Evolve Full Stack Developer

Introduction to ExpressJS

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Now about that spaceship

Agenda

Building an ExpressJS HTTP server

- Intro to **ExpressJS**
- Activity: “You’re in a deep dark wood”
- Handling **URL**s
- Handling **GET** & **POST Requests**
- Intro to OpenAPI

By the end of today you be able to start an ExpressJS server to service GET and POST requests, as well as document and test it.

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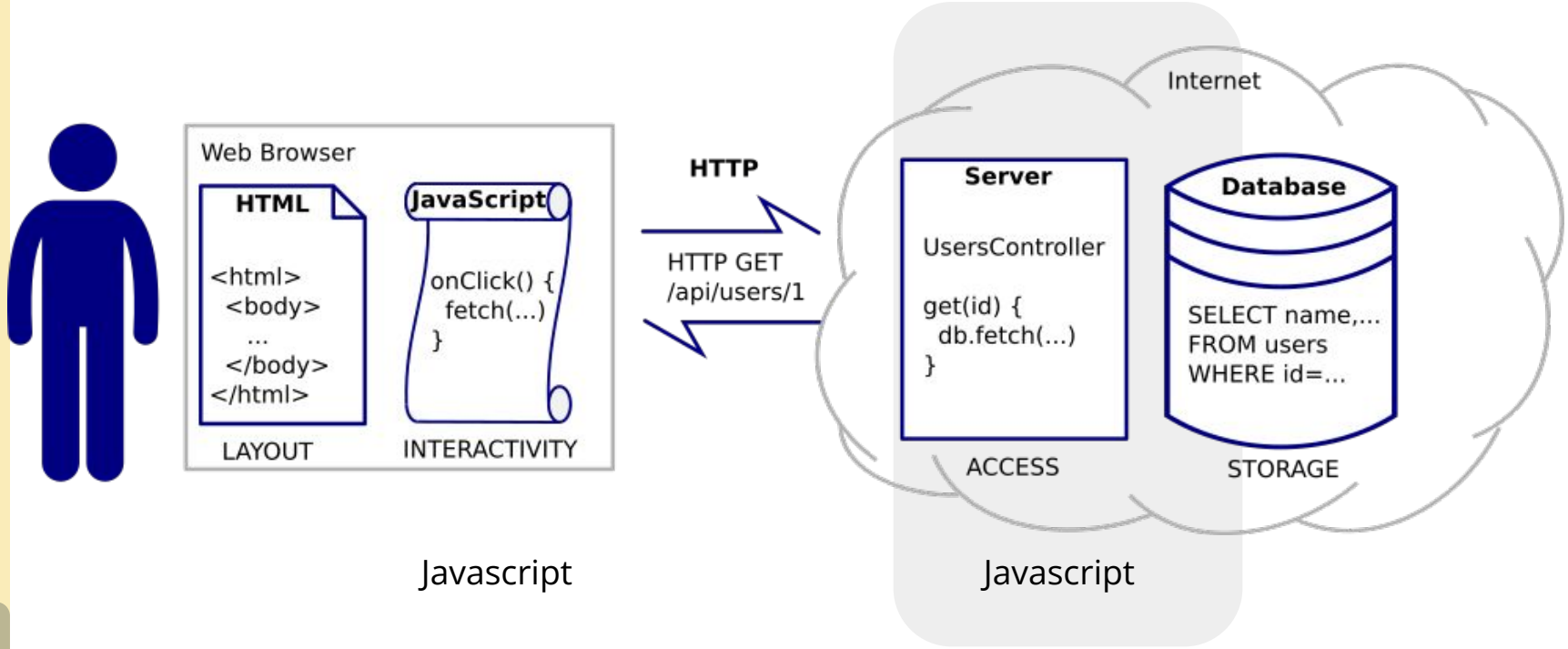
Focus Area



