ASSIGNMENT

Name:V.ABHILASH
Hall ticket number:2303a51227
Batch-01
Date:-19-01-2025

1. Implementing CRUD Operations

You implement Create, Read, Update, and Delete operations by calling specific methods on your Sequelize model objects within your controller logic.

- **Create**: Use the `.create()` method to insert a new row into the database.
- **Read**: Use `.findAll()` to retrieve all records or `.findByPk(id)` to find a specific entry by its primary key.
- **Update**: Use the `.update()` method, which requires a `where` clause to specify which record to modify.
- **Delete**: Use the `.destroy()` method with a `where` clause to remove records from the database.

2. Data Validation and Constraints

Sequelize handles data integrity at both the application level and the database level:

- **Model Validation**: These are defined in the model schema (e.g., `isEmail: true`, `len: [2, 20]`) and are checked before the query is sent to the database.
- **Constraints**: These are database-level rules such as `allowNull: false`, `unique: true`, or foreign key restrictions that prevent invalid data from being stored.

3. Defining Relationships

Relationships are defined in your model configuration files to link different tables together.

- **One-to-Many**: For a platform where one course has many enrollments, you use `Course.hasMany(Enrollment)` and `Enrollment.belongsTo(Course)`.
- **Many-to-Many**: If a student can join many courses and a course has many students, you use `User.belongsToMany(Course, { through: 'Enrollments' })`.

4. Role of Sequelize Methods

These built-in methods act as an abstraction layer, translating JavaScript code into SQL queries:

Method	Role	SQL Equivalent
`create`	Inserts a new record.	`INSERT INTO`

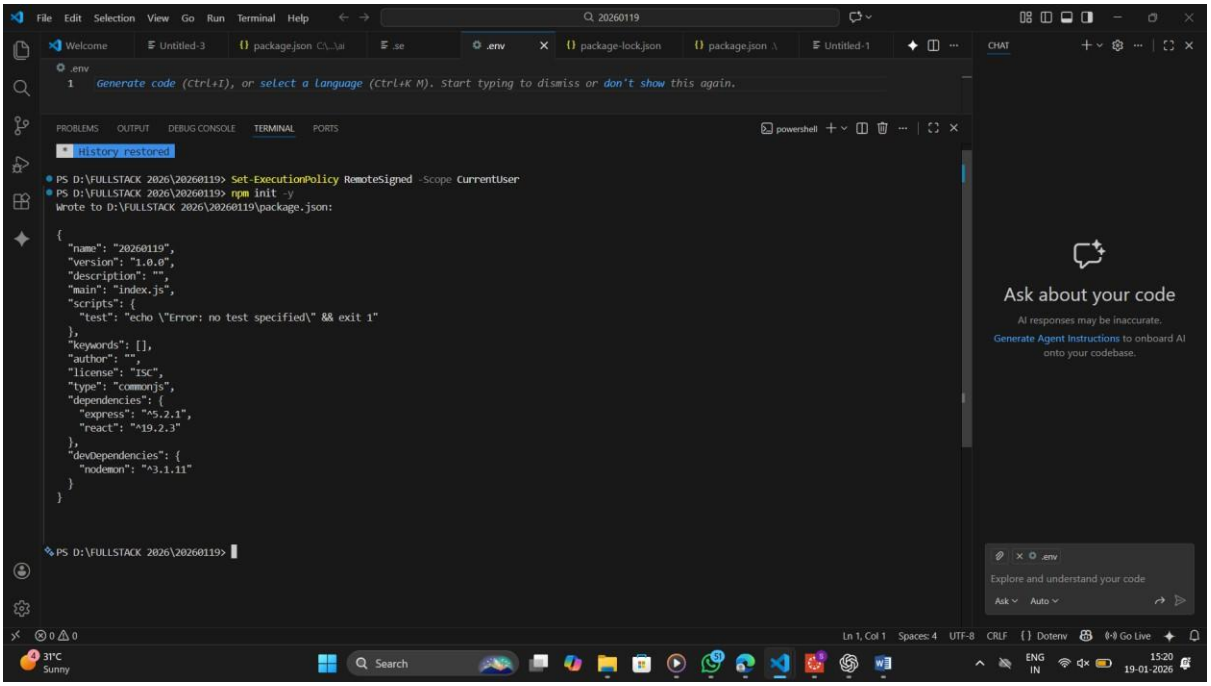
Method	Role	SQL Equivalent
`findAll`	Retrieves all records.	`SELECT *`
`findByPk`	Retrieves one record by ID.	`SELECT ... WHERE id = x`
`update`	Modifies existing records.	`UPDATE ... SET`
`destroy`	Removes records.	`DELETE FROM`

