INTRODUCTION TO NODE.JS

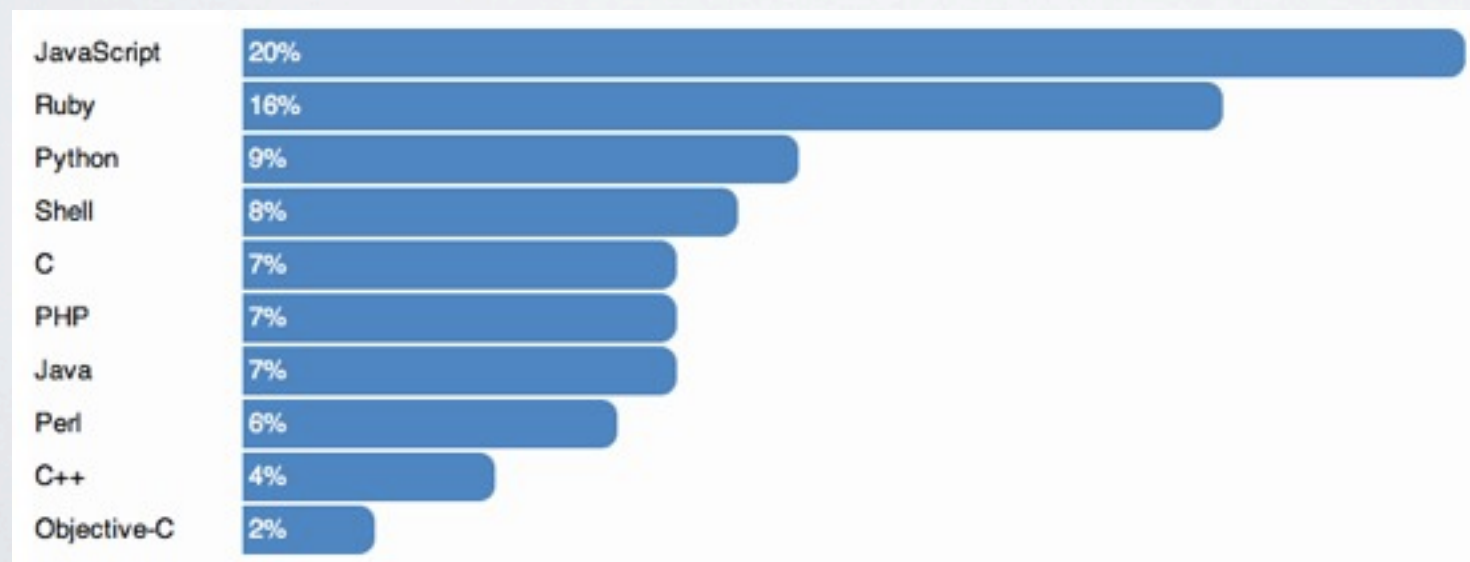Rafael de Oleza <roa@tid.es>

WTF IS NODE.JS

- "Evented I/O for V8 Javascript" - http://nodejs.org

- "Event-driven I/O server-side JavaScript environment based on V8" - Wikipedia

ADVANTAGES

- V8 is really fast

- Very active community

- Event-oriented, single-threaded

- It's Javascript!

JavaScript	20%
Ruby	16%
Python	9%
Shell	8%
C	7%
PHP	7%
Java	7%
Perl	6%
C++	4%
Objective-C	2%

DISADVANTAGES

- Very young

- Callback spaghetti code

```javascript
var du = function(path, callback) {
  var total = 0;
  fs.stat(path, function(err, stat) {
    if (err) {
      callback(err);
      return;
    }
    if (stat.isFile()) {
      fs.readFile(path, function(err, data) {
        if (err) {
          callback(err);
          return;
        }
        callback(null, data.length);
      });
    }
    else if (stat.isDirectory()) {
      fs.readdir(path, function(err, files) {
        if (err) {
          return callback(err);
        }
        var totalFiles = files.length;
        var k = 0;
        for (var i = 0; i < totalFiles; i++) {
          du(path + "/" + files[i], function(err, len) {
            if (err) {
              return callback(err);
            }
            total += len;
            k++;
            if (k === totalFiles) {
              callback(null, total);
            }
          });
        }
      });
    }
  });
};
```

HELLO-WORLD.JS

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

http.createServer(function (req, res) {
  res.writeHead(200, {'Content-Type': 'text/plain'});
  res.end('Hello World\n');
}).listen(1337, "127.0.0.1");

console.log('Server running at http://127.0.0.1:1337/');
```

MANAGING DEPENDENCIES

- npm is the most popular package manager

- Simple, fast, lightweight

- Global packages VS Local packages

INSTALLATION OF PACKAGES

