



Codesmith +



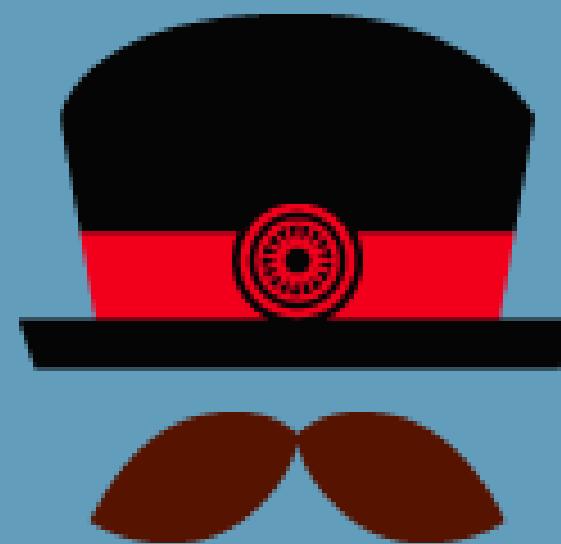
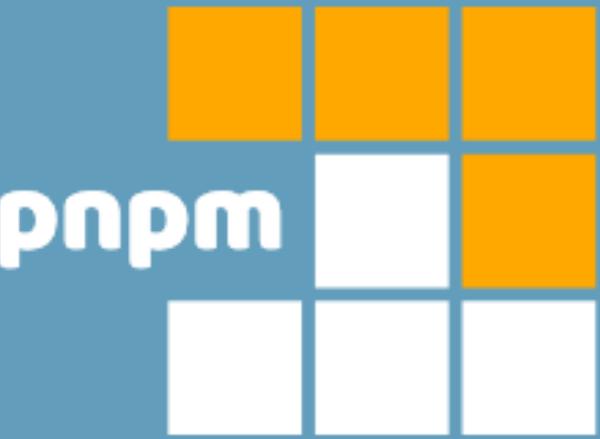
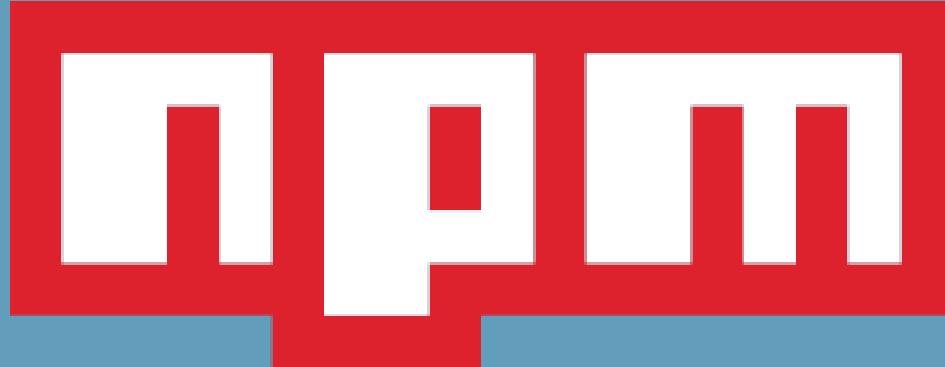
single sprout

