



Webpack^{5.x.x}

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Definition

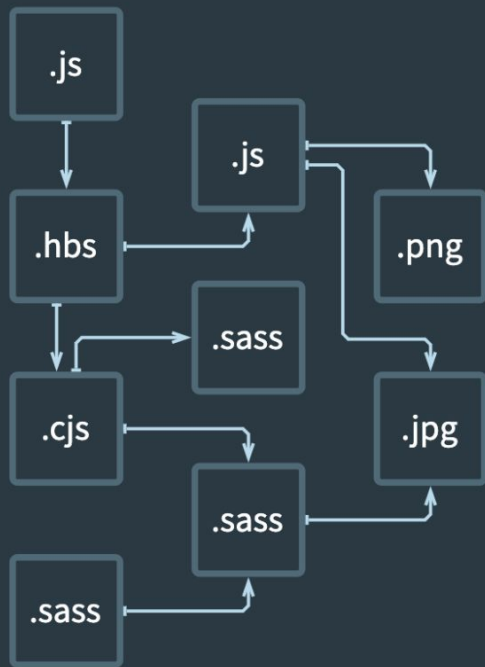
What is webpack

a static module bundler which runs through all the code and its dependencies starting from entry point and joins them into a bundle.

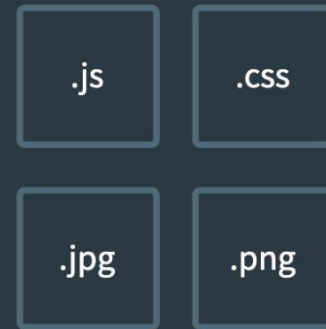
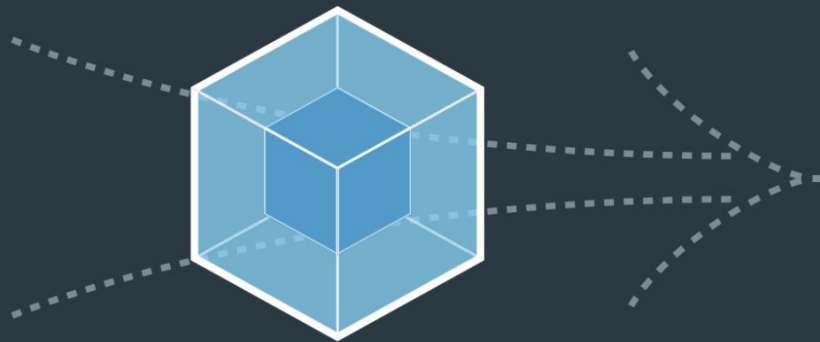


The reference to the documentation webpack.js.org

bundle your scripts



MODULES WITH DEPENDENCIES



STATIC ASSETS

Advantages

- helps bundle javascript and static assets

```
1 <html>
2   <script src="/src/main.js"></script>
3   <script src="/src/auth.js"></script>
4   <script src="/src/home.js"></script>
5   <script src="/src/http-request.js"></script>
6   <script src="/src/utils.js"></script>
7 </html>
```



```
1 <html>
2   <script src="/dist/bundle.js"></script>
3 </html>
```

Advantages

- helps manage the dependency relationship and load your assets in dependency order

```
1  // CommonJS
2  const path = require('./path');
3  module.exports = path;
4
5  // ES Modules
6  import path from './path';
7  export default path;
8
```

Advantages

- using loaders webpack can transpile code with the latest features to ES5 syntax to enable old browsers support

```
1 const all = [...[1, 10, 100], ...[-1, -10, -100]];
2
3 const value = null ?? 0;
4
5 const sum = (arr) => {
6   return arr.reduce((acc, value) => acc + value, 0);
7 }
8
9
10
11
12
13
```

```
1 "use strict";
2
3 require("core-js/modules/es.array.concat.js");
4
5 var _ref;
6
7 var all = [1, 10, 100].concat([-1, -10, -100]);
8 var value = (_ref = null) !== null && _ref !== void 0 ? _ref : 0;
9
10 var sum = function sum(arr) {
11   return arr.reduce(function (acc, value) {
12     return acc + value;
13   }, 0);
14 };
15
```

