NPM

npm & packages Intro

Local Project npm Repository <Your Code> Core Node Packages express Dependencies (3rd Party) body-parser Installed & Managed via npm

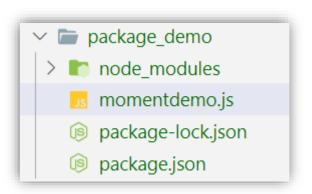
What is npm?

- npm is the standard package manager for Node.js. It also manages downloads of dependencies of your project.
- www.npmjs.com hosts thousands of free packages to download and use.
- The NPM program is installed on your computer when you install Node.js.
 - npm -v // will print npm version
- What is a package?
 - A package in Node.js contains all the files you need for a module.
 - Modules are JavaScript libraries you can include in your project.
 - A package contains:
 - JS files
 - package.json (manifest)
 - package-lock.json (maybe)

Create & use a new package

npm init // will create package.json

- When we install a package:
 - Notice dependencies changes in package.json
 - notice folder: node modules
 - This structure separate our app code to the dependencies. Later when we
 - share/deploy our application, there's no need to copy node_modules, run: npm install will read all dependencies and install them locally.



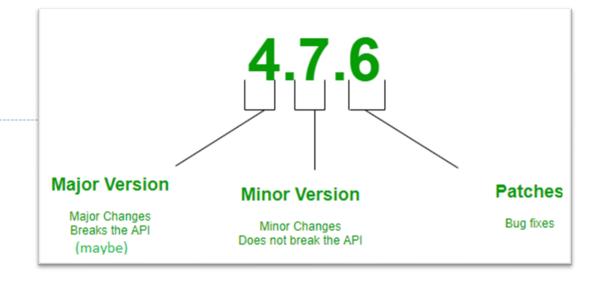
package.json Manifest

- The package.json file is kind of a manifest for your project.
- It can do a lot of things, completely unrelated.
- It's a central repository of configuration for installed packages.
- The only requirement is that it respects the JSON format.
- version: indicates the current version
- name: the application/package name
- description: a brief description of the app/package
- main: the entry point for the application
- scripts: defines a set of node scripts you can run
- dependencies: sets a list of npm packages installed as dependencies
- devDependencies: sets a list of npm packages installed as development dependencies

```
{
    "name": "package demo",
    "version": "1.0.0",
    "description": "",
    "main": "index.js",
    "scripts": {
        "start": "node momentdemo.js"
     },
    "author": "Anna Smith",
    "license": "ISC",
    "dependencies": {
        "moment": "^2.29.1"
    "devDependencies": {
        "eslint": "^7.28.0"
```

Semantic Versioning

- The Semantic Versioning concept is simple: all versions have 3 digits: x.y.z.
 - the first digit is the major version
 - the second digit is the minor version
 - the third digit is the patch version



- When you make a new release, you don't just up a number as you please, but you have rules:
 - you up the major version when you make incompatible API changes
 - you up the minor version when you add functionality in a backwardcompatible manner
 - you up the patch version when you make backward-compatible bug fixes

More details about Semantic Versioning

• Why is that so important?

• Because npm set some rules we can use in the package.json file to choose which versions it can update our packages to, when we run npm update.

The rules use those symbols:

- ^: it's ok to automatically update to anything within this major release. If you write ^0.13.0, when running npm update, it can update to 0.13.1, 0.14.2, and so on, but not to 1.14.0 or above.
- ~: if you write ~0.13.0 when running npm update it can update to patch releases: 0.13.1 is ok, but 0.14.0 is not.
- >: you accept any version higher than the one you specify

package-lock.json

- Introduced by NPM version 5 to capture the exact dependency tree installed at any point in time.
- Describes the exact tree
- Guarantee the dependencies on all environments.
- Don't modify this file manually.
- Always use npm CLI to change dependencies, it'll automatically update package-lock.json

```
"name": "lesson03-demo",
  "version": "1.0.0",
  "lockfileVersion": 1,
  "requires": true,
  "dependencies": {
    "moment": {
      "version": "2.24.0",
      "resolved": "https://registry.npmjs.org/moment/-
/moment-2.24.0.tgz",
      "integrity": "sha512-
bV7f+612QigeBBZSM/6yTNq4P2fNpSWj/0e7jQcy87A8e7o2nAfP/34/2ky5
Vw4B9S446EtIhodAzkFCcR4dQg=="
```

More About Packages

- Development Dependencies: Needed only while I'm developing the app.
 It's not needed for running the app.
 - npm install mocha --save-dev
 // notice devDependencies entry now in package.json
- Global Dependencies: Available to all applications
 - npm install -g nodemon
 - nodemon app.js //auto detects changes and restarts your project