webpack

webpack.js.org

A not entirely accurate tale but good enough for our needs

yui

mootools

dojo
toolkit

script.aculo.us
it's about the user interface, baby!

node
JS

ServerJS

ServerJS ⟶ **CommonJS**

CommonJS *is a project with the goal of specifying an ecosystem for JavaScript outside the browser…*

"Standardizing" before you have implementation is naive, in the most literal sense of showing a lack of experience, wisdom, or judgement.

Isaac Z. Schlueter, the author of npm, the package manager for Node.js,

	A	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U
1	Contact & info : http://eric.daspet.name/ , @edasfr or @webperf_fr Authors of js loaders and webperf experts are more than welcome to request write access to the grid. Please ask, we are waiting for you.	**LABjs**	**HeadJS**	**ControlJS**	**RequireJS**	**Load.js**	**YepNope.js**	**$script.js**	**LazyLoad**	**curl.js**	**JsDefer (w/o Jquery)**	**jquery.defer.js**	**Bootstrap**	**PINF JS Loader**	**BravoJS**	**NBL.js**	**JSLoad**	**jQl**	**JSL**
2	*Features (please read the "Warnings" worksheet)*	http://labjs.com/	http://headjs.com/	http://stevesouders.(	http://requirejs.org/	https://github.com/chris	http://yepnopejs.com	http://www.dustindia	https://github.com/rg	https://github.com/ur	https://github.com/Boris	https://github.com/B	https://bitbucket.org/	https://github.com/pi	http://code.google.co	http://berklee.github.	http://code.google.co	https://github.com/C	http://www.andresvidal.com
3	***This comparaison is not maintained and was initiated by the crowd. Most of this data may be wrong or outdated. Please use it as a start for your research, not as an end.***	*labjs*	*headjs*																
4	Author(s)	Kyle Simpson	Tero Piirainen	Steve Souders	James Burke	Chris O'Hara	Alex Sexton & Ralph Holzmann	Dustin Diaz	Ryan Grove	John Hann @unscriptable	Boris Moore	Boris Moore	Scott Koon	Christoph Dorn	Wes Garland	Berklee	Eric Nguyen	Cédric Morin	Andres Vidal
5	Size minified	4.7 KB	6.3 KB	3.6 KB (w. closure adv.)	13 KB (+1 KB order plugin)	2 KB	3.4 KB	1.4 KB	1.6 KB	4.5KB to 6.4KB	4.7 KB	2.6 KB	1.3 KB	22 KB	10.7 KB	971 B	9.8 KB	1.5 KB	2.1 KB
6	Size minified and gzipped	2.2 KB	1.9 KB	1.5 KB	5.3 KB (+650B order plugin)	1 KB	1.6 KB	643 B	904 B	2.2KB to 2.9KB	2.5 KB	1.6 KB	699 B	6.2 KB	3.6 KB	593 B		718 B	855 B
7	License	MIT	MIT	Apache 2.0	BSD or MIT	MIT	WTFPL	MIT	MIT	MIT			Apache 2.0	MIT	MIT	MIT	LGPL		MIT and GNU