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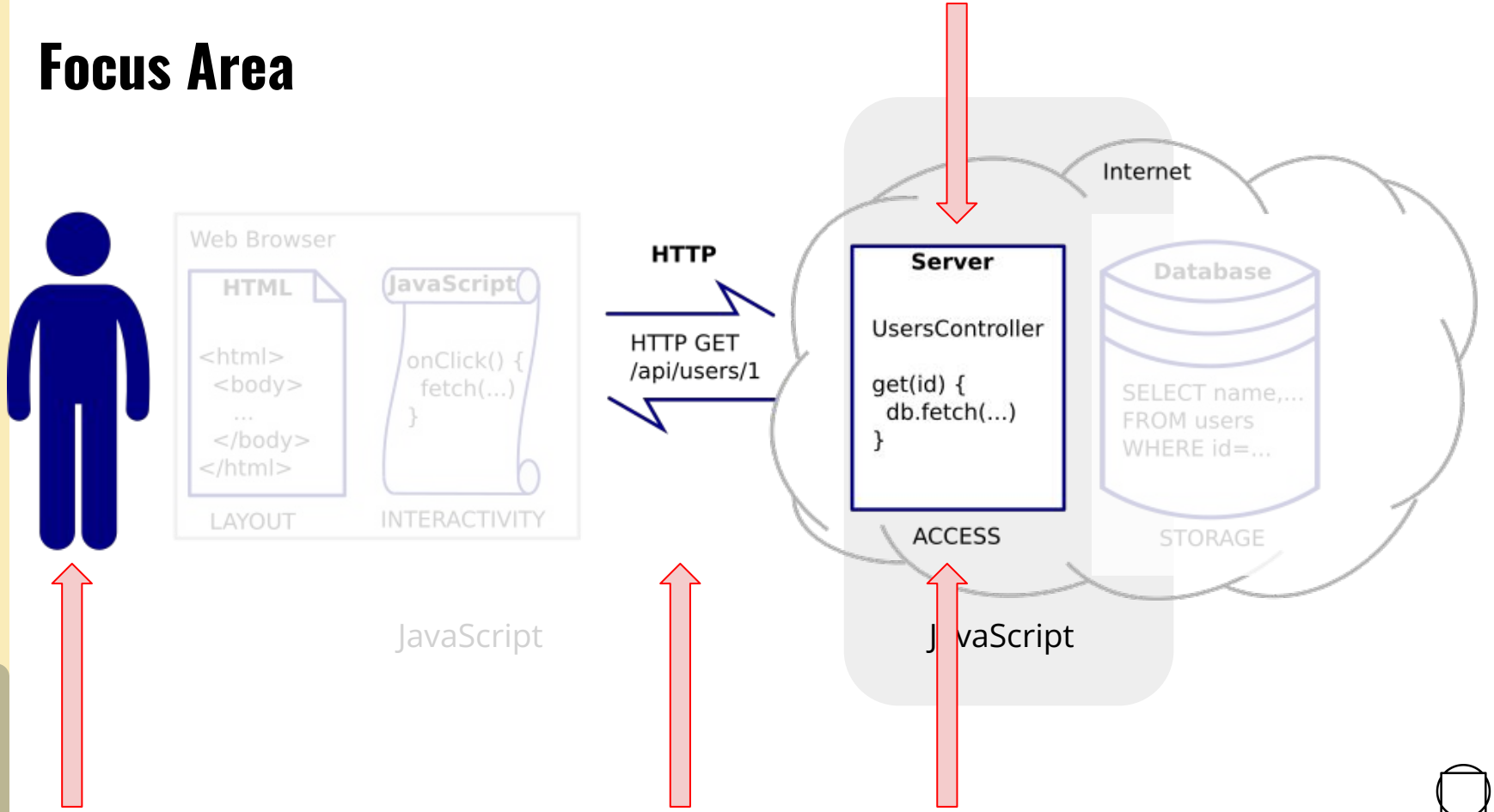
Focus Area