TECH TALKS

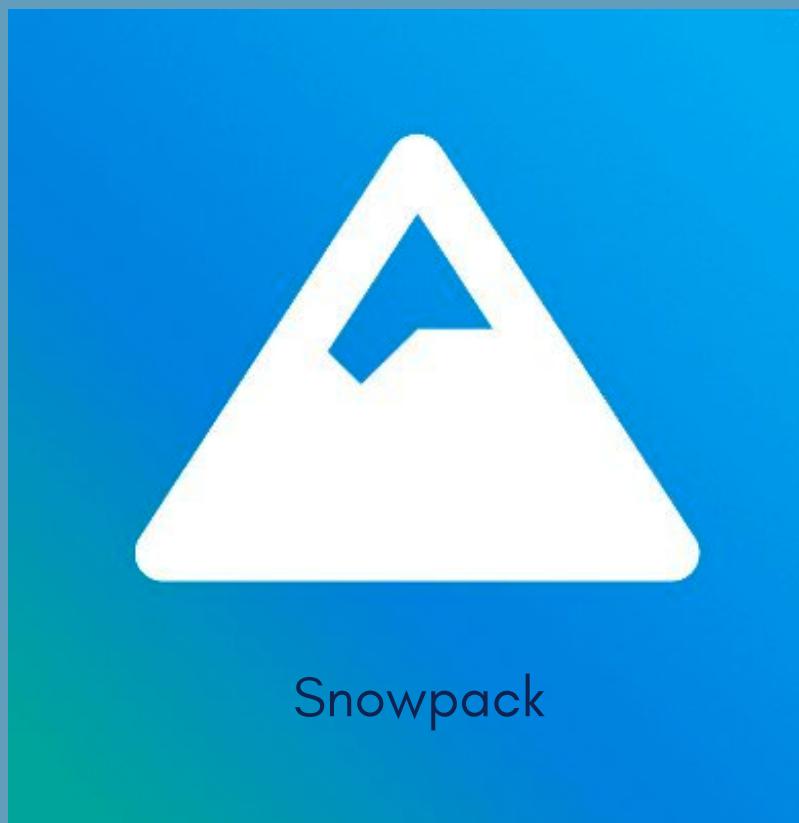
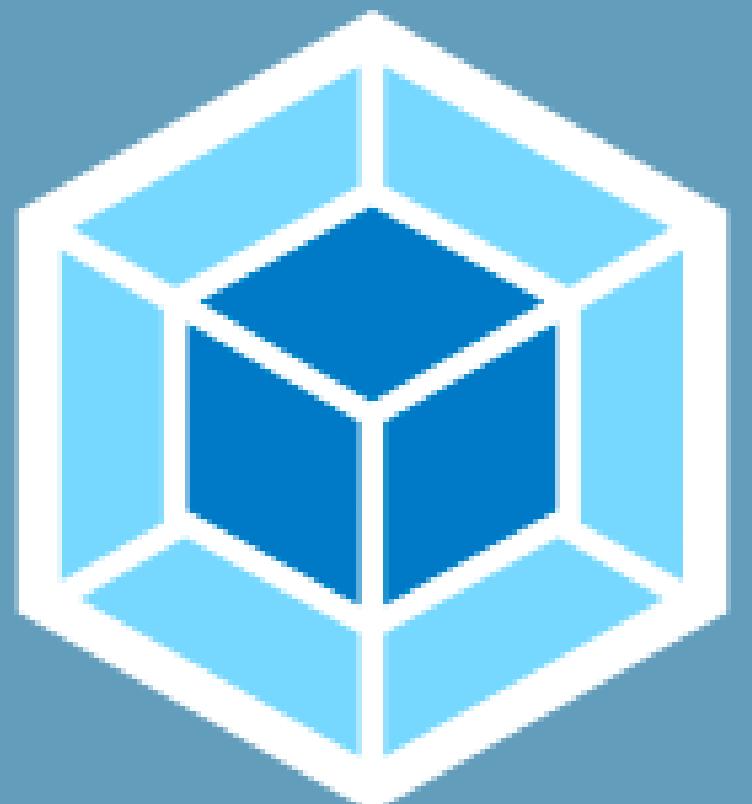
Build Tool Alternatives with Joey Ma

BUILD TOOL ALTERNATIVES

Joey Ma



YO



WHY?

Tools that help developers build.



core concepts:

- development code != production code
- tasks we can automate
- "install" vs "do"
- types of build tools

alternative:

- pnpm

DEVELOPMENT

index.js

```
1 import React from 'react'
2 import ReactDOM from 'react-dom'
3 import App from './App'
4 import {RecoilRoot} from 'recoil';
5
6 // import RecoilizeDebugger from 'recoilize';
7
8
9 ReactDOM.render(
10   <React.StrictMode>
11     <RecoilRoot>
12       /* <RecoilizeDebugger /> */
13       <App />
14     </RecoilRoot>
15   </React.StrictMode>,
16   document.getElementById('root'),
17 )
18
```

APP.js

```
1 import React from 'react'
2 import {Input} from './components/Input'
3 import {Stats} from './components/Stats'
4 import {Tasks} from './components/Tasks'
5 import {ThemeProvider, GlobalStyles, Page} from './components/theme'
6 import {Header, darkModeState} from './components/Header'
7 import { useRecoilValue } from 'recoil'
8
9
10 const Home = () => {
11   return (
12     <Page>
13       <Header />
14       <Stats />
15       <Tasks />
16       <Input />
17     </Page>
18   )
19 }
20
21 const App = () => [
22   const darkMode = useRecoilValue(darkModeState)
23   return (
24     <ThemeProvider darkMode={darkMode}>
25       <GlobalStyles />
26       <Home />
27     </ThemeProvider>
28   )
29 ]
30
31 export default App
32
```

box.js

```
1 import React from 'react';
2 import ReactDOM from 'react-dom';
3
4 console.log(colors);
5
6 const colorHeader = <h2 id="colorHead">Color Changer!</h2>;
7 ReactDOM.render(colorHeader, document.getElementById('header'));
8
9 class Board extends React.Component {
10   constructor(props) {
11     super(props);
12     this.state = {};
13   }
14
15   render() {
16     // notice we can render all of the tags in the array boxes by writing {boxes}.
17     // Any code appearing between curly braces in jsx will be evaluated as
18     // javascript.
19     // This allows us to do things like: <div id={myVar}>Example!</div>
20     const boxes = [];
21     return (
22       <div id="board">
23         <button className="btn">New Colors!</button>
24         {boxes}
25       </div>
26     );
27   }
28
29 ReactDOM.render(<Board />, document.getElementById('content'));
30
```