8	Load JS files without blocking	Y	Y (tested)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		Y	Y
9	Load independent JS files/groups in parallel	Y (tested)	Y (tested)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		Y	Y
10	Ability to execute a callback after loading a script asynchronously	Y (tested)	Y (tested)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		Y
11	Execute independent JS files independently from the call order (chrome, safari, ie)	Y (tested)	Y (tested)	Y	Y	?	N (by design)	?	N	Y	Y	Y	N	Y	Y	Y			Y
12	Execute independent JS files independently from the call order (firefox, opera)	N (tested)	N (tested)	Y	Y	?	N (by design)	?	N	Y	Y	Y	N	Y	Y	Y			Y
13	Avoid loading a JS file twice if the HTTP cache is missing (same domain) (chrome, safari, ie)	Y (tested)	N (tested)	N	N	?	N	N ?	Y	Y	Y	Y	Y	Y	Y	Y			Y
14	Avoid loading a JS file twice if the HTTP cache is missing (cross domain) (chome, safari, ie)	N (tested)	N (tested)	N	N	?	N	N ?	Y	Y	Y	Y	Y	Y	Y	Y			Y
15	Avoid loading a JS file twice if the HTTP cache is missing (cross domain) (firefox, opera)	Y (tested)	Y (tested)	N	N	?	N	N ?	Y	Y	Y	Y	Y	Y	Y	Y			Y
16	Able to avoid executing a JS file twice if called twice	Y (tested)	Y (tested)	Y	?	?	Y	?	N	Y	Y	Y	Y	Y	Y	Y	Y		Y
17	Able to execute a JS file twice if called twice	Y (tested)	N (by design)	N	?	?	Y	?	Y	Y/N	N	N	N ?	N	N	N ?	N ?		Cached
18	Allow to define dependencies (executed before the wanted script)	Y (tested)	Y (tested)	Y	Y	Y	Y	Y	Partially	Y	Y	Y	Y	Y	Y	Y	Y		Y
19	Load dependencies in parallel	Y (tested)	Y (tested)	Y	Y	Y	Y	Y ?	Y	Y	Y	Y	Y	Y	Y	Y	N		Y
20	Load JS files outside the "same domain" policy	Y (tested)	Y (tested)	Y	Y	?	Y	?	Y	Y	Y	Y	Y	Planned	N	Y			Y
21	Feature detection and no user agent sniffing	Y	N	N	Y	?	Y	?	N	Y	N/A	N/A	Y	Y	Y	Y			N
22	Future proof with async=false	Y	Y (tested)	N/A	Partialy	N	N/A	N	Y	Y	N	N	N	Planned	Planned	N			Planned
23	Ability to define shortcuts or ids (not full urls) to JS files / groups	N	Y (tested)	N	Y/N	N	Y	Y	N	Y	Y	Y	N	Y	Y	N	Y		N
24	Ability to pre-define dependencies in the <head> or somewhere central	N	Y	N	Y	N	N	N	N	Y	Y	Y	N	Y	Y	Y	Y		N
25	Compliant with the CommonJS Modules spec	N	Planned	N	Y	?	N/A	In Progress	N	Y	N	N	N	Y	Y	N	N		N
26	Supports plugins/extensions	N	N	N	Y	N	Y	N	N	Y	N	N	N	Planned	Y	N	N		N
27	Let use classic <script> external tags (controlJS style)	N	N	Y	N	N	N	N	N	N	Y	Y	N	N	N	N	Y		
	Patches page's document.readyState																		