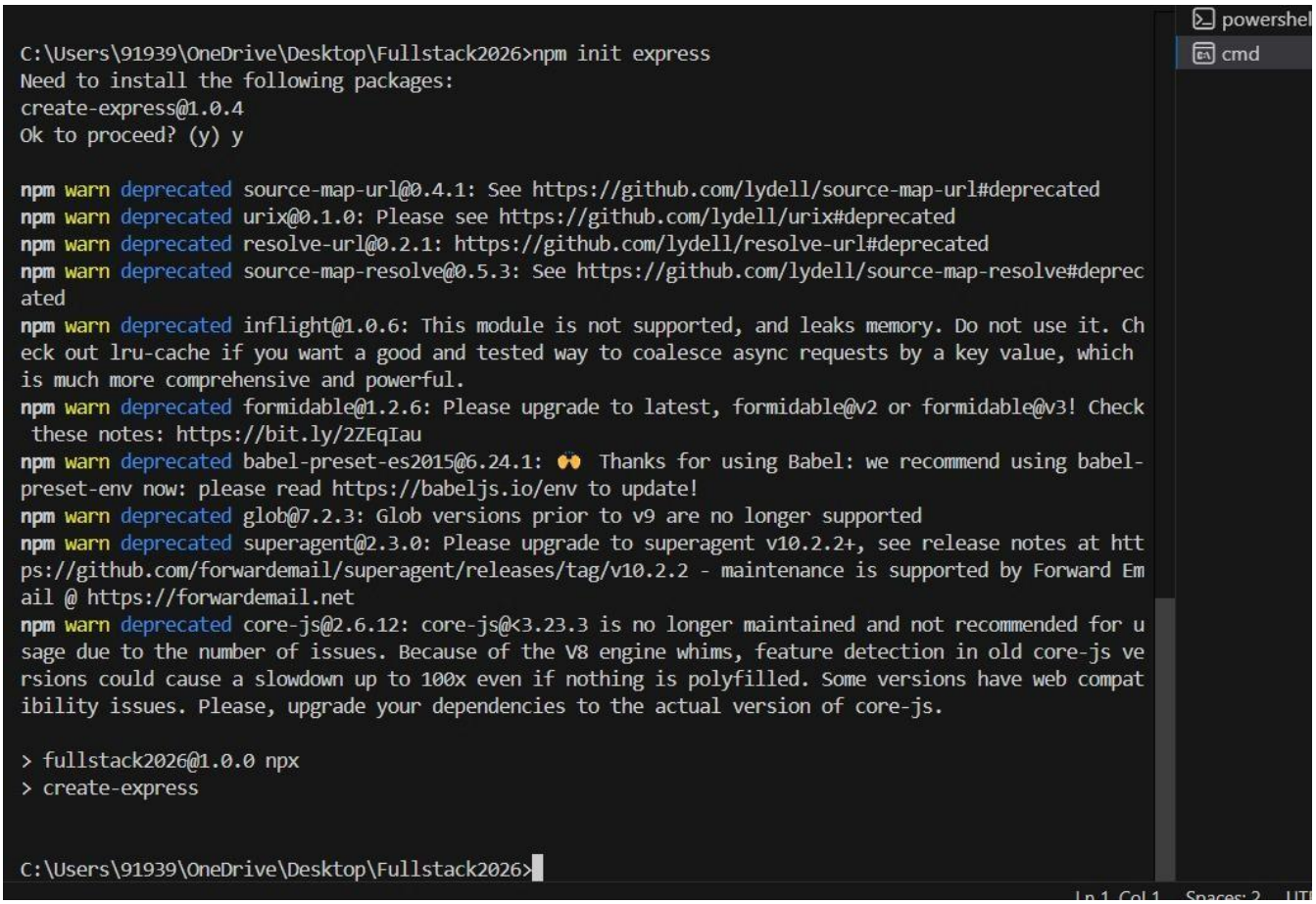
5. Handling Database Errors Gracefully

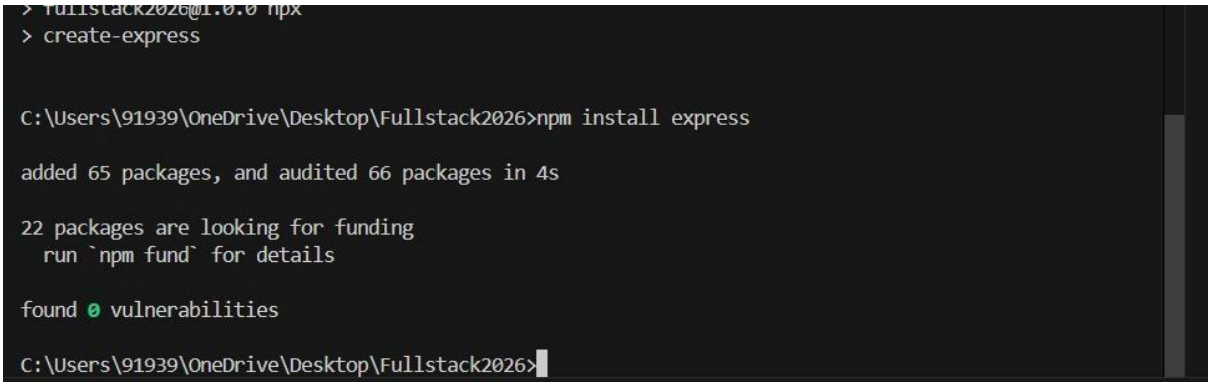
To prevent your server from crashing during database issues, you should use a structured error-handling approach:

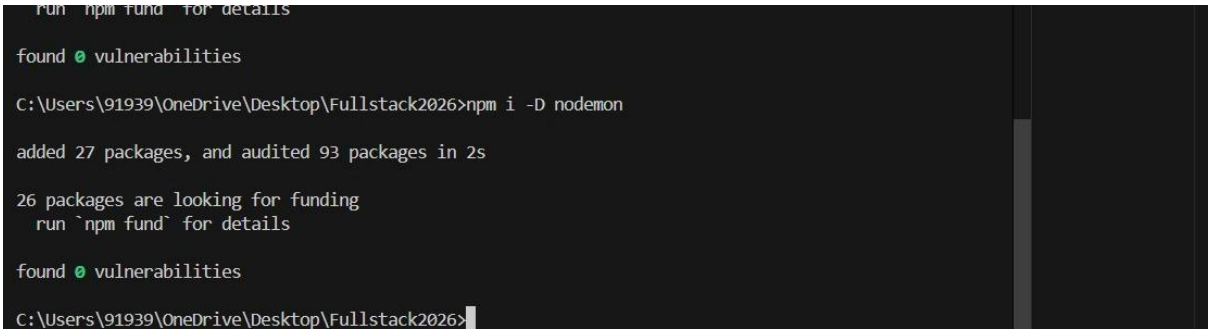
- **Async/Await**: Use `try/catch` blocks or an `asyncHandler` middleware (as seen in your `app.js`) to catch rejected promises.
- **Middleware**: Pass errors to a global `errorHandler` (like the one imported in your `app.js`) to send a clean JSON response back to the client.
- **Specific Errors**: Check for specific Sequelize error types, such as `SequelizeValidationError` or `SequelizeUniqueConstraintError`, to provide helpful feedback to the user.

Images




powershel
cmd
C:\Users\91939\OneDrive\Desktop\Fullstack2026>npm init express
Need to install the following packages:
create-express@1.0.4
Ok to proceed? (y) y
npm warn deprecated source-map-url@0.4.1: See https://github.com/lydell/source-map-url#deprecated
npm warn deprecated urix@0.1.0: Please see https://github.com/lydell/urix#deprecated
npm warn deprecated resolve-url@0.2.1: https://github.com/lydell/resolve-url#deprecated
npm warn deprecated source-map-resolve@0.5.3: See https://github.com/lydell/source-map-resolve#deprecated
