

# node.js

*evented I/O for V8 JavaScript*

# what is node?

- Server-side JavaScript done right.
- Runs on V8
- An environment for developing high-performance web services
- Evented TCP stack
- Not a framework

# why node?

- Web applications spend most of their time doing I/O
- JavaScript is the language of the web

**V8**

# V8

- Google's open source JavaScript engine.
- Developed by Lars Bak.
- Fast: compiles JavaScript to machine code.
- Implements most of ECMAScript 5.

# ECMAScript 5

## ECMAScript 5

# Safe prototype extension

```
Object.defineProperty(Object.prototype, "forEach", {  
  value: function (callback) {  
    var keys = Object.keys(this);  
  
    for (var i = 0, key; i < keys.length; i++) {  
      key = keys[i];  
      callback.call(this, key, this[key]);  
    }  
  }  
});
```

## ECMAScript 5

# Access to the hidden prototypes

```
Object.getPrototypeOf([ ]) // Array  
[ ].__proto__                // Array  
[ ].__proto__.__proto__      // Object
```



## ECMAScript 5

# Basic prototypal inheritance

```
var o = Object.create({ foo: 42 });
```

```
o.bar = "bah";
```

```
Object.keys(o)    // ["bar"]
```

```
o.foo             // 42
```

```
o.__proto__       // { foo: 42 }
```

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# **Event-driven programming**

- Asynchronous I/O
- Callbacks

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# Common.js module system

```
var sys = require( "sys" );
```

```
sys.puts( "hello world" );
```

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## Common.js module system

require.paths	<i>// ["../lib", ...]</i>
__dirname	<i>// this dirname</i>
__filename	<i>// this filename</i>

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## Simple HTTP server

```
var http = require( 'http' );

http.createServer( function (request, response) {
    response.writeHead(200, {
        'Content-Type': 'text/plain'
    });
    response.end( 'Hello World\n' );
}).listen(8000);
```

# **Event-driven programming**

```
setTimeout(function () {  
    // Do something after 1 second  
}, 1000);
```



```
process.nextTick(function () {  
    // Do something asynchronously  
});
```

# Async error handling

```
process.addListener( 'uncaughtException',  
                    function (err) {  
                        // Handle exception  
                    });
```

# Async signal handling

```
process.addListener( 'SIGINT', function (err) {  
    // Handle Ctrl-C  
});
```

**modules**

# file-system module

```
require( 'fs' );
```

# **modules**

## **fs**

- one-to-one mapping with unix commands
- most functions have a synchronous version

# Asynchronous file stat

```
fs.stat("path/to/file", function (err, res) {  
    if (res) {  
        // Handle success  
    } else {  
        // Handle error  
    }  
});
```

# Synchronous file stat

```
var res = fs.statSync("path/to/file");  
  
if (res) {  
    // Handle success  
} else {  
    // Handle error  
}
```



**<http://nodejs.org>**

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**<http://github.com/cloudhead/node-intro>**