

# Practical 8

Link to my GitHub repository:

<https://github.com/RaviThakur322/Node-JS-Practical-GF2023485999/tree/main>

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

Task: 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.

## 1. sandbox-installer.js

```
1 import { spawn } from 'child_process';
2 import { promises as fs } from 'fs';
3 import path from 'path';
4
5 // --- Configuration ---
6 const SANDBOX_DIR = path.join(process.cwd(), 'sandbox');
7 const PACKAGE_TO_INSTALL = 'chalk';
8 const PACKAGE_VERSION = '4.1.2'; // A specific, older version for determinism
9 const fullPackageId = `${PACKAGE_TO_INSTALL}@${PACKAGE_VERSION}`;
10
11 /**
12  * Executes a shell command and streams its output, returning a promise.
13  * @param {string} command - The command to execute (e.g., 'npm').
14  * @param {string[]} args - The arguments for the command.
15  * @param {import('child_process').SpawnOptions} options - Spawn options.
16  * @returns {Promise<void>} A promise that resolves on successful exit, rejects on error.
17 */
18 function runCommand(command, args, options = {}) {
19   return new Promise((resolve, reject) => {
20     console.log(`\n  Running: ${command} ${args.join(' ')}`);
21     const child = spawn(command, args, { stdio: 'pipe', ...options });
22
23     // Stream stdout and stderr to the parent console
24     child.stdout.pipe(process.stdout);
25     child.stderr.pipe(process.stderr);
26
27     child.on('error', (error) => {
28       reject(new Error(`Failed to start subprocess. ${error.message}`));
29     });
30
31     child.on('close', (code) => {
```

## Output:

```
(Use `node --trace-warnings ...` to show where the warning was created)
✓ Sandbox directory created.
✓ Minimal package.json created.

--- Step 2: Installing chalk@4.1.2 into the sandbox ---

☒ Running: npm install chalk@4.1.2 --prefix /Users/ravithakur/Documents/GitHub/Node-JS-Practical-GF2023485999/sandbox --no-save
✓ chalk@4.1.2 installed successfully.

--- Step 3: Verifying the installation ---
```