1. common.js + (/private/tmp) - VIM (vim)

```
// Declare our dependencies
var leftPad = require('left-pad');
var findMoney = require('./money-finder.js');

// Do whatever the module should do
function paddedMoney(n) {
  return leftPad(findMoney(n), 2, '0');
}

// Export something to other modules that import this module
module.exports = paddedMoney;
~
~
~
~
~
~
~
~
~
~
~
-- INSERT --
```

(non-standard) **CommonJS module**

1. amd.js + (/private/tmp) - VIM (vim)

```
// Declare our dependencies
define([
  'left-pad',
  './money-finder.js'
], function (leftPad, findMoney) {

  // Do whatever the module should do
  function paddedMoney(n) {
    return leftPad(findMondey(n), 2, '0');
  }

  // Export something to other modules that import this module
  return paddedMoney;
});
~
~
~
~
~
~
~
~
-- INSERT --
```

AMD module (asynchronous module definition)

REQUIRE.JS

The (former) king of configuration files.

1. index.html (~/Development/unpack-w...tudy-cases/amd-bad-timeline) - VIM (zsh)

```
<!doctype html>¬
<html lang="en">¬
  <head>¬
    <meta charset="utf-8">¬
    <meta http-equiv="x-ua-compatible" content="ie=edge">¬
    <title>AMD case study</title>¬
    <meta name="description" content="">¬
    <meta name="viewport" content="width=device-width, initial-scale=1">¬
</head>¬
<body>¬
  <script data-main="main.js" src="node_modules/requirejs/require.js"></script>
</body>¬
</html>¬
~
~
~
~
~
-- INSERT --
```

1. main.js + (~/Development/un...ases/amd-bad-timeline) - VIM (zsh)

```
require.config({
  paths: {
    mout: 'node_modules/mout/src',
    backbone: 'node_modules/backbone/backbone.js',
    underscore: 'node_modules/underscore/underscore.js',
    domReady: 'node_modules/dom-ready/dom-ready'
  },
  shim: {
    'backbone': {
      deps: ['underscore', 'jquery'],
      exports: 'Backbone
    },
    'underscore': {
      exports: '_'
    },
    'jquery.colorize': ['jquery'],
    'jquery.scroll': ['jquery'],
    'backbone.layoutmanager': ['backbone']
  },
  deps: [
    'domReady',
    'Backbone'
  ],
  callback: function (domReady, Backbone) {
    domReady(function(){
      // Start your application here...
    })
  }
```

-- INSERT --

Developer Tools - AMD case study - http://127.0.0.1:8080/

Inspector | Console | Debugger | Style Editor | Performance | Memory | Network

All | HTML | CSS | JS | XHR | Fonts | Images | Media | Flash | WS | Other

29 requests, 104.15 KB (transferred: 104.15 KB), 1.39 s

Filter URLs

Status	Method	File	Domain	Cause	Type	Transferr...	Size	0 ms / 640 ms / 1.28 s
200	GET	/	127.0.0.1:8080	document	html	386 B	386 B	18 ms
200	GET	require.js	127.0.0.1:8080	script	js	84.46 KB	84.46 KB	11 ms
200	GET	main.js	127.0.0.1:8080	script	js	403 B	403 B	1 ms
200	GET	dom-ready.js	127.0.0.1:8080	script	js	4.86 KB	4.86 KB	3 ms
200	GET	map.js	127.0.0.1:8080	script	js	464 B	464 B	3 ms
200	GET	compose.js	127.0.0.1:8080	script	js	588 B	588 B	2 ms
200	GET	partial.js	127.0.0.1:8080	script	js	734 B	734 B	8 ms
200	GET	stripHtmlTags.js	127.0.0.1:8080	script	js	245 B	245 B	11 ms
200	GET	pascalCase.js	127.0.0.1:8080	script	js	310 B	310 B	4 ms
200	GET	countSteps.js	127.0.0.1:8080	script	js	277 B	277 B	4 ms
200	GET	makeIterator_.js	127.0.0.1:8080	script	js	1.07 KB	1.07 KB	1 ms
200	GET	indexOf.js	127.0.0.1:8080	script	js	597 B	597 B	3 ms
200	GET	slice.js	127.0.0.1:8080	script	js	709 B	709 B	1 ms
200	GET	take.js	127.0.0.1:8080	script	js	484 B	484 B	1 ms
200	GET	toString.js	127.0.0.1:8080	script	js	244 B	244 B	1 ms
200	GET	camelCase.js	127.0.0.1:8080	script	js	706 B	706 B	1 ms
200	GET	upperCase.js	127.0.0.1:8080	script	js	225 B	225 B	1 ms
200	GET	identity.js	127.0.0.1:8080	script	js	169 B	169 B	2 ms
200	GET	prop.js	127.0.0.1:8080	script	js	231 B	231 B	1 ms
200	GET	deepMatches.js	127.0.0.1:8080	script	js	1.39 KB	1.39 KB	1 ms
200	GET	replaceAccents.js	127.0.0.1:8080	script	js	1.36 KB	1.36 KB	6 ms
200	GET	removeNonWord.js	127.0.0.1:8080	script	js	389 B	389 B	9 ms
200	GET	lowerCase.js	127.0.0.1:8080	script	js	226 B	226 B	4 ms
200	GET	forOwn.js	127.0.0.1:8080	script	js	513 B	513 B	2 ms
200	GET	isArray.js	127.0.0.1:8080	script	js	177 B	177 B	2 ms
200	GET	hasOwn.js	127.0.0.1:8080	script	js	204 B	204 B	3 ms
200	GET	forIn.js	127.0.0.1:8080	script	js	2.27 KB	2.27 KB	3 ms
200	GET	isKind.js	127.0.0.1:8080	script	js	204 B	204 B	2 ms
200	GET	kindOf.js	127.0.0.1:8080	script	js	467 B	467 B	2 ms