Advantages

- improve developers experience running dev server and watching for changes

```
> webpack-prep@1.0.0 start /Users/maksimkiryka/projects/2021/rsschool/mentoring/webpack-prep
> webpack serve --mode=development --open

i [wds]: Project is running at http://localhost:8080/
i [wds]: webpack output is served from /
i [wds]: Content not from webpack is served from /Users/maksimkiryka/projects/2021/rsschool/mentoring/webpack-prep
i [wdm]: wait until bundle finished: /
(node:21300) [DEP_WEBPACK_TEMPLATE_PATH_PLUGIN_REPLACE_PATH_VARIABLES_HASH] DeprecationWarning: [hash] is now [fullhash] (also consider using [chunkhash] or [contenthash], see documentation for details)
i [wdm]: asset main.a3c51a280969fe60999f.js 370 KiB [emitted] [immutable] (name: main)
asset image.5a5cf525b93984277249218a2d711fb1.png 9.04 KiB [emitted] [immutable] [from: src/assets/image.png] (auxiliary name: main)
asset index.html 252 bytes [emitted]
runtime modules 1.84 KiB 6 modules
modules by path ./node_modules/ 336 KiB
  modules by path ./node_modules/webpack-dev-server/client/ 20.9 KiB 10 modules
  modules by path ./node_modules/html-entities/lib/*.js 61 KiB 5 modules
  modules by path ./node_modules/webpack/hot/ 1.58 KiB 3 modules
  modules by path ./node_modules/url/ 37.4 KiB 3 modules
  modules by path ./node_modules/querystring/*.js 4.51 KiB
    ./node_modules/querystring/index.js 127 bytes [built] [code generated]
    ./node_modules/querystring/decode.js 2.34 KiB [built] [code generated]
    ./node_modules/querystring/encode.js 2.04 KiB [built] [code generated]
modules by path ./src/ 491 bytes
  ./src/index.js 237 bytes [built] [code generated]
  ./src/util.js 168 bytes [built] [code generated]
  ./src/assets/image.png 86 bytes [built] [code generated]
webpack 5.38.1 compiled successfully in 3053 ms
i [wdm]: Compiled successfully.
```

Advantages

- code minification and obfuscation

```
(void 0===b||r.isEmptyObject(d))&&(a.nodeType?a[this.expand]=void 0:delete a[this.expand])),hasData:function(a){va
{[\\w\\W]*\\}|\\[\\[\\w\\W]*\\]}$/;Z=/[A-Z]/g;function $(a){return"true"===a?"false"!-a&&("null"===a?'null:a==>a;"":a:Y.test
.replace(Z,"-$&").toLowerCase(),c=a.getAttribute(d),"string"===typeof c){try{c=$(c)}catch(e){}X.set(a,b,c)}else c=void
(a,b,c){return X.access(a,b,c)},removeData:function(a,b){X.remove(a,b)},_data:function(a,b,c){return W.access(a,b,c)},
is[0],g=f&&f.attributes;if(void 0===a){if(this.length&&(e=X.get(f),1===f.nodeType&&W.get(f,"hasDataAttrs"))){c=g.leng
d,e[d])});W.set(f,"hasDataAttrs",!0)}return e}return"object"===typeof a?this.each(function(){X.set(this,a)}):T(this,fun
a)return b=(b||"fx")+"queue",d=W.get(a,b),c&&(!d||Array.isArray(c)?d=W.access(a,b,r.makeArray(c)):d.push(c)),d||[],de
,b),g=function(){r.dequeue(a,b)};"inprogress"===e&&(e=c.shift(),d--),e&&("fx"===b&&c.unshift("inprogress"),delete f.st
return W.get(a,c)||W.access(a,c,{empty:r.Callbacks("once memory").add(function(){W.remove(a,[b+"queue",c])}})})),r.fn.
length-c?r.queue(this[0],a):void 0===b?this:this.each(function(){var c=r.queue(this,a,b);r._queueHooks(this,a,"fx"
tion(){r.dequeue(this,a)}),clearQueue:function(a){return this.queue(a||"fx",[]),promise:function(a,b){var c,d=1,e=r.
f a&&(b=a,a=void 0),a=a||"fx";while(g-->c=W.get(f[g],a+"queueHooks"),c&&c.empty&&(d++,c.empty.add(h))){return h()},{e.pro
+1})=|)("+aa+")([a-z%]*$","i"),ca=["Top","Right","Bottom","Left"],da=function(a,b){return a-b||a,"none"===a.style.dis
a=function(a,b,c,d){var e,f,g={};for(f in b)g[f]=a.style[f],a.style[f]=b[f];e=c.apply(a,d||[]);for(f in b)a.style[f]=g
n(){return r.css(a,b,""),i=h(),j=c&&c[3]||(r.cssNumber[b]?""+"px"),k=(r.cssNumber[b]||"px"!-j&&+i)&&ba.exec(r.css(a,
=(f=h())/i)&&i=f&&-g)}return c&&(k+k||+i||0,e-c[1]?k+(c[1]+1)*c[2]:+c[2],d&&(d.unit=j,d.start=k,d.end=e)),e}var ga
ndChild(c.createElement(d)),e=r.css(b,"display"),b.parentNode.removeChild(b),"none"===e&&(e="block"),ga[d]=e,e)}functi
b?("none"===c&&(e[f]=W.get(d,"display"))||null,e[f]||(d.style.display="")),""===d.style.display&&da(d)&&(e[f]=ha(d))):"
splay=e[f]);return a}r.fn.extend({show:function(){return ia(this,!0)},hide:function(){return ia(this)},toggle:function
his).show():r(this).hide()}}));var ja=/^(?:checkbox|radio)$/i,ka=/<([a-z][^\\x20\\t\\r\\n\\f]+)/i,la=/^$/i/(?:java|ec
"</table>"],col:[2,"<table><colgroup>","</colgroup></table>"],tr:[2,"<table><tbody>","</tbody></table>"],td:[3,"<table>
ma tfoot ma colgroup ma caption ma thead ma th ma td:function pa(a,b){var c;return c="undefined"!-typeof a.getElemen
```