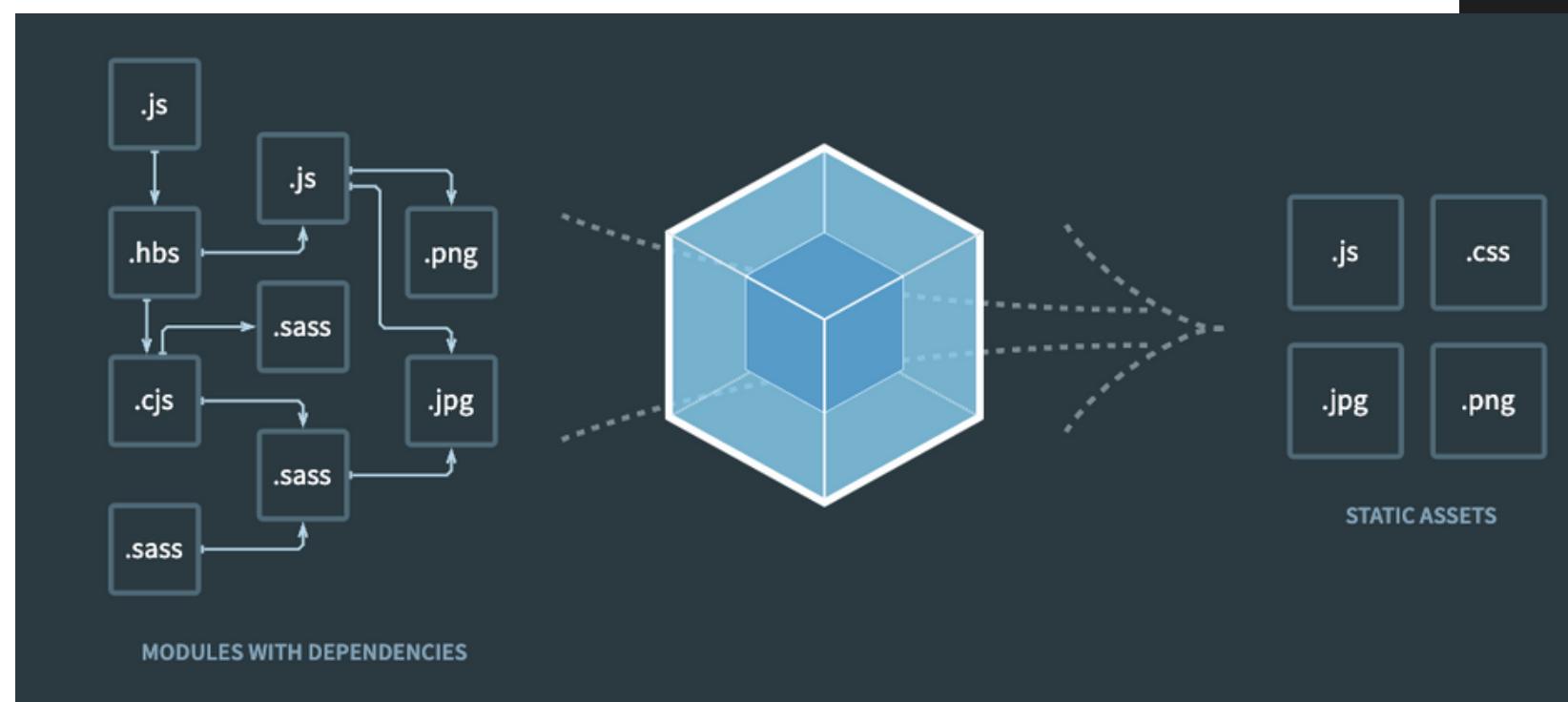
actions.js

```
1 import * as types from '../constants/actionType
2
3 export const sendSearchActionCreator = (data) =>
4   type: types.SEND_SEARCH,
5   payload: data,
6 };
7
8 export const LOGIN = (loginStatus) => ({
9   type: types.LOG_IN,
10  payload: loginStatus
11 });
12
13 export const acceptButtonActionCreator = () =>
14   type: types.ACCEPT_BUTTON,
15 };
16
17 export const rejectButtonActionCreator = (prevR
18   type: types.REJECT_BUTTON,
19   payload: prevRestaurantIndex,
20 };
21
22 export const favouritesButtonActionCreator = (c
23   type: types.FAVOURITES_BUTTON,
```

