4  y = 12;
```

Operators

- comparison

```
1  >  
2  <  
3  >=  
4  <=  
5  !=  
6  ==  
7  !  
8  ||  
9  &&
```

Operators

- assignment

```
1  +
2  -
3  *
4  /
5  %
6  =
7  +=
8  -=
9  ++
10 --
```

Control

```
1  if ( boolean statement ) {  
2      ...  
3  } else {  
4  }
```

Control

```
1  switch (variable) {  
2    case 1:  
3    case 2:  
4    case default:  
5  }
```

Control

```
1  while (boolean condition)
2  {
3      ...
4  }
5
6  do
7  {
8      ...
9  }
10 while (boolean condition);
```

Functions

```
1  function add(a,b) {  
2      return a + b;  
3  }  
4  
5  a(5,3);
```


Objects

```
1  function Person(name,age) {  
2      this.name = name;  
3      this.age = age;  
4  }  
5  
6  var p = new Person('Annie',23);  
7  document.write('Name: ' + p.name);
```

Functions

```
1  function show() {  
2      document.write('Name: ' + this.name);  
3  }  
4  
5  function Person(name,age) {  
6      this.name = name;  
7      this.age = age;  
8      this.show = show();  
9  }  
10  
11  var p = new Person('Annie',23);  
12  p.show();
```

Functions

```
1  function Person(name,age) {  
2      this.name = name;  
3      this.age = age;  
4      this.show = function () { document.write('Name: ' + this.name); }  
5  }  
6  
7  var p = new Person('Annie',23);  
8  p.show();
```

window

```
1 window.location.href  
2 window.location.hostname  
3  
4 window.history.length  
5 window.history.back()
```

document

```
1 document.getElementById("header");  
2 document.getElementsByTagName("h1");
```

Event Handlers

```
1 <input type="button" onclick="javascript:doButton()" >  
2 <select onChange="javascript:doChange()" >  
3 <a onClick="javascript:activate()" >  
4 <form onSubmit="javascript:validate()" >  
5 <body onLoad="javascript:init()" >
```

Alternatives

Alternatives

- **▸ CoffeeScript**
 - compiles into Javascript
 - simpler syntax
- **▸ JQuery**
 - Javascript library
 - makes common interactions with browser much simpler
- **▸ Angular**
 - Javascript web framework
 - if using Angular, **▸ don't use JQuery**