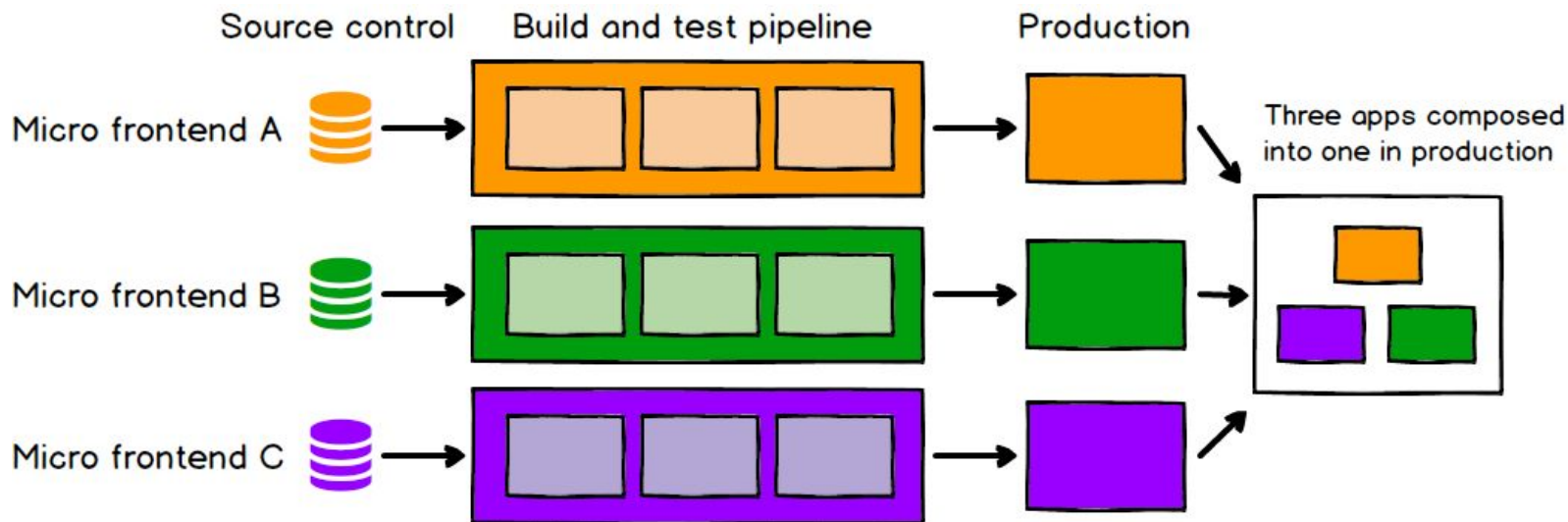

Advantages

- tree shaking



Advantages

- enable micro-frontends approach



Why should we use webpack?