main.css

```
1  * {
2    font-family: Verdana, Geneva, Tahoma, sans-serif;
3    font-size: 16px;
4  }
5
6  .loginBackground {
7    display: flex;
8    flex-direction: column;
9    justify-content: center;
10   align-items: center;
11   background-image: url(https://images.unsplash.com/photo-1515003197210-e0cd71810b5f?ixlib=rb-1.2.1&ixid=MnwxMjA3fDB8MHxwaG90by1wYWdlfHx8fGVufDB8fHx8&auto=format&q=80);
12   background-position-x: center;
13   background-position-y: center;
14   height: 100%;
15   resize: both;
16 }
17
18 #logo {
19   padding: 10px;
20   border-radius: 15px;
21   // background-color: white;
22   // mix-blend-mode: hard-light;
23 }
24
25 .login {
```

PRODUCTION

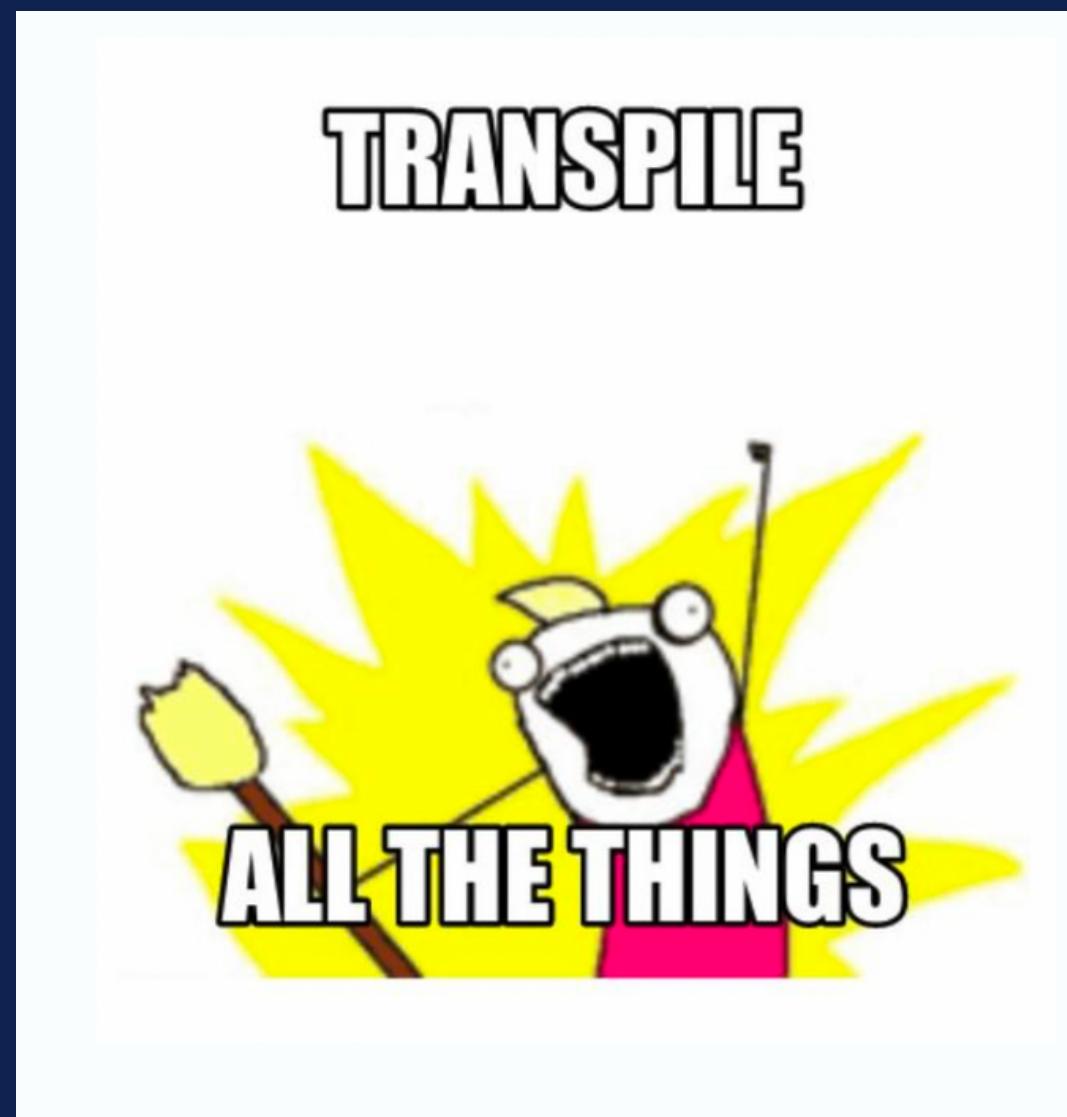


```
1 <!doctype html><html lang="en"><head><meta  
charset="UTF-8"><meta http-equiv="X-UA-Compatible"  
content="IE=edge"><meta name="viewport"  
content="width=device-width,  
initial-scale=1"><title>AlgoVerse</title><script  
defer="defer" src="bundle.js"></script><link href="main.css"  
rel="stylesheet"></head><body><div id="root"></div></body></html>
```