npm warn deprecated inflight@1.0.6: This module is not supported, and leaks memory. Do not use it. Check out lru-cache if you want a good and tested way to coalesce async requests by a key value, which is much more comprehensive and powerful.
npm warn deprecated formidable@1.2.6: Please upgrade to latest, formidable@v2 or formidable@v3! Check these notes: https://bit.ly/2ZEqIau
npm warn deprecated babel-preset-es2015@6.24.1: Thanks for using Babel: we recommend using babel-preset-env now: please read https://babeljs.io/env to update!
npm warn deprecated glob@7.2.3: Glob versions prior to v9 are no longer supported
npm warn deprecated superagent@2.3.0: Please upgrade to superagent v10.2.2+, see release notes at https://github.com/forwardemail/superagent/releases/tag/v10.2.2 - maintenance is supported by Forward Email @ https://forwardemail.net
npm warn deprecated core-js@2.6.12: core-js@<3.23.3 is no longer maintained and not recommended for usage due to the number of issues. Because of the V8 engine whims, feature detection in old core-js versions could cause a slowdown up to 100x even if nothing is polyfilled. Some versions have web compatibility issues. Please, upgrade your dependencies to the actual version of core-js.
> fullstack2026@1.0.0 npx
> create-express
C:\Users\91939\OneDrive\Desktop\Fullstack2026>


