What is it
The callback paradigm
Everything is a Module in Node.js

Node.js

Dominic Bosch

March 25, 2014

What is it
The callback paradigm
Everything is a Module in Node.js

What is it
The callback paradigm
Everything is a Module in Node.js

General Attributes

▶ Software Platform

What is it
The callback paradigm
Everything is a Module in Node.js

General Attributes

- ▶ Software Platform
- ▶ Scalable Networking applications

What is it
The callback paradigm
Everything is a Module in Node.js

General Attributes

- ► Software Platform
- ► Scalable Networking applications
- ► Asynchronous events, Non-blocking I/O

What is it
The callback paradigm
Everything is a Module in Node.js

General Attributes

- ▶ Software Platform
- ▶ Scalable Networking applications
- ▶ Asynchronous events, Non-blocking I/O
- ▶ Applications written in JavaScript

What is it
The callback paradigm
Everything is a Module in Node.js

General Attributes

- ▶ Software Platform
- ▶ Scalable Networking applications
- ▶ Asynchronous events, Non-blocking I/O
- ▶ Applications written in JavaScript
- ▶ Many built-in libraries

What is it
The callback paradigm
Everything is a Module in Node.js

General Attributes

- ▶ Software Platform
- ▶ Scalable Networking applications
- ▶ Asynchronous events, Non-blocking I/O
- ▶ Applications written in JavaScript
- ▶ Many built-in libraries
- ▶ Custom libraries from Package Manager NPM

What is it
The callback paradigm
Everything is a Module in Node.js

setTimeout Example

Synchronous functions:

```
var fs = require('fs');
try {
  var data = fs.readFileSync('./cryptico.js','utf8');
} catch (err) {

}
```

What is it
The callback paradigm
Everything is a Module in Node.js

setTimeout Example

Synchronous functions:

```
var fs = require('fs');
try {
  var data = fs.readFileSync('./cryptico.js','utf8');
} catch (err) {

}
```

Asynchronous functions:

```
var fs = require('fs');
var fAsyncCalled = function(err, data) {
  if(err){
    console.log('Error during file retrieval!');
    return;
  }
};
fs.readFile('./cryptico.js','utf8', fAsyncCalled);
```

What is it
The callback paradigm   setTimeout Example
Everything is a Module in Node.js

Why is this not going to work?

```
for( var i = 0; i < 100; i++ ) {
  setTimeout( function() {
    console.log(i);
  }, 1000);
}
```

What is it
The callback paradigm
Everything is a Module in Node.js

setTimeout Example

Solution:

```
var fDelayed = function(id) {
  return function() {
    console.log(id);
  };
};
for( var i = 0; i < 100; i++ ) {
  setTimeout( fDelayed(i), 1000);
}
```

Registers the value of i by value and not by reference in the anonyomous function which is returned on the first function call of fDelayed(i).

What is it
The callback paradigm   setTimeout Example
Everything is a Module in Node.js

(Almost) Real-life example:

```
function fetchUserObjectsAsync( arrNames, cbAnswer ){
  var semaphore = arrNames.length,
  objUsers = {},
  fGetUserAsync = function( name, cbLocal ){
    db.getUser(name, cbLocal);
  },
  fJoin = function( uName ) {
    return function( err, obj ) {
      --semaphore
      if( err || !obj ) return;
      objUsers[ uName ] = obj;
      if( semaphore === 0 ){
        cbAnswer( null, objReplies );
      }
    }
  };

  for( var name in arrNames ){
    fGetUserAsync( user, fJoin( name ));
  }
}
```

What is it
The callback paradigm
Everything is a Module in Node.js

Built-in Modules
Node Packaged Modules (NPM)
Custom JS Modules

► Load Modules via require:

What is it · Built-in Modules
The callback paradigm · Node Packaged Modules (NPM)
Everything is a Module in Node.js · Custom JS Modules

► Load Modules via require:
  ► Built-in: `require('fs');`

What is it
The callback paradigm
Everything is a Module in Node.js

Built-in Modules
Node Packaged Modules (NPM)
Custom JS Modules

- Load Modules via require:
    - Built-in: `require('fs');`
    - Project: `require('./my-module');`

What is it
The callback paradigm
Everything is a Module in Node.js

Built-in Modules
Node Packaged Modules (NPM)
Custom JS Modules

- ▶ Load Modules via require:
    - ▶ Built-in: `require('fs');`
    - ▶ Project: `require('./my-module');`
- ▶ Modules are cached!

What is it
The callback paradigm
Everything is a Module in Node.js

Built-in Modules
Node Packaged Modules (NPM)
Custom JS Modules

http://nodejs.org/api/

What is it
The callback paradigm
Everything is a Module in Node.js

Built-in Modules
Node Packaged Modules (NPM)
Custom JS Modules

► Url: https://www.npmjs.org/

What is it
The callback paradigm
Everything is a Module in Node.js

Built-in Modules
Node Packaged Modules (NPM)
Custom JS Modules

- Url: https://www.npmjs.org/
- Everybody can publish to NPM!

What is it
The callback paradigm
Everything is a Module in Node.js

Built-in Modules
Node Packaged Modules (NPM)
Custom JS Modules

- Url: https://www.npmjs.org/
- Everybody can publish to NPM!
- Global/Local/Project installation

What is it
The callback paradigm
Everything is a Module in Node.js

Built-in Modules
Node Packaged Modules (NPM)
Custom JS Modules

My Favorite: Project Installation
package.json
npm install
track version
Example of how peope still could break your roject: groc/jade

What is it
The callback paradigm
Everything is a Module in Node.js

Built-in Modules
Node Packaged Modules (NPM)
Custom JS Modules

place index.js into node-modules - cryptico.js