BUNDLING

TRANSPILATION

maintain browser compatibility



```
1 const es6func = (num) => num + 1;  
2  
3 const myArray = [1, 2, 3];  
4  
5 const myArray2 = [...myArray];
```

↓

```
1 "use strict";  
2  
3 var es6func = function es6func(num) {  
4   return num + 1;  
5 };  
6  
7 var myArray = [1, 2, 3];  
8 var myArray2 = [].concat(myArray);
```

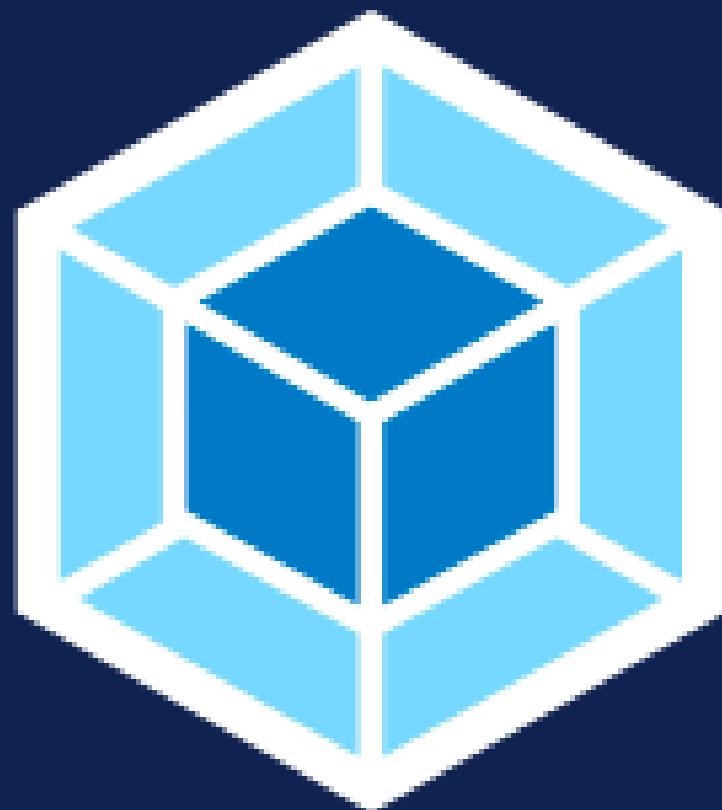
MINIFICATION

```
2 (( )=>{var e={669:(e,t,n)=>{e.exports=n(609)},592:(e,t,n)=>
{"use strict";var r=n(867),a=n(26),l=n(372),o=n(327),i=n(97),
u=n(109),s=n(985),c=n(61),f=n(655),d=n(263);e.exports=function
(e){return new Promise((function(t,n){var p,h=e.data,m=e.
headers,g=e.responseType;function y(){e.cancelToken&&e.
cancelToken.unsubscribe(p),e.signal&&e.signal.
removeEventListener("abort",p)}r.isFormData(h)&&delete m
["Content-Type"];var v=new XMLHttpRequest;if(e.auth){var b=e.
auth.username||"",w=e.auth.password?unescape
(encodedURIComponent(e.auth.password)):"";m.
Authorization="Basic "+b+ea(b+":"+w)}var k=i(e.baseURL,e.url);
function E(){if(v){var r="getAllResponseHeaders"in v?u(v.
getAllResponseHeaders()):null,l={data:g&&"text"!==g&&
"json"!==g?v.responseText:v.status,status:v.status,
statusText:v.statusText,headers:r,config:e,request:v};a(
(function(e){t(e),y()}),(function(e){n(e),y()}),l),v=null}if
(v.open(e.method.toUpperCase()),o(k,e.params,e.
paramsSerializer),!0),v.timeout=e.timeout,"onloadend"in v?v.
onloadend=E:v.onreadystatechange=function(){v&&4==v.
readyState&&(0!==v.status||v.responseURL&&0==v.responseURL.
indexOf("file:"))&&setTimeout(E)},v.onabort=function(){v&&(n(c
("Request aborted",e,"ECONNABORTED",v)),v=null)},v.
onerror=function(){n(c("Network Error",e,null,v)),v=null},v.
ontimeout=function(){var t=e.timeout?"timeout of "+e.timeout
+"ms exceeded":"timeout exceeded",r=e.transitional||f.
transitional;e.timeoutErrorMessage&&(t=e.timeoutErrorMessage),
n(c(t,e,r.clarifyTimeoutError?"ETIMEDOUT":"ECONNABORTED",v)),
v=null},r.isStandardBrowserEnv(){var S=(e.withCredentials||s
(k))&&e.xsrfCookieName?l.read(e.xsrfCookieName):void 0;S&&(m
[e.xsrfHeaderName]=S)},"setRequestHeader"in v&&r.forEach(m,
(function(e,t){void 0===h&&"content-type"===t.toLowerCase()?
delete m[t]:v.setRequestHeader(t,e)})),r.isDefined(e.
withCredentials)||!(v.withCredentials!=!e.withCredentials),g&&
```