> fullstack2026@1.0.0 npx
> create-express
C:\Users\91939\OneDrive\Desktop\Fullstack2026>npm install express
added 65 packages, and audited 66 packages in 4s
22 packages are looking for funding
run `npm fund` for details
found 0 vulnerabilities
C:\Users\91939\OneDrive\Desktop\Fullstack2026>


run `npm fund` for details
found 0 vulnerabilities
C:\Users\91939\OneDrive\Desktop\Fullstack2026>npm i -D nodemon
added 27 packages, and audited 93 packages in 2s
26 packages are looking for funding
run `npm fund` for details
found 0 vulnerabilities
C:\Users\91939\OneDrive\Desktop\Fullstack2026>

Node.js v24.13.0
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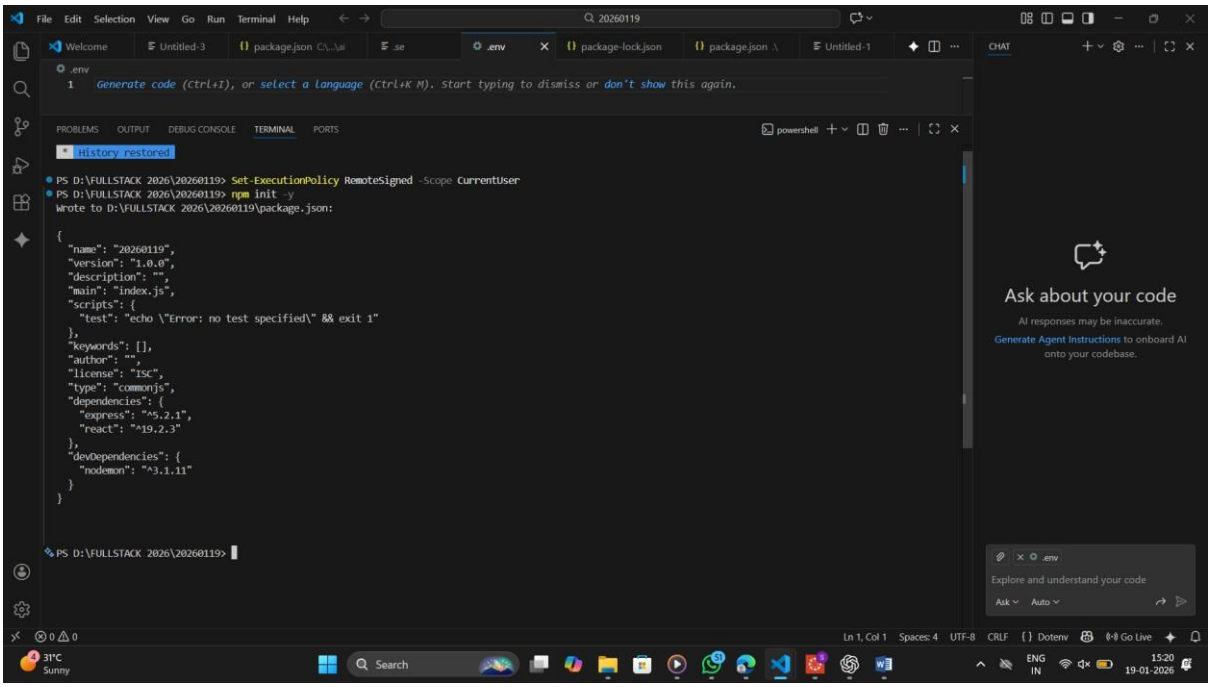
>> "name": "Sai Tejaswi"
>> "Gmail":"Teju2005@gmail.com"
>> }


