

Lecture 2. File Handling Modules

07 April 2025 23:30

Node.js File System Operations Summary

This code snippet demonstrates various **file system operations** using the built-in `fs` module in Node.js. It includes both **synchronous** and **asynchronous** methods.

Importing File System Module

```
js
CopyEdit
const fs = require('fs');
```

- Loads the **fs module** to enable file operations like read, write, copy, delete, etc.

Writing to a File

Synchronous Write

```
js
CopyEdit
// fs.writeFileSync('./test.txt', "Hello world");
```

- Writes "Hello world" to test.txt.
- **Blocks** the execution until writing is done.

Asynchronous Write

```
js
CopyEdit
// fs.writeFile('./test.txt', "Hello world Async", (err) => {});
```

- Writes asynchronously.
- Non-blocking.
- `err` will contain error info if writing fails.

Reading from a File

Synchronous Read

```
js
CopyEdit
// const result = fs.readFileSync('./contacts.txt', "utf-8");
// console.log(result);
```

- Reads file content **synchronously** and logs it.
- `utf-8` ensures human-readable text.

Asynchronous Read

```
js
CopyEdit
fs.readFile('./contacts.txt', "utf-8", (err, result) => {
  if(err){
    console.log("Error", err);
  }else{
    console.log(result);
  }
});
```

- Reads file **asynchronously** and prints content.
- err is used for error handling.

+ Appending to a File

```
js
CopyEdit
fs.appendFileSync("./test.txt", `${Date.now()}Hey There\n`);
```

- Appends timestamp + "Hey There" to test.txt.
- appendFileSync ensures operation completes before moving on.

Copying a File

```
js
CopyEdit
fs.cpSync("./test.txt", "./copy.txt");
```

- Creates a copy of test.txt as copy.txt.

Deleting a File

```
js
CopyEdit
fs.unlinkSync('./copy.txt');
```

- Deletes copy.txt synchronously.

File Statistics

```
js
CopyEdit
console.log(fs.statSync('./test.txt'));
```

- Logs metadata of test.txt, including:
 - Size
 - Created date
 - Last modified date
 - File type info

Summary Table

Operation	Method Used	Sync/Async	Description
Write File	writeFileSync	Sync	Creates/Writes content to file
Write File	writeFile	Async	Async version of writing
Read File	readFileSync	Sync	Reads content from file
Read File	readFile	Async	Async version with error handling
Append Content	appendFileSync	Sync	Appends content with timestamp
Copy File	cpSync	Sync	Copies file
Delete File	unlinkSync	Sync	Deletes specified file
File Info	statSync	Sync	Fetches file details (size, time)