browserify

The king of the ify

1. main.js + (~/Development/un...es/browserify-example) - VIM (vim)

```
 17 var React = require('react');¬
 16 var render = require('react-dom').render;¬
 15 var HelloWorld = require('./components/HelloWorld.jsx');¬
 14 var load = require;¬
 13 ¬
 12 if (Math.random() > 0.5) {¬
 11   var surprise = require('./surprise.js');¬
 10 } else if (Math.random() < 0.5) {¬
  9   // I'm just here because I can...¬
  8   require('./another-surprise.js');·¬
  7 } else {¬
  6   // At this point this is just getting weird...¬
  5   ("") + load('./not-even-sure-what-happens.js');¬
  4 }¬
  3 ¬
  2 render(<HelloWorld />, document.getElementById('app'));¬
  1 ¬
 18   module.exports = true;¬
~
~
~
~
~
~
~
~
~
~
```

AST explorer

https://astexplorer.net

AST Explorer | Snippet | JavaScript | babylon6 | Transform

```
var React = require('react');
var render = require('react-dom').render;
var HelloWorld = require('./components/He
var load = require;

if (Math.random() > 0.5) {
  var surprise = require('./surprise.js')
} else if (Math.random() < 0.5) {
  // I'm just here because I can...
  require('./another-surprise.js');
} else {
  // At this point this is just getting w
  ("") + load('./not-even-sure-what-happe
}

render(<HelloWorld />, document.getEleme

module.exports = true;
```