File Edit Selection View Go Run Terminal Help
20260119
Welcome
Untitled-3
package.json
.se
.env
package-lock.json
package.json
Untitled-1
CHAT
.env
1 Generate code (Ctrl+I), or select a language (Ctrl+K M). Start typing to dismiss or don't show this again.
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
powershell
History restored
PS D:\FULLSTACK 2026\20260119> Set-ExecutionPolicy RemoteSigned -Scope CurrentUser
PS D:\FULLSTACK 2026\20260119> npm init -y
Wrote to D:\FULLSTACK 2026\20260119\package.json:
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"name": "20260119",
"version": "1.0.0",
"description": "",
"main": "index.js",
"scripts": {
"test": "echo \"Error: no test specified\" && exit 1"
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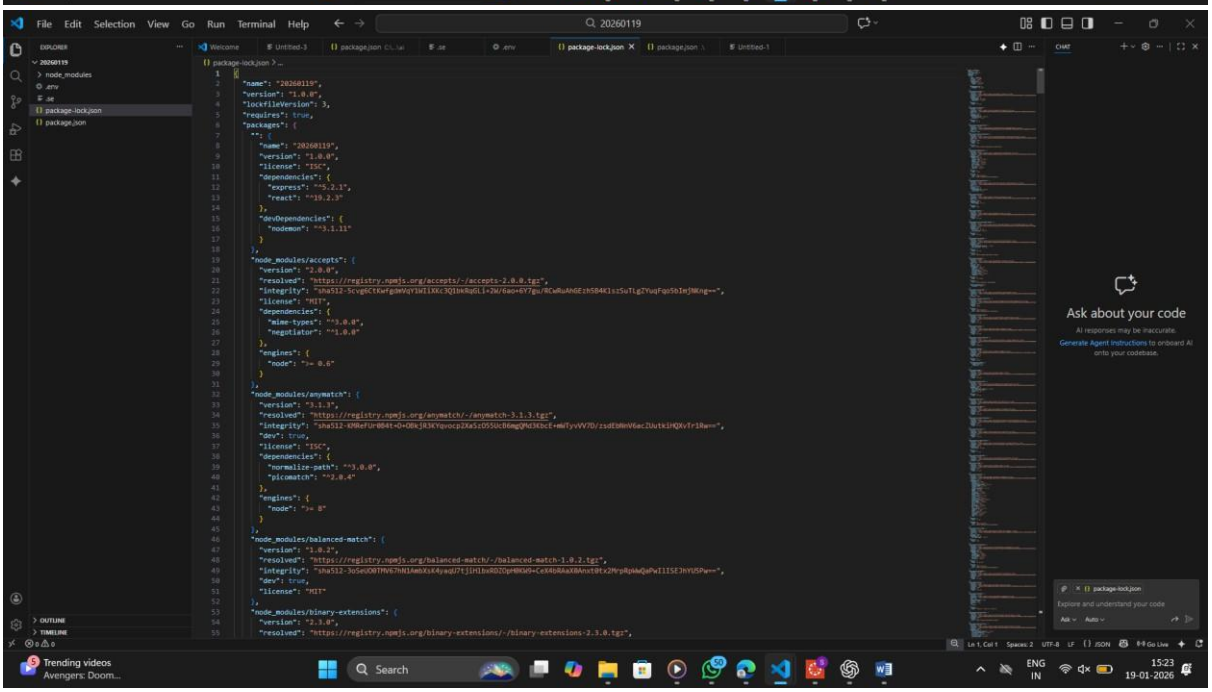
"keywords": [],
"author": "",
"license": "ISC",
"type": "commonjs",
"dependencies": {
"express": "^5.2.1",
"react": "^19.2.3"
},
"devDependencies": {
"nodemon": "^3.1.11"
}
}
PS D:\FULLSTACK 2026\20260119>
Ask about your code
AI responses may be inaccurate.
Generate Agent Instructions to onboard AI onto your codebase.
.env
Explore and understand your code
Ask
Auto
Ln 1, Col 1 Spaces: 4 UTF-8 CRLF Dotenv Go Live
31°C
Sunny
Search
ENG
IN
15:20
19-01-2026