- Reduces the final file size
- A further step of "uglifying" variable names can further minify the file size at the same time obscuring the code.

PACKAGING

putting the results of all prior steps as specified by the developer (usually done by the bundler)



WHAT ABOUT NPM!?

The other kind of build tools.

Even though the line can get blurry sometimes... Node & npm are two perfect examples, the grandparents, of build tools. The doer and the installer.

Node executes the file, npm installs the file (and further manages dependencies, node modules, etc.)



INSTALLERS VS DOERS

Installs

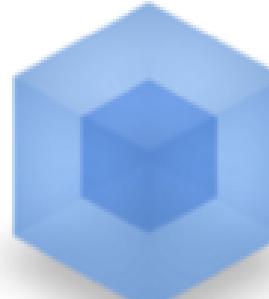


BOWER



YEOMAN

Does



webpack
MODULE BUNDLER



Brunch

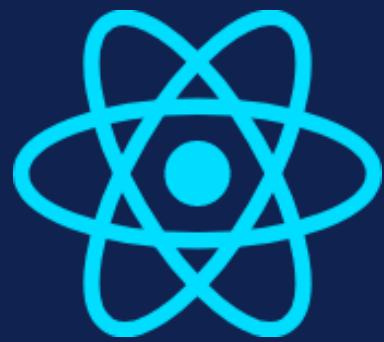


Snowpack



INSTALL

- Node.js
- Angular.js
- React.js
- back end web application framework
- testing libraries
- other front end build tools



Express
A X I O S

DO

- Bundling
- Transpiling
- Minifying
- Uglifying
- Packaging



TYPES



package managers

module bundlers

task runners

code analyzers (or Linters)



performant npm

- Its goal is to provide a faster and more efficient package manager.
- inspired by ied by Alexander Gugel
- created by Zoltan Kochan
- both of whom are just cool individual developers



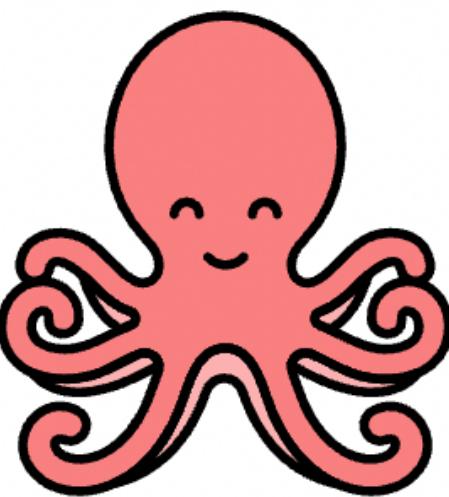
Fast

pnpm is up to 2x faster than the alternatives



Efficient

Files inside `node_modules` are linked from a single content-addressable storage



Supports monorepos

pnpm has built-in support for multiple packages in a repository



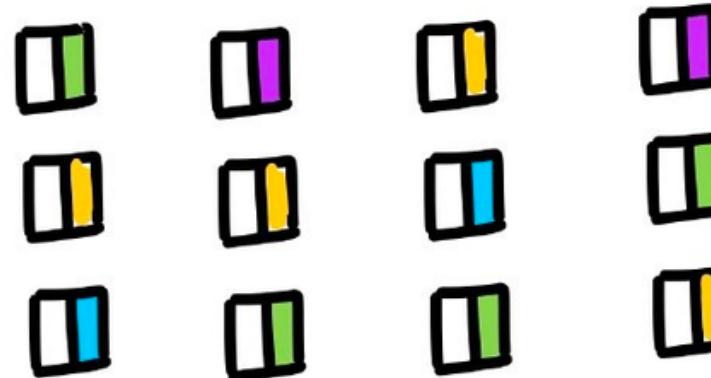
Strict

pnpm creates a non-flat `node_modules` by default, so code has no access to arbitrary packages

