

Intro to Node.js

Using JavaScript on the server-side to build web sites



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Agenda

- What is Node.js
- Web Development with Node.js
- Ecosystem (NPM, Express.js, MongoDB, node-inspector)
- Paradigm (event-driven, non-blocking I/O model, async)

What is Node.js?

- A server-side JavaScript interpreter
- it uses the V8 JavaScript interpreter that Google wrote for Chrome...
- ...and repurposes it for use on the server
- Open source, created by Ryan Dahl (2009), available for Mac, Windows, and Linux.
- Installer for Mac OS X is < 8 MB

Source: <http://www.ibm.com/developerworks/opensource/library/os-nodejs/>

Samples

- helloworld.js
- webserver1/2/3.js (HTTP)
- echoserver.js and chatserver.js (TCP)
- express1.js - static files

Source Code:

<http://github.com/hectorcorrea/intro-to-nodejs>

"Node.js uses an ***event-driven, non-blocking I/O model*** that makes it lightweight and efficient, perfect for data-intensive real-time applications that run across distributed devices."

<http://nodejs.org>

Blocking code

```
text = readFile("myfile.txt");  
console.log(text);
```

Non-Blocking code

```
readFile("myfile.txt", function(text) {  
    console.log(text);  
});  
console.log("xxx"); // executes immediately
```

Non-block client-side example

```
$.ajax({  
  url: "/js/fakedata.js",  
  dataType: "json",  
  success: function(data) {  
    $("#txtName").val(data.name);  
    $("#txtCity").val(data.city);  
  },  
  error: function(data) {  
    alert("Oops...something went wrong" + data);  
  }  
});
```

Non-blocking server-side example

```
var server = http.createServer(function(req, res) {  
  if(req.url == "/sample.html") {  
    fs.readFileSync("sample.html", function(err, text){  
      res.setHeader("Content-Type", "text/html");  
      res.end(text);  
    });  
    return;  
  }  
  
  res.setHeader("Content-Type", "text/html");  
  res.end("Hello World");  
  
});  
server.listen(8000, "127.0.0.1");
```



Callback

The Node.js Ecosystem

Node Package Manager

- Tool to download modules for Node.js
- Comes bundled with Node.js
- Over ~~20,000~~ 30,000 modules available
- Express.js, CoffeeScript, Socket.io, View Templates, Testing, Logging, DB Access, Async, RSS, Forever, Cluster, et cetera

Usage

```
$ npm install someModule
```

Express.js

- A server-side MVC framework to build web applications
- Similar to Sinatra (Ruby) or Bottle (Python)
- Provides the plumbing for HTTP, routes, and views
- No built-in support for models

```
# Install Express  
$ npm install express
```

Samples

- `express2.js` - routes
- `express3.js` - views
- `express4.js` - external routes (via `bookRoutes.js`)
- `express4.js` - database access (via `bookRoutes2.js`)

Source Code:

<http://github.com/hectorcorrea/intro-to-nodejs>

Socket.IO

- **WebSocket** is an IETF proposed standard that enables two-way communication. See <http://tools.ietf.org/html/rfc6455>
- **Socket.IO** is a JavaScript library that wraps WebSockets
- Socket.IO provides cleaner API than raw WebSockets
- Supports older browsers

```
# Install Socket.IO
```

```
$ npm install socket.io
```

Samples

- socketioDemo.js - server side
- chat.html - client side

Source Code:

<http://github.com/hectorcorrea/intro-to-nodejs>

Debugging

Node Inspector is a debugger interface for Node.js using the WebKit Web Inspector.

```
# Install node-inspector
```

```
$ npm install -g node-inspector
```

```
# Run your app
```

```
node --debug app
```

```
#Run node-inspector (in a separate window)
```

```
$ node-inspector
```

Browse to address given by node-inspector, select source file to browse, set breakpoint, and browse to your app.

Hosting in Production

- Stand alone
- Behind another web server (Apache, nginx, IIS)
- PaaS: Nodejitsu.com, Heroku, AppFog, Azure

Questions?

Code Samples & More

- Code: <http://github.com/hectorcorrea.com/intro-to-node-js>
- Blog: <http://hectorcorrea.com/blog/introduction-to-node-js>
- Node.js web site <http://nodejs.org> (installers, API docs)
- Feel free to ping me hector@hectorcorrea.com

Thanks!