- helps bundle javascript and static assets
- helps manage the dependency relationship and load your assets in dependency order
- using loaders webpack can transpile code with the latest features to ES5 syntax to enable old browsers support
- improve developers experience running dev server and watching for changes
- code minification and obfuscation
- tree shaking
- enable micro-frontend approach

Simple config

No config is needed*

* There are limitations:

- The entry point is src/index.js
- Output file is dist/main.js
- Production mode

Simple webpack.config.js

```
1  const path = require('path');
2  const HtmlWebpackPlugin = require('html-webpack-plugin');
3
4  module.exports = {
5    mode: 'production',
6    entry: './src/index.js',
7    output: {
8      path: path.resolve(__dirname, 'dist'),
9      filename: '[name].[hash].js'
10   },
11   module: {
12     rules: [ /* list of loaders */]
13   },
14   plugins: [ /* list of plugins */],
15   resolve: {
16     extensions: ['.js', '.ts', '...'],
17     alias: {}
18   },
19   devtool: 'source-map',
20   devServer: {
21     contentBase: path.join(__dirname, 'dist'),
22     port: 3000,
23   },
24  };
```

Entry

```
module.exports = {  
  entry: './src/index.js',  
};
```

```
module.exports = {  
  entry: ['./src/main_1.js', './src/main_2.js'],  
};
```

```
module.exports = {  
  entry: {  
    main: './src/main.js',  
    docs: './src/docs.js',  
    blog: './src/blog.js',  
  },  
};
```

Output

```
module.exports = {  
  output: {  
    path: path.resolve(__dirname, 'dist'),  
    filename: 'bundle.js'  
  },  
};
```

Loaders

```
module.exports = {
  module: {
    rules: [
      {
        test: /\.css$/,
        use: ['style-loader', 'css-loader']
      },
      {
        test: /\..(png|jpg|gif|svg)$/,
        loader: 'file-loader',
        options: {
          name: '[name].[ext]'
        }
      }
    ]
  },
};
```


Commonly used loaders

- [babel-loader](#) Loads ES6+ code and transpiles to ES5 using Babel
- [file-loader](#) resolves import on a file into a url and emits the file into the output directory.
- [ts-loader](#) Loads TypeScript 2.0+ like JavaScript
- [style-loader](#) Add exports of a module as style to DOM
- [css-loader](#) Loads CSS file with resolved imports and returns CSS code
- [sass-loader](#) Loads and compiles a SASS/SCSS file
- [postcss-loader](#) Loads and transforms a CSS/SSS file using PostCSS

Plugins

```
const HtmlWebpackPlugin = require('html-webpack-plugin');

module.exports = {
  plugins: [
    new HtmlWebpackPlugin()
  ],
};
```

Commonly used plugins

- [HtmlWebpackPlugin](#) creates html file automatically
- [MiniCssExtractPlugin](#) extracts CSS into separate files. It creates a CSS file per JS file which contains CSS.
- [TerserWebpackPlugin](#) uses terser to minify JavaScript
- [BundleAnalyzerPlugin](#) is used to visualize size of webpack output files with an interactive zoomable treemap

Mode

```
module.exports = {  
  mode: 'production',  
};
```

```
webpack --mode=development
```

```
module.exports = {  
  plugins: [  
    new webpack.EnvironmentPlugin({  
      NODE_ENV: 'development', // use 'development' unless process.env.NODE_ENV is defined  
      DEBUG: false,  
    })  
  ],  
};
```

Bundle size

```
webpack --mode=development  
assets by status 9.04 KiB [cached] 1 asset  
asset main.js 6.72 KiB [compared for emit] (name: main)  
asset index.html 231 bytes [compared for emit]  
runtime modules 1.72 KiB 5 modules  
cacheable modules 491 bytes  
  ./src/index.js 237 bytes [built] [code generated]  
  ./src/util.js 168 bytes [built] [code generated]  
  ./src/assets/image.png 86 bytes [built] [code generated]  
webpack 5.38.1 compiled successfully in 298 ms
```

```
webpack --mode=production  
assets by status 9.04 KiB [cached] 1 asset  
asset main.js 728 bytes [emitted] [minimized] (name: main)  
asset index.html 214 bytes [emitted]  
orphan modules 254 bytes [orphan] 2 modules  
runtime modules 1.06 KiB 2 modules  
./src/index.js + 2 modules 491 bytes [built] [code generated]  
webpack 5.38.1 compiled successfully in 506 ms
```

Dev Server

```
module.exports = {  
  devServer: {  
    contentBase: path.join(__dirname, 'dist'),  
    port: 8080,  
  },  
};
```

Installation

```
npm init -y
```

```
npm i -D webpack webpack-cli webpack-dev-server
```

Usage

package.json

```
"scripts": {  
  "build": "webpack"  
},
```

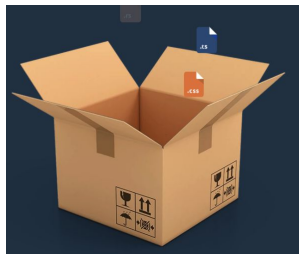
```
"scripts": {  
  "build": "webpack --config webpack.config.js"  
}
```

npm run build

Alternatives



Rollup



Parcel





Thank you!