Modules, require(), NPM

Using modules in your application

```
var foo = require('foo');
var Bar = require('bar');
var justOne = require('largeModule').justOne;

var f = 2 + foo.alpha;            ⟵ Modules can export variables
var b = foo.beta() * 3;           ⟵ ... including functions

var bar = new Bar();              ⟵ Modules may export objects

console.log(justOne());
```

Three sources of Node modules

#1: Built-in Modules

- **Come pre-packaged with Node**
- **Are require()'d with a simple string identifier**
  - `var fs = require('fs');`

- **A sample of built-in modules include:**
  - fs
  - http
  - crypto
  - os

http://nodejs.org/api/

Three sources of Node modules

#2: Your Project's files

- **Each .js file is its own module**

- **A great way to modularize your application's code**

- **Each file is require()'d with file system-like semantics:**

  - ```
    var data = require('./data');
    ```
    ← *data.js in the same directory*

  - ```
    var foo = require('./other/foo');
    ```
    ← *foo.js in the 'other' subdirectory*

  - ```
    var bar = require('../lib/bar');
    ```
    bar.js in the 'lib' directory, "up and over" from this script's directory

- **Single variable require() still valid:**

  - ```
    var justOne = require('./data').justOne;
    ```

Three sources of Node modules

#2: Your Project's files

Variables are marked for export via "module.exports"

one.js

```
var count = 2;

var doIt = function(i, callback) {
 // do something, invoke callback
}

module.exports.doIt = doIt;

module.exports.foo = 'bar';
```
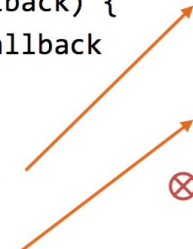
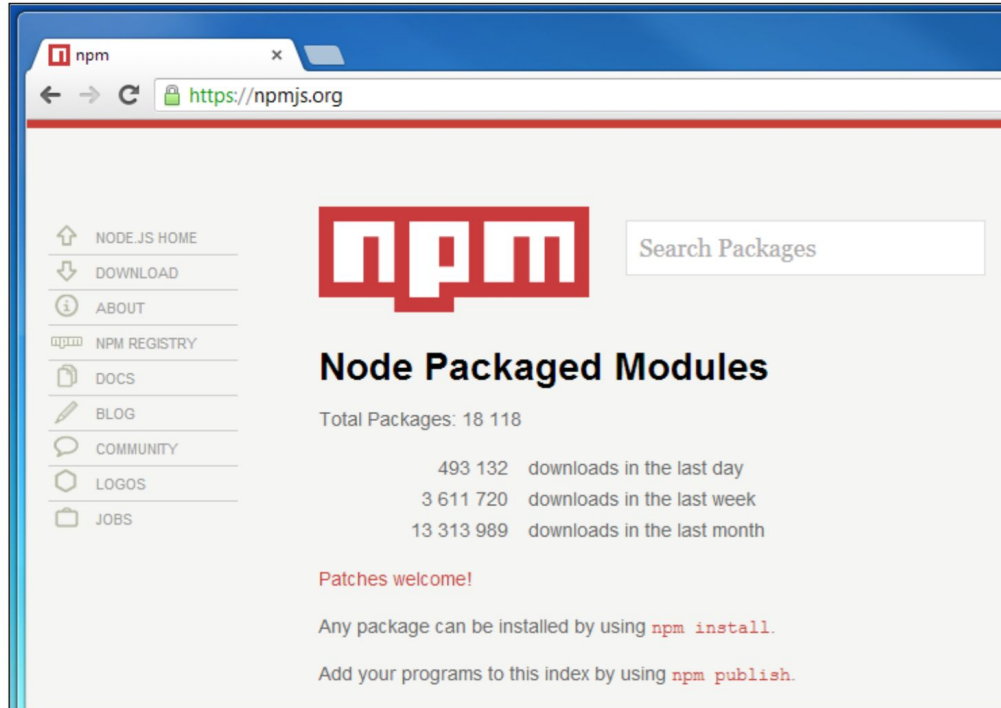**two.js**

```
var one = require('./one');

one.doIt(23, function (err, result) {
  console.log(result);
});

console.log(one.foo);
⊗ console.log(one.count);
```

Three sources of Node modules

#3: Third Party Modules via Node Package Manager (NPM) registry

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- **Installed via "npm install *module_name*" into "node_modules" folder**
- **Are require()'d via simple string identifiers, similar to built-ins**
  - var request = require('request');
- **Can require() individual files from within a module, but be careful!**
  - var BlobResult = require('azure/lib/services/blob/models/blobresult');

- **Some modules provide command line utilities as well**
- **Install these modules with "npm install –g *module_name*"**
  - Examples include: express, mocha, azure-cli