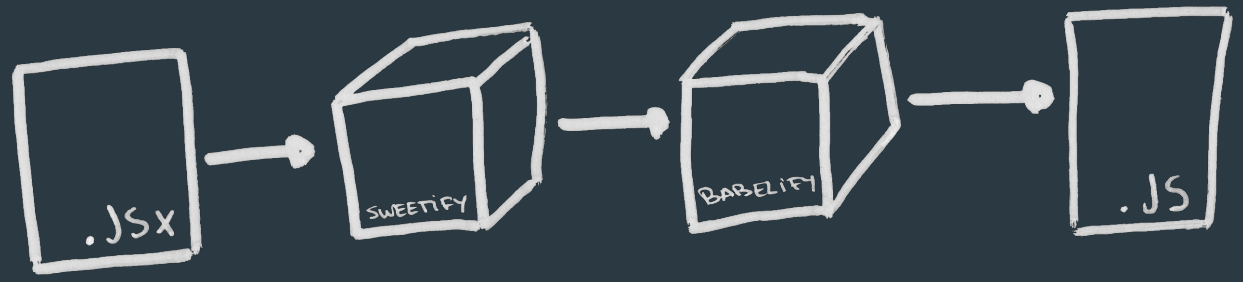
Tree | JSON

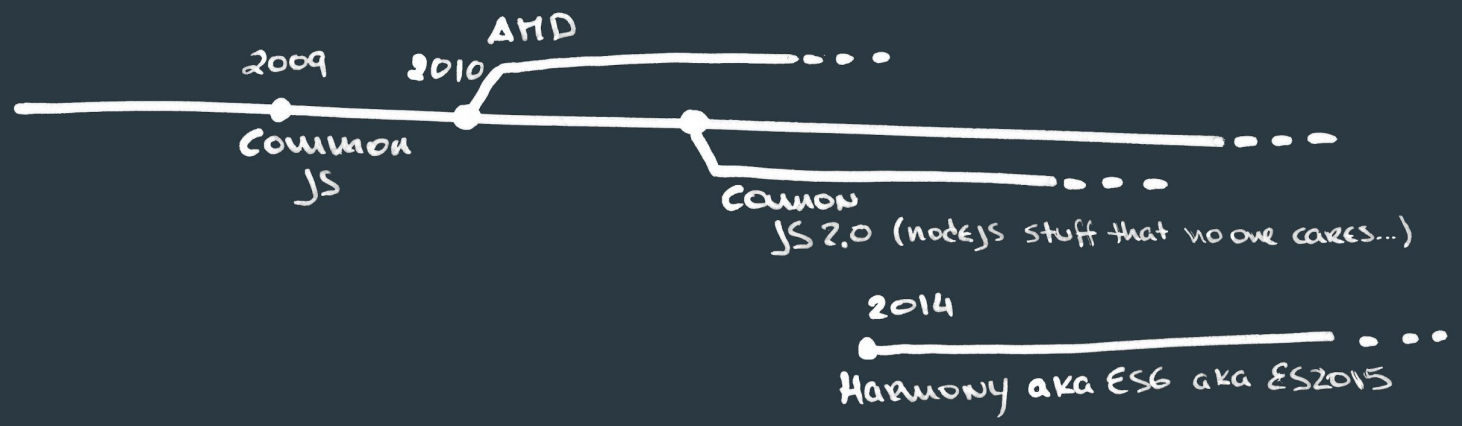
Parser: babylon6-6.15.0

Autofocus | Hide methods | Hide empty keys | Hide location data

```
- File {
    type: "File"
  - program: Program {
      type: "Program"
      sourceType: "module"
    - body: [
      + VariableDeclaration {type, declarations, kind}
      + VariableDeclaration {type, declarations, kind}
      + VariableDeclaration {type, declarations, kind}
      + VariableDeclaration {type, declarations, kind}
      - IfStatement {
          type: "IfStatement"
        + test: BinaryExpression {type, left, operator, right}
        + consequent: BlockStatement {type, body, directives}
        - alternate: IfStatement {
            type: "IfStatement"
          + test: BinaryExpression {type, left, operator, right}
          - consequent: BlockStatement {
              type: "BlockStatement"
            - body: [
              - ExpressionStatement {
                  type: "ExpressionStatement"
                - expression: CallExpression {
                    type: "CallExpression"
                  - callee: Identifier = $node {
                      type: "Identifier"
                      name: "require"
                    }
```

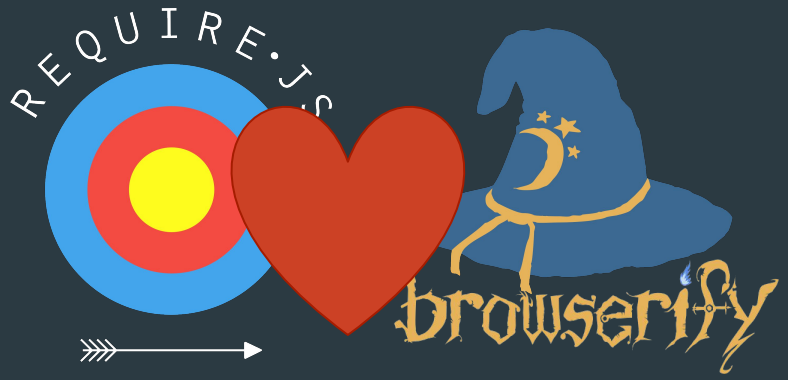
Built using React, Babel, Font Awesome, CodeMirror Express, and WebPack | GitHub


.JSX
SWEETIFY
BABELIFY
.JS


2009
2010
AMD
Common JS
Common JS 2.0 (nodejs stuff that no one cares...)
2014
Harmony aka ES6 aka ES2015

REQUIRE.JS

browserify


REQUIRE.JS
browserify

REQUIRE.JS
browserify

REQUIRE.JS
owserify

The (current) king of configuration files.

The (current) king of configuration files.