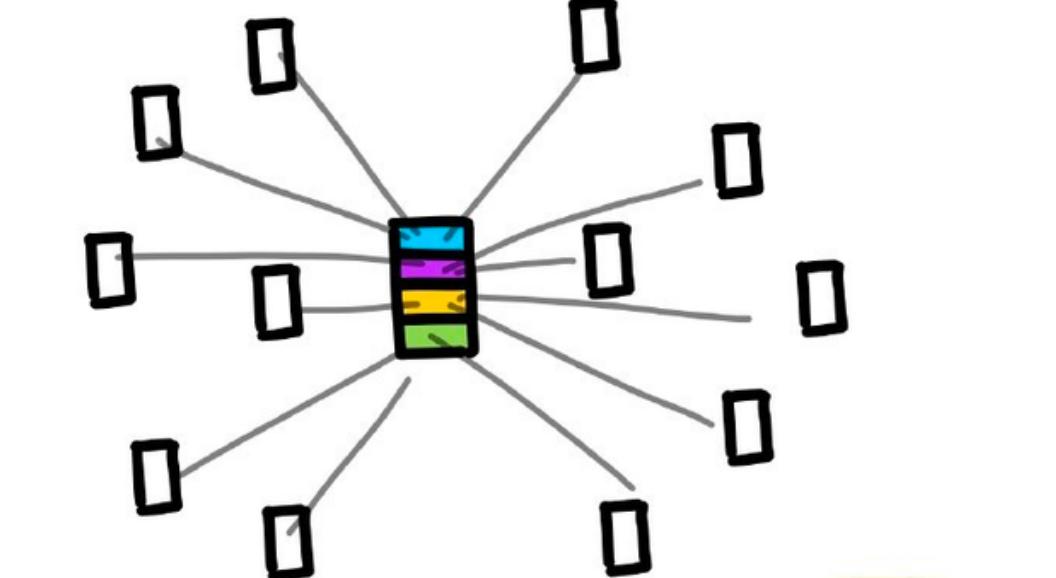
THE IDEA



- saves disk space
- faster install time



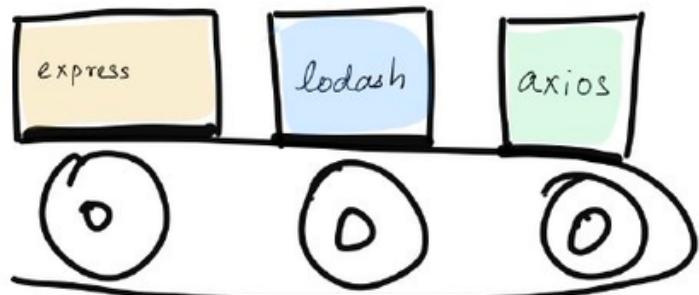
why maintain separate dependencies



If you can have **single copy** of them?

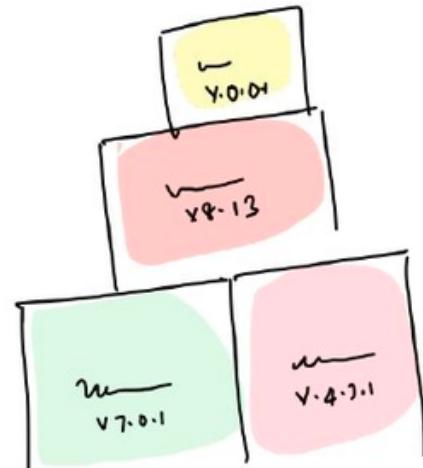
HOW DOES IT WORK?