File Edit Selection View Go Run Terminal Help
20260119
EXPLORER
20260119
node_modules
.env
.se
package-lock.json
package.json
Welcome
Untitled-3
package.json
.se
.env
package-lock.json
package.json
Untitled-1
CHAT
package-lock.json > ...
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"": {
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"react": "^19.2.3"
},
"devDependencies": {
"nodemon": "^3.1.11"
}
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"license": "MIT",
"dependencies": {
"mime-types": "^3.0.0",
"negotiator": "^1.0.0"
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"node_modules/binary-extensions": {
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"resolved": "https://registry.npmjs.org/binary-extensions/-/binary-extensions-2.3.0.tgz",
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Ln 1, Col 1 Spaces: 2 UTF-8 LF JSON Go Live
Trending videos
Avengers: Doom...
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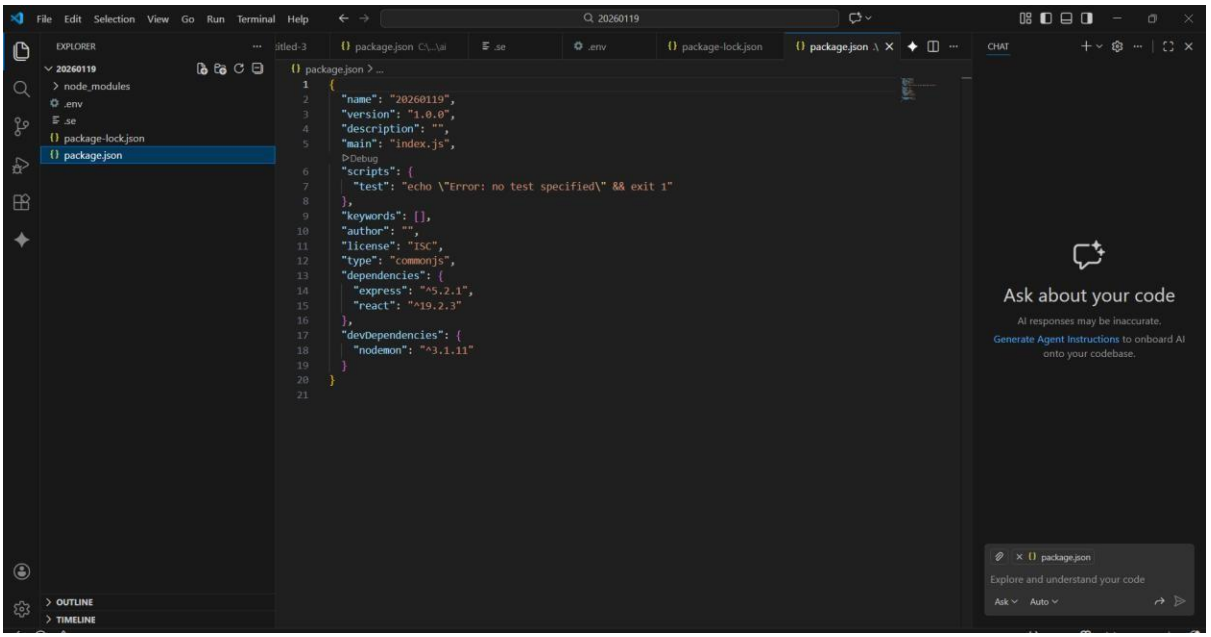
File Edit Selection View Go Run Terminal Help
20260119
EXPLORER
20260119
node_modules
.env
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package-lock.json
package.json
package.json C:\...\ai
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CHAT
{
"name": "20260119",
"version": "1.0.0",
"description": "",
"main": "index.js",
Debug
"scripts": {