...but has enough benefits to make it worth it

Where to find entry files

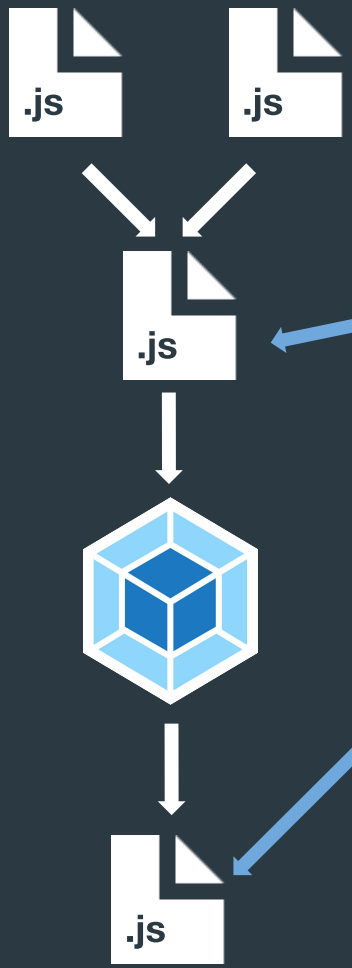
Where to output generated files

Declare your plugins here

How to load and transform files

1. webpack.config.js + (~/Development/unpack-webpack/05-plugins) - VIM (vim)

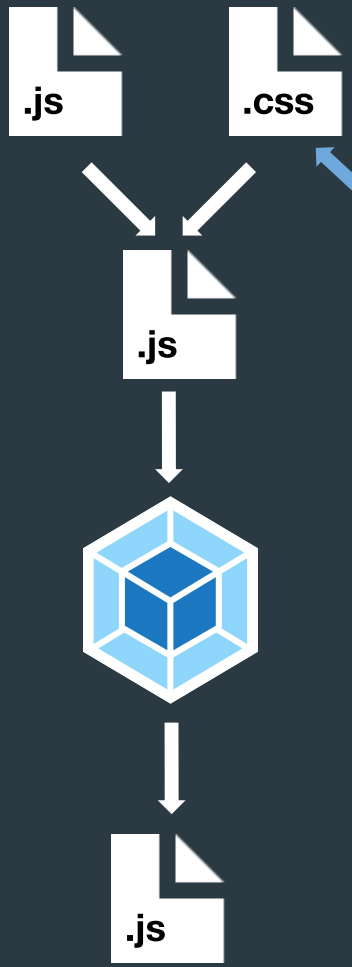
```
const path = require('path');
const HtmlWebpackPlugin = require('html-webpack-plugin');
const OfflinePlugin = require('offline-plugin');
const CleanWebpackPlugin = require('clean-webpack-plugin');

module.exports = {


  entry: './src/main.js',


  output: {
    filename: '[name].[chunkhash].js',
    path: path.resolve('dist')
  },


  plugins: [
    new CleanWebpackPlugin(path.resolve('dist')),
    new HtmlWebpackPlugin(),
    new OfflinePlugin()
  ],


  module: {
    rules: [
      { test: /\.js?$/, loader: 'babel-loader' },
      { test: /\.png$/, loader: 'url-loader', options: { limit: 7000 } }
    ]
  }


};
```



1. webpack.config.js (~/Development/unpack-webpack/05-plugins) - VIM (vim)

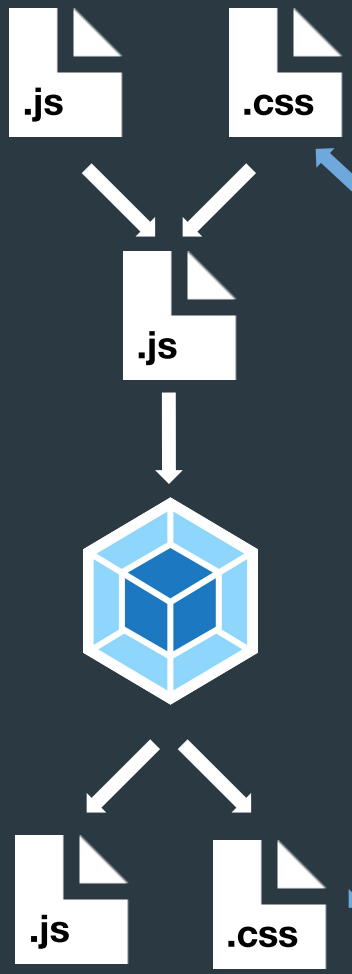
```
const path = require('path');

module.exports = {

  entry: './src/main.js',

  output: {
    filename: '[name].[chunkhash].js',
    path: path.resolve('dist')
  },

};
```

