Namaste React Namaste React (Ep. 02 Igniting our App - HW)

Chapter 02 (Igniting our App)

What is NPM?

Package manager for Javascript runtime environment Node.js
free, open-source registry and library of JavaScript dependencies.

What is Parcel/Webpack? Why do we need it?

Parcel and Webpack = JavaScript bundlers.

Bundlers
Combine JavaScript files, CSS, and images into a production ready build for the browser. The goal is to minimise HTTP requests, load less files, and only necessary code and improve page load performance

What Is A JavaScript Bundler? - CodeJourney.net

What is `.parcel-cache`

Root-level directory stores cache used by Parcel during the bundling process.

Benefits:

- **Speed**: Improves subsequent build times. How ? Do not have to reprocess unchanged files during bundling.

What is npx?

Package runner tool.

Executes npm packages without installing them globally on your system.
If the package isn't installed locally, npx fetches from npm registry and runs it.

Advantages Over npm

1. Prevents cluttering your system with global packages and reduces potential version conflicts.
2. Always runs the latest version
3. Ideal for running packages on a one-time basis without installing them permanently.

Eg. npx create-react-app my-app

`dependencies` vs `devDependencies`

Two types of dependencies

- Dev dependency (required for development only)
  npm install (automatically install dependencies in your local env. Not in other user's environment)

- Normal dependency (required for dev + production)
  npm install (automatically install dependencies)

Tree Shaking

optimization technique in Parcel

analyses the imports and exports of each module and removes unused code from the final bundle. (Thus, reducing build size, and improving load times)

If you use CSS modules, unused classes will be removed automatically

Hot Module Replacement

A development feature that updates modules in a running application without needing a full reload.

See update in UI and logic in real-time without resetting application state

Parcel supports HMR out of the box

Parcel Superpowers (Parcel)

1. Zero config bundler as compared to Webpack
2. Builtin dev server (http://localhost:1234) (Need HTTPS? --https flag)
3. Hot reloading (automatically rebuilds changed files and UI updates)
4. beautiful diagnostics (in browser and terminal)
5. multi-core architecture that parallelizes work across all cores
6. Tree shaking (remove unused code)
7. Minification (removing whitespace, renaming variables to shorter names)
8. Compressing bundles using Gzip and Brotl (not enabled by default)
9. Image Optimization (resizing, changing file type, and quality)
10. Code Splitting (split application code into smaller bundle sizes, load on demand)
11. Transpilation (convert source code from one programming language to another)
12. Differential bundling (shipping different bundles for different target browsers)

package.json` and `package-lock.json`

package.json

- Configuration file for npm
- Tracks dependencies with version ranges (~ and ^)
- Define what your project needs broadly.

package-lock.json

- Automatically generated using npm install
- Tracks complete dependency tree with exact version locked
- Ensures everyone gets the same versions of dependencies.

Do not modify `package-lock.json`

Reasons:

1. Install incompatible versions that break your application
2. Dependency conflicts
3. Loss of Integrity and consistency (integrity hashes ensure the downloaded package is exactly what is expected. Manual edits can disrupt this integrity.)