"test": "echo \"Error: no test specified\" && exit 1"
},
"keywords": [],
"author": "",
"license": "ISC",
"type": "commonjs",
"dependencies": {
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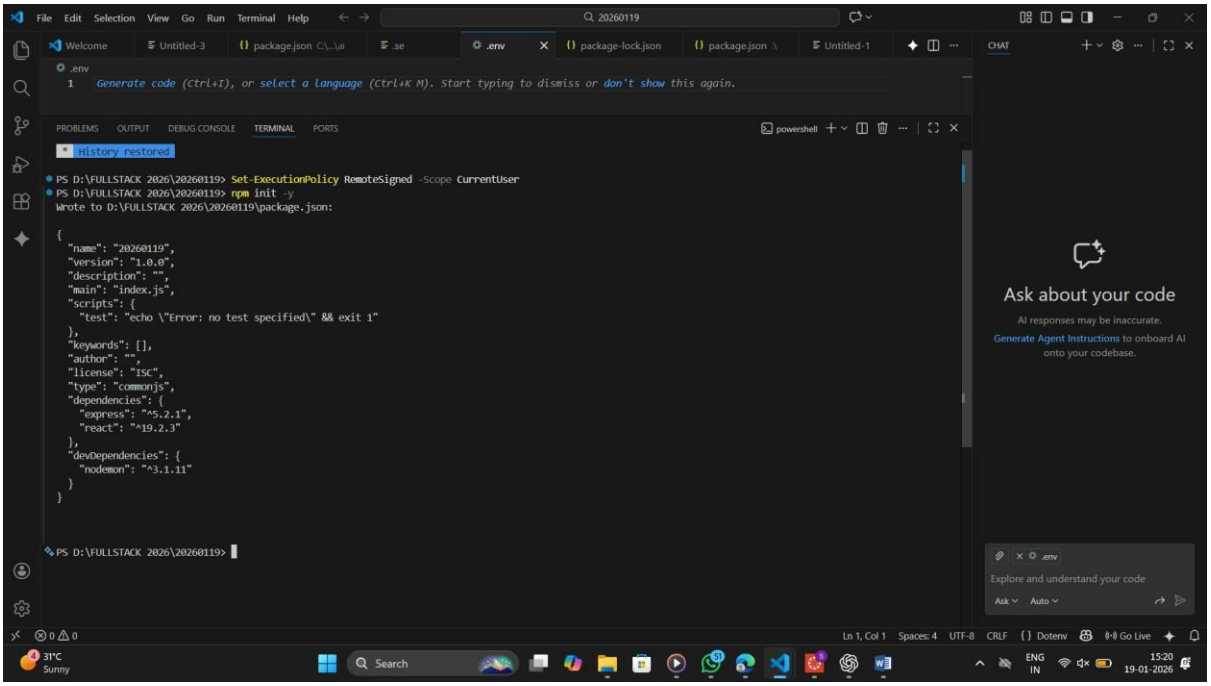
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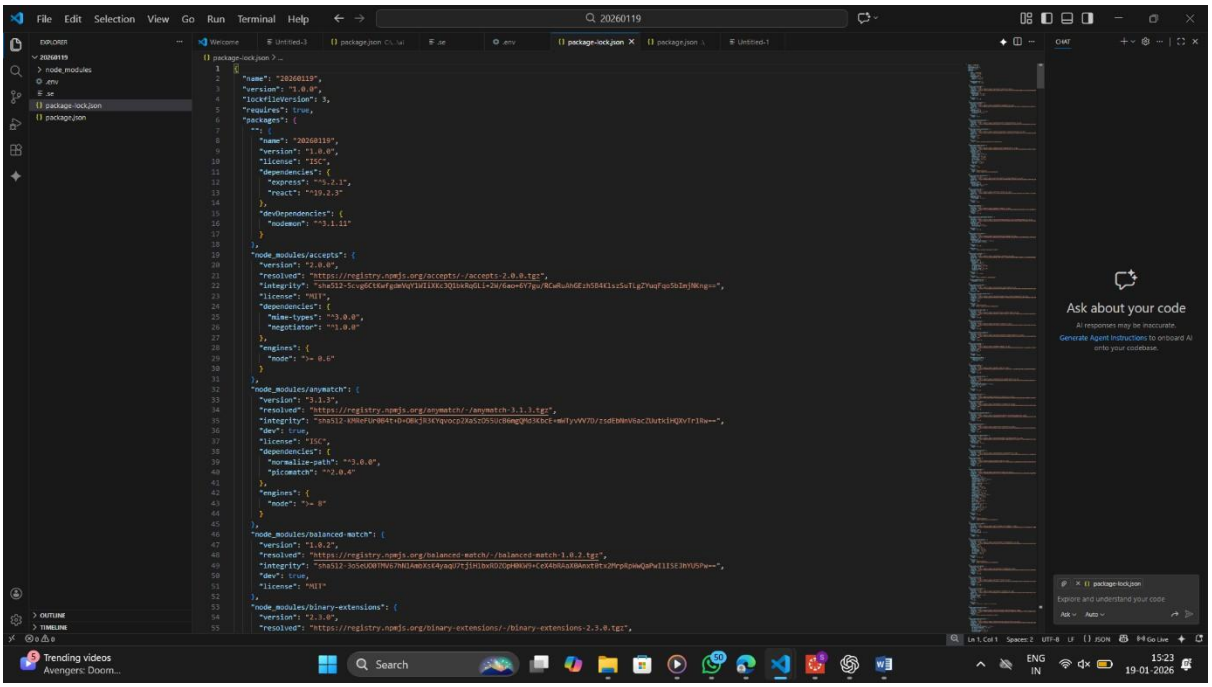
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node_modules
.env
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package.json
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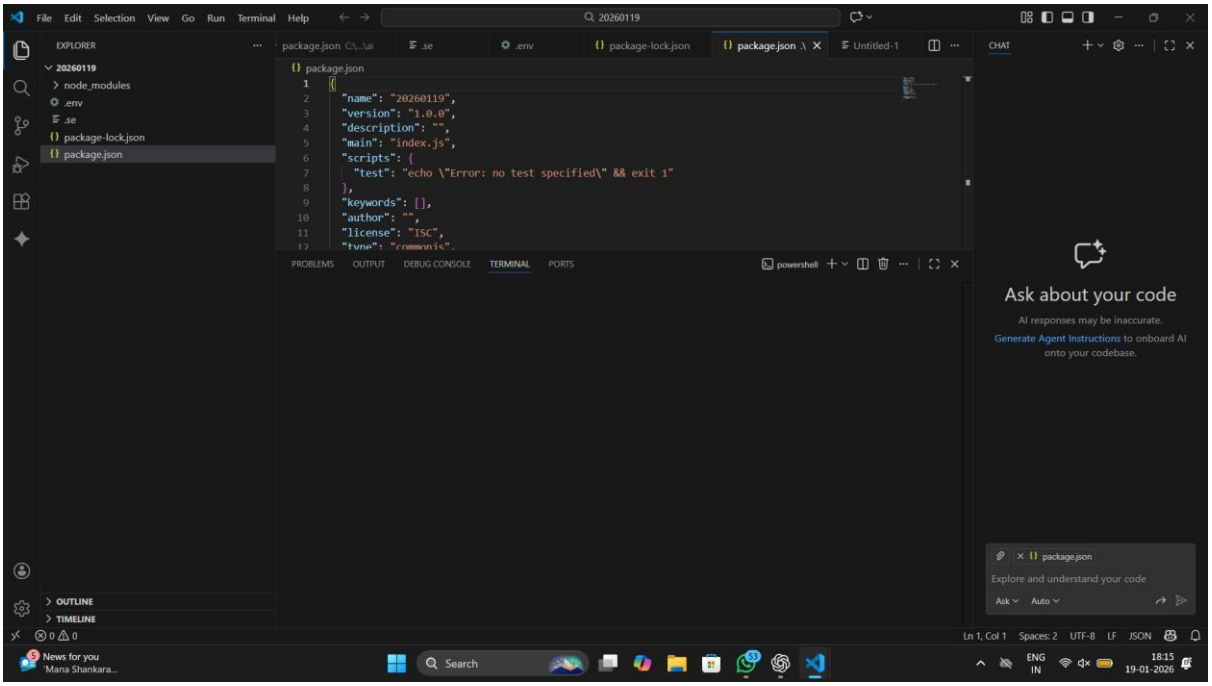
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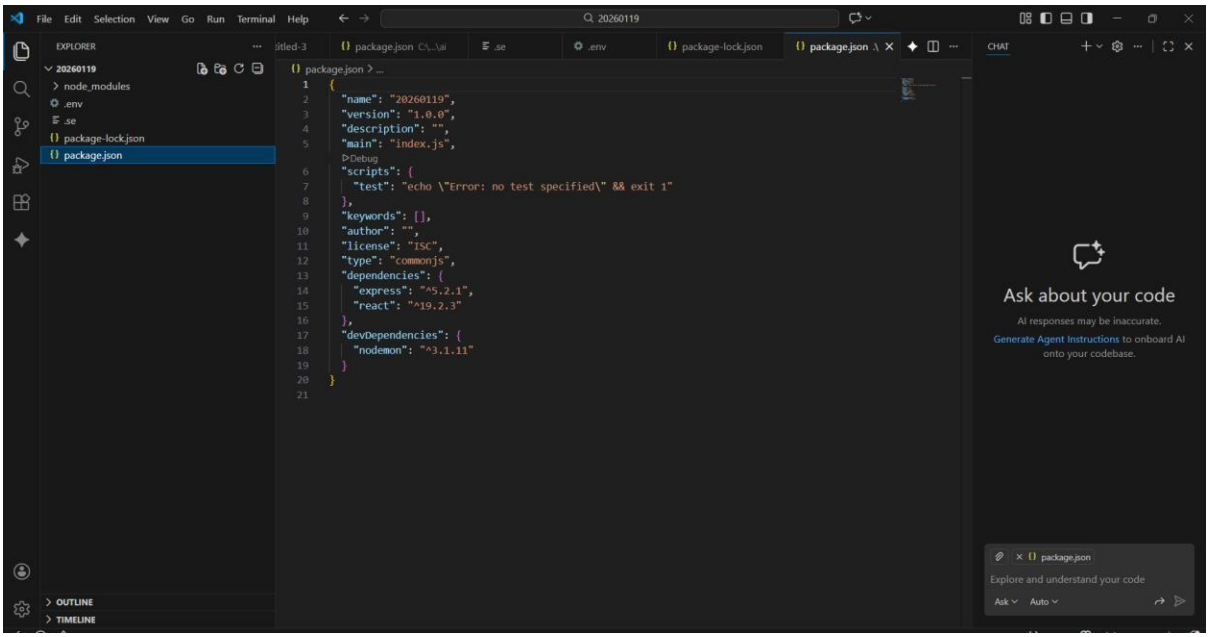
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