

Practical – 8

GitHub Link: <https://github.com/Devsharma511/NodeJs.git>

1. Goal: Programmatically install a package into a sandbox folder with deterministic package-lock.json .

2. Tasks: Write a script that:

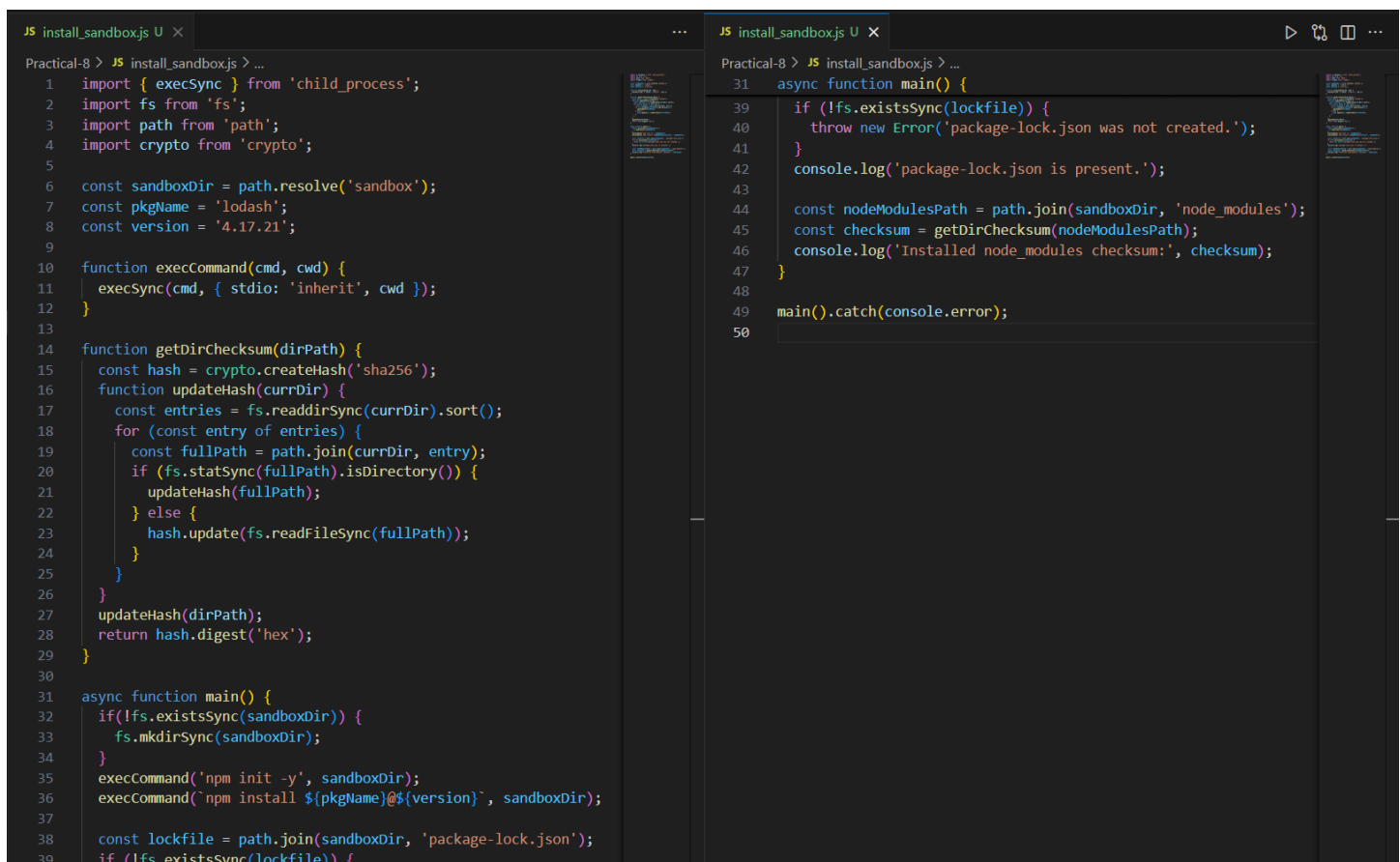
Creates an isolated node_modules in ./sandbox.

Installs a specific version of a package programmatically using npm CLI and captures lockfile.

Verifies installed tree checksum.

Project Structure:

1. install_sandbox.js:



```
JS install_sandbox.js U X
Practical-8 > JS install_sandbox.js > ...
1  import { execSync } from 'child_process';
2  import fs from 'fs';
3  import path from 'path';
4  import crypto from 'crypto';
5
6  const sandboxDir = path.resolve('sandbox');
7  const pkgName = 'lodash';
8  const version = '4.17.21';
9
10 function execCommand(cmd, cwd) {
11   execSync(cmd, { stdio: 'inherit', cwd });
12 }
13
14 function getDirChecksum(dirPath) {
15   const hash = crypto.createHash('sha256');
16   function updateHash(currDir) {
17     const entries = fs.readdirSync(currDir).sort();
18     for (const entry of entries) {
19       const fullPath = path.join(currDir, entry);
20       if (fs.statSync(fullPath).isDirectory()) {
21         updateHash(fullPath);
22       } else {
23         hash.update(fs.readFileSync(fullPath));
24       }
25     }
26   }
27   updateHash(dirPath);
28   return hash.digest('hex');
29 }
30
31 async function main() {
32   if (!fs.existsSync(sandboxDir)) {
33     fs.mkdirSync(sandboxDir);
34   }
35   execCommand('npm init -y', sandboxDir);
36   execCommand(`npm install ${pkgName}@${version}`, sandboxDir);
37
38   const lockfile = path.join(sandboxDir, 'package-lock.json');
39   if (!fs.existsSync(lockfile)) {
40
41   JS install_sandbox.js U X
42   Practical-8 > JS install_sandbox.js > ...
43   31  async function main() {
44   39    if (!fs.existsSync(lockfile)) {
45   40      throw new Error('package-lock.json was not created.');
```

Output:

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS  GITLENS

● PS C:\Users\sharm\nodejs> cd Practical-8
● PS C:\Users\sharm\nodejs\Practical-8> node install_sandbox.js
Wrote to C:\Users\sharm\nodejs\Practical-8\sandbox\package.json:

{
  "name": "sandbox",
  "version": "1.0.0",
  "description": "",
  "main": "index.js",
  "scripts": {
    "test": "echo \"Error: no test specified\" && exit 1"
  },
  "keywords": [],
  "author": "",
  "license": "ISC"
}

added 1 package, and audited 2 packages in 2s

found 0 vulnerabilities
package-lock.json is present.
Installed node_modules checksum: a9ab62cf68fc123cfb2a79181e28fe5be40afe1ef5cee4554a34e641dc2d3ae6
❖ PS C:\Users\sharm\nodejs\Practical-8> 
```