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Web and Database Computing

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Server APIs and Authentication: Server Libraries & Interfaces

Integrating with Host System

Other API classes/functions to make our web applications do more.

Uploading files

Files are uploaded using POST requests. To use them we need to:

1. Save the file to the filesystem
 - Usually all uploaded files go in a given location with random names.
2. Record the file's name/location
3. Use the recorded data to serve the file again later when needed.

There are a number of different server Middlewares, and client libraries to help with this:

- Multer on the server
 - <https://expressjs.com/en/resources/middleware/multer.html>
- Dropzone on the client
 - <https://www.dropzonejs.com/>

Demo

Interacting with the Filesystem

The **fs** module can be used to read and write to files in the server's filesystem.

- **readFile** and **readFileSync** methods can be used to read from files
- **readdir** and **readdirSync** methods can be used to list the contents of folders
- **writeFile** and **writeFileSync** methods can be used to write to files
- <https://nodejs.org/api/fs.html>

Demo

Sending Emails

The **nodemailer** package can be used to send emails using your preferred email service.

- Install using **npm install --save nodemailer** (not installed by default)
- Can use SMTP (the simple mail transfer protocol) with an existing mail service, or mail server on your server (if one is present/setup)
- **createTransport** method is used to provide server details
- **sendMail** method is used to send emails
- *Unfortunately CS50 blocks SMTP; we will provide settings to overcome this.*
- <https://nodemailer.com/about/>

Demo

Interacting with other software

The `child_process` module can be used to run and interact with programs in the server's OS.

- `exec` and `execSync` methods can be used to run programs
- `spawn` method can be used to start and interact with a program via STDIN and STDOUT
- https://nodejs.org/api/child_process.html

Demo

Summary

- NodeJS' built-in libraries can be used to
 - Upload files
 - Interact with the server's filesystem
 - Send emails
 - Run arbitrary code on the server
 - and much more ...



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