1 PNPM has a content addressable filestore



2

what does that mean?
files can be retrieved
based on content & not by
filename



Git is a popular example.
For every file, you have a
hash id

= **a36d7e6c391...**

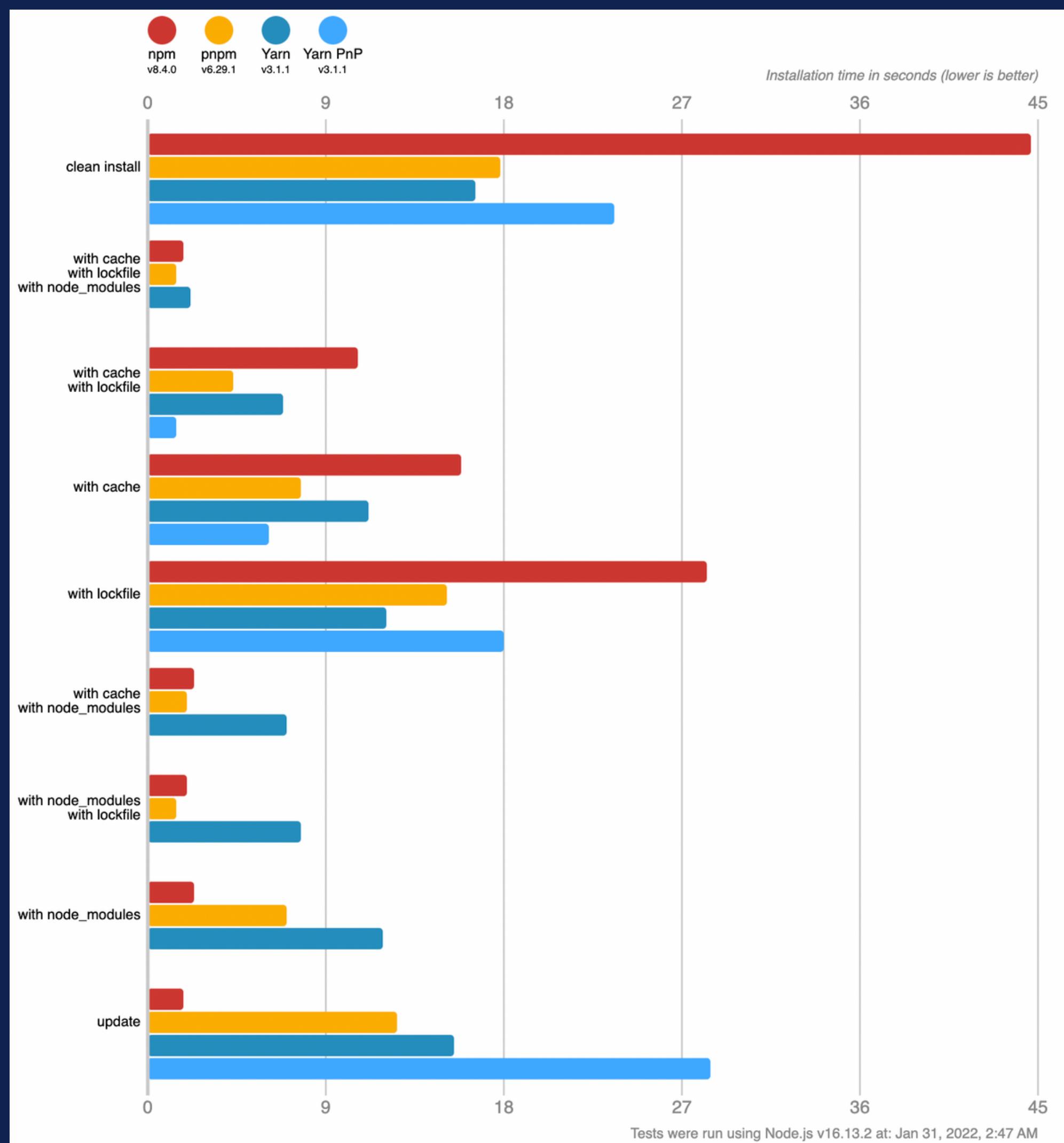
a duplicate content will have the
same id

3

If PNPM already has that
package content, it simply
creates a alias (hardlink)
hardlinks do not occupy disk space



| npm | Yarn | pnpm |
|--------------------|---------------------|---------------------|
| npm install | yarn install | pnpm install |
| npm update | yarn upgrade | pnpm update |



CONCLUSION

keeping up with the Build Tool Alternatives

TMI

Too many front-end build tools can make you feel overwhelmed. But do not worry – once you make sense of the tools, you will realize that they are here to make your life easier, not more difficult.

TL; DR

Start simple without them, you'll want them soon enough.
Node & npm are old-school, but are still super helpful.
Learn what you need; don't let some build tools' steep learning curve slow you down!

Future of Build Tools

The current popular BTs such as npm and webpack are likely here to stay, but many developers are also open to trying out new Build Tool Alternatives. Who knows? Maybe you will be impressed by them as well!

Resources

<https://developerexperience.io/practices/javascript-front-end-build-tools>



<https://www.npmjs.com/>



<https://yarnpkg.com/>



<https://pnpm.io/>

<https://rollupjs.org/guide/en/>



<https://www.voitanos.io/blog/npm-yarn-pnpm-which-package-manager-should-you-use-for-sharepoint-framework-projects/>



Thank you for listening



JOEY MA



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