```
rafeca->roa ~ npm install express socket.io jade stylus
stylus@0.15.4 ./node_modules/stylus
  - growl@1.1.0
  - cssom@0.2.0
express@2.4.6 ./node_modules/express
  - mime@1.2.4
  - qs@0.3.1
  - connect@1.7.1
jade@0.15.4 ./node_modules/jade
  - mkdirp@0.0.6
  - commander@0.1.0
socket.io@0.8.4 ./node_modules/socket.io
  - policyfile@0.0.4
  - redis@0.6.6
  - socket.io-client@0.8.4
```

PACKAGE.JSON

```json
{
  "author": "Rafael de Oleza <rafeca@gmail.com> (http://twitter.com/rafeca)",
  "name": "autotester",
  "description": "Autotester looks for changes on your project files, executes your tests and notifies you the results automatically, to accelerate TDD in Node",
  "version": "0.0.1",
  "homepage": "http://github.com/rafeca/autotester",
  "repository": {
    "type": "git",
    "url": "git://github.com/rafeca/autotester.git"
  },
  "main": "index",
  "bin" : {
    "autotester" : "./bin/autotester"
  },
  "scripts": {
    "test": "jasmine-node spec/"
  },
  "engines": {
    "node": "~v0.4.5"
  },
  "dependencies": [
    "growl": "> 0.5",
    "nodewatch": "*",
    "commander": "1.0.x"
  ]
}
```

UNIT TESTING

```javascript
dayofweek.js
module.exports = dayOfWeek = function() {
  /** (...) **/
  return {
    getDay: function(date, callback) {
      /** (...) **/
      callback(null, result);
    }
  };
}();
```

```javascript
spec/dayofweek_spec.js
var dayOfWeek = require('../dayofweek.js');

describe('Day of week tests', function(){
  it('should return the day of week for a Tuesday', function() {
    dayOfWeek.getDay('20/09/2011', function(err, result) {
      expect(err).toBeNull();
      expect(result).toEqual('Tuesday');
      asyncSpecDone();
    });
    asyncSpecWait();
  });
});
```

USEFUL NODE PACKAGES

- Web Developing: Express, Socket.io, SocketStream, Zappa

- Templates: Haml-js, Jade, CoffeeKup, Stylus, Less, Sass.js

- TDD: Jasmine-node, Vows, Expresso, Sinon.js

- Building: Jake

- Utils: Commander, docco, Step

WHAT ABOUT COFFEESCRIPT?

```coffeescript
connFu.setOptions
  streamHostname: 'backchatstream.gatillos.com'
  apiHostname: 'api.gatillos.com'
  useSsl: no

connFu.createApp
  apiKey: '1234abcd'
  handlers:
    voice:
      join: (call) ->
        growl.notify "#{call.from} joined the conference #{call.to}"
      leave: (call) ->
        grow.notify "#{call.from} left the conference #{call.to}"

    twitter:
      new: (tweet) ->
        growl.notify tweet.content, title: "New Tweet from #{tweet.from}"

    sms:
      new: (sms) ->
        grow.notify sms.content, title: "New SMS from #{sms.from}"

.listen()
```

CALLBACK SPAGHETTI CODE

```javascript
var du = function(path, callback) {
  var total = 0;
  fs.stat(path, function(err, stat) {
    if (err) {
      callback(err);
      return;
    }
    if (stat.isFile()) {
      fs.readFile(path, function(err, data) {
        if (err) {
          callback(err);
          return;
        }
        callback(null, data.length);
      });
    }
    else if (stat.isDirectory()) {
      fs.readdir(path, function(err, files) {
        if (err) {
          return callback(err);
        }
        var totalFiles = files.length;
        var k = 0;
        for (var i = 0; i < totalFiles; i++) {
          du(path + "/" + files[i], function(err, len) {
            if (err) {
              return callback(err);
            }
            total += len;
            k++;
            if (k === totalFiles) {
              callback(null, total);
            }
          });
        }
      });
    }
  });
};
```

VS

```coffeescript
du = (path, callback) ->
  Step
  () ->
    fs.stat path, this
  ,
  (err, stat) ->

    throw err if err
    if stat.isFile()
      fs.readFile path, (err, data) ->
        callback(err, data.length)
    else if stat.isDirectory()
      fs.readdir path, this
  ,
  (err, files) ->

    throw err if err
    group = this.group()
    files.forEach (file)->
      du path + '/' + file, group()
  ,
  (err, sizes) ->

    throw err if err
    total = sizes.reduce (t, s) -> t + s
    callback(err, total)
```

EXAMPLE

Yet Another Chat Website

THANKS!

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