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Let’s Get Started

Creating a new NPM project

Review of *npm*

- NPM is a set of command-line tools that ships with “node” and it is a a repository of *modules* (code built by other developers) available from npmjs.com
- To initialize a new project:
  a. Make a new directory: **`mkdir intro-to-expressjs`**
  b. Change to that new directory: **`cd intro-to-expressjs`**
  c. Create a new NPM project: **`npm init`** (or **`npm init -y`**)
- Once created, start VS Code: **`code .`**
- Update package.json with “type”: “module”

Takeaways

- Create a new project with **`npm init`** (or other tools as we’ll see when we get to React)
- **`package.json`** is updated by the npm command or by editing the file manually (name, version, scripts, etc.)
- Add **`package.json`** and **`package-lock.json`** to your *git repository*.
- Add **`node_modules`** to your **`.gitignore`** file. This directory stores all your dependencies (often lots of files) which should not be committed to your repository.
- *Do not* manually edit **`package-lock.json`**.

ExpressJS - Getting started

Set Up ExpressJS

- Install the *express module* to your project: **`npm install express`**
- ExpressJS app example: start and console.log()
- ExpressJS app example: Add "Hello World!" API
- res.send() vs res.json() vs res.end()

Key Takeaways

- ExpressJS builds two handy objects for you: ***request*** and ***response*** that are passed to the “handler function” or the “callback function” or the “middleware”.
- If a route sends a response, the connection is closed and no further processing takes place.

Exercise - Create a GET handler in ExpressJS

Instructions

Extend the ***hello world*** ExpressJS app

- Mild: Add a new GET endpoints that returns the plain text: `"ExpressJS Rulez!!!"`
- Medium: Add a new GET endpoint that returns JSON: `{"hello": "world"}`
- Spicy: Add GET endpoints that returns JSON including the server's current Date:
  - `{"currentDate": "Friday, October 14, 2022 10:42AM"}`

ExpressJS - handling URL query parameters

Review

- Article: URL Anatomy

Code Example

- Mild: Handling URL query parameters
- Medium: Respond to the values of multiple parameters (e.g. **daylight** and **numberOfDragons**)

Key Takeaways

- Query parameters are the name/value pairs that come after the ? in a URL.
- Name/values are separated by =
- Different name/value pairs are separated by &
- Example query URL: `/forest?daylight=true&numberOfDragons=8`
- URL query parameters are automatically parsed by ExpressJS and are defined in the ***request.query*** object

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ExpressJS - Browser vs. Command Line

- You can interact with an ExpressJS server using the Browser:
  a. http://localhost:4000/forest?daylight=true&numberOfDragons=8
- A browser does “a lot of work” that the user cannot see
- Using a command-line tool bring you (the developer) “closer to what is actually happening”
- Run the command:

```
curl "http://localhost:4000/forest?daylight=true&numberOfDragons=8"
```

- See the “man page” for curl and its `-v, --verbose` option

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Express - handling POST requests

Code Example

- Handling POST Requests
- To send data via POST with:
  - curl -d '{"text":"Hello, World!"}' -H 'Content-Type: application/json' <url>
  - curl -d @<filename> <url>

Key Takeaways

- The **`express.urlencoded()`** middleware will look for form submission headers and add the data to **`request.body`**. This assumes data was submitted using a traditional submit button (i.e. not using Javascript to submit json) or a POST request sent using form data in an application such as Postman.
- There is a JSON version of this middleware if you're expecting a form to be submitted using that data structure: **`express.json()`**. It performs the same functionality and adds submitted data to **`request.body`**

OpenAPI

What is OpenAPI

- OpenAPI is a specification that helps developers design, document, and test APIs that are consistent, flexible, and easy to use.

How we can use it

- Sample OpenAPI doc
- Full specification documentation
- VSCode Extension

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Today we...

1. Created an Express web server
2. Created GET endpoint handlers
3. Accepted submitted data from URL query parameters using GET
4. Accepted submitted data from a POST request
5. Introduced OpenAPI to document and test our APIs