"webpack.config.js" 18L, 175C written



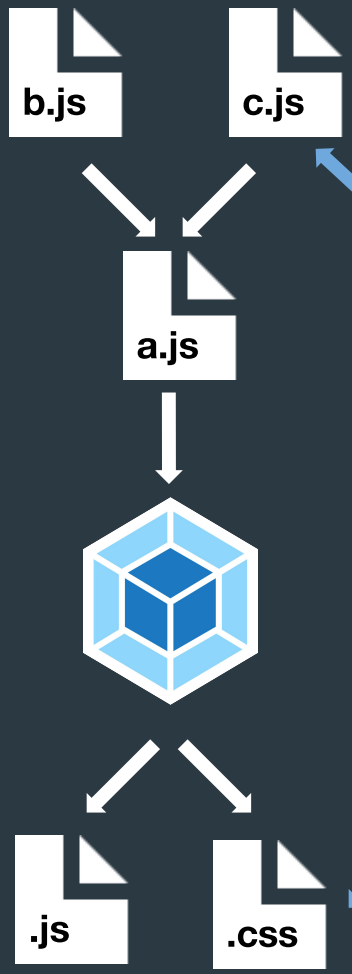
1. webpack.config.js (~/Development/unpack-webpack/05-plugins) - VIM (vim)

```
const path = require('path');

module.exports = {

  entry: './src/main.js',

  output: {
    filename: '[name].[chunkhash].js',
    path: path.resolve('dist')
  },

  module: {
    rules: [
      {
        test: /\.css$/,
        use: [ 'style-loader', 'css-loader' ]
      }
    ]
  }

};
~
~
~
~
~
"webpack.config.js" 28L, 298C written
```



1. webpack.config.js + (~/Development/unpack-webpack/05-plugins) - VIM (vim)

```
23 const path = require('path');¬
22 const ExtractTextPlugin = require("extract-text-webpack-plugin");¬
21 ¬
20 ¬
19 ¬
18 module.exports = {¬
17 ¬
16 ¬
15   entry: './src/main.js',¬
14 ¬
13 ¬
12   output: {¬
11     filename: '[name].[chunkhash].js',¬
10     path: path.resolve('dist')¬
 9   },¬
 8 ¬
 7 ¬
 6   plugins: [new ExtractTextPlugin('styles.css')],¬
 5 ¬
 4 ¬
 3   module: {¬
 2     rules: [¬
 1       {¬
24         test: /\.css$/,¬
 1         use: ExtractTextPlugin.extract({ ¬
 2           fallbackLoader: 'style-loader', ¬
 3           loader: 'css-loader'¬
 4         })¬
 5       }¬
 6     ]¬
 7   }¬
 8 ¬
 9 ¬
```



1. webpack.config.js + (~/Development/unpack-webpack/05-plugins) - VIM (vim)

```
23 const path = require('path');¬
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21 ¬
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12   output: {¬
11     filename: '[name].[chunkhash].js',¬
10     path: path.resolve('dist')¬
 9   },¬
 8 ¬
 7 ¬
 6   plugins: [new ExtractTextPlugin('styles.css')],¬
 5 ¬
 4 ¬
 3   module: {¬
 2     rules: [¬
 1       {¬
24         test: /\.css$/,¬
 1         use: ExtractTextPlugin.extract({ ¬
 2           fallbackLoader: 'style-loader', ¬
 3           loader: 'css-loader'¬
 4         })¬
 5       }¬
 6     ]¬
 7   }¬
 8 ¬
 9 ¬
```

- CommonJS, AMD and Harmony modules
- Static assets (e.g.: images) are treated as modules
- Loader & Bundler
- Web Dev Server
- Code Splitting aka Loading on Demand/Async loading
- Tree Shaking
- Hot Module Replacement

JAVASCRIPT
PLEASE JUST WORK