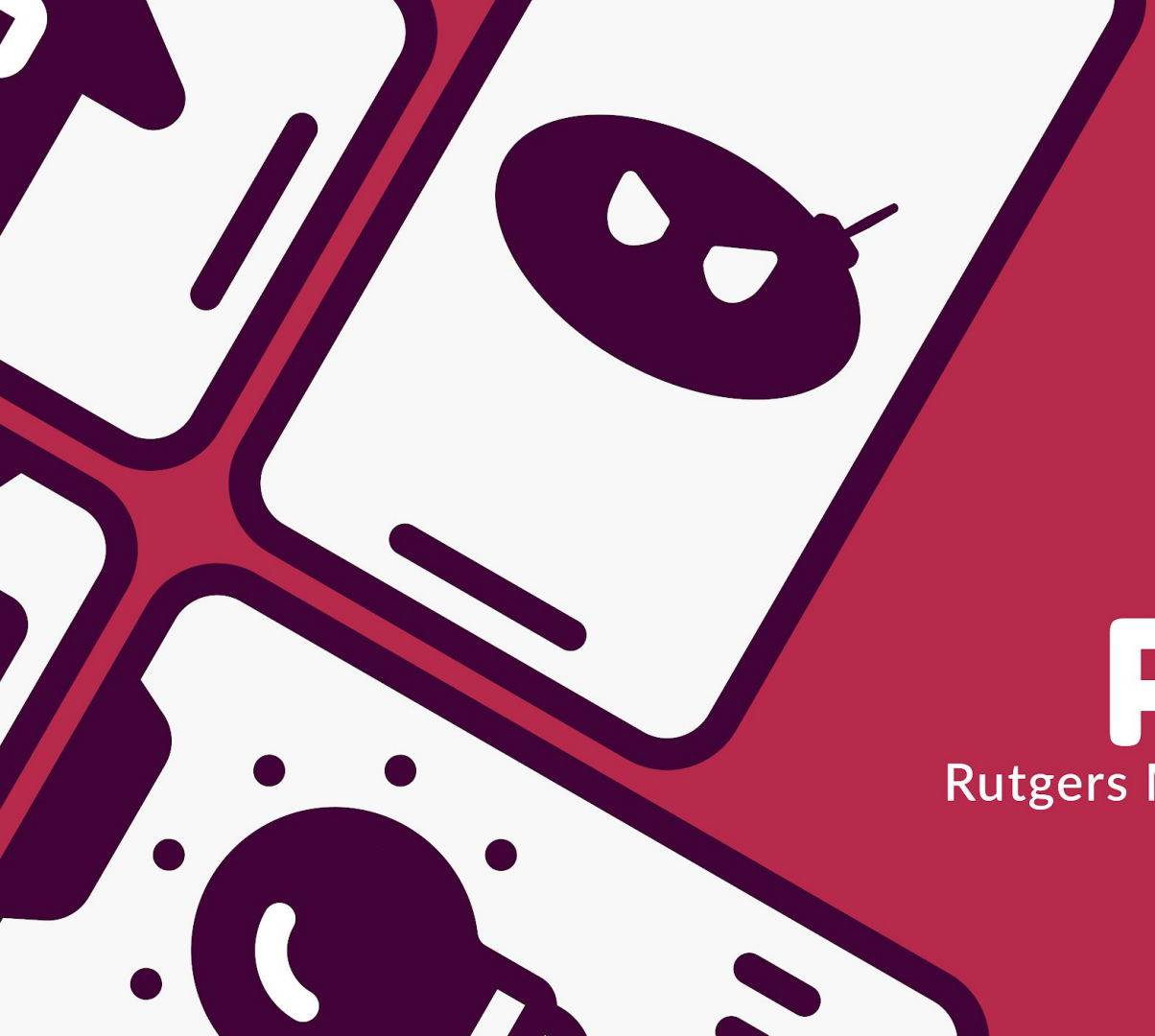


RUMAD

Rutgers Mobile App Development

Overview

For this section, we'll be covering:

- Asynchronous Calls
- Requests
- Express endpoints

Review / Questions

- npm demo
- package / dependencies explanation

Review

NPM - How do we use it?

- The basic commands are:
  - **npm -v** to confirm the installation
  - **npm init** to initialize a folder as a local package
  - **npm install <package_name>** to install packages
    - npm i <package_name>

NPM - Configuration file

What are dependencies?

- “a piece of code—a library, a module, or a package—that a project requires to function correctly”

What is Express? (RECAP)

"Express is a minimal and flexible Node.js web application framework that provides a robust set of features for web and mobile applications." (expressjs)

Express provides us with functionality to:

- Route traffic
- Write and use middleware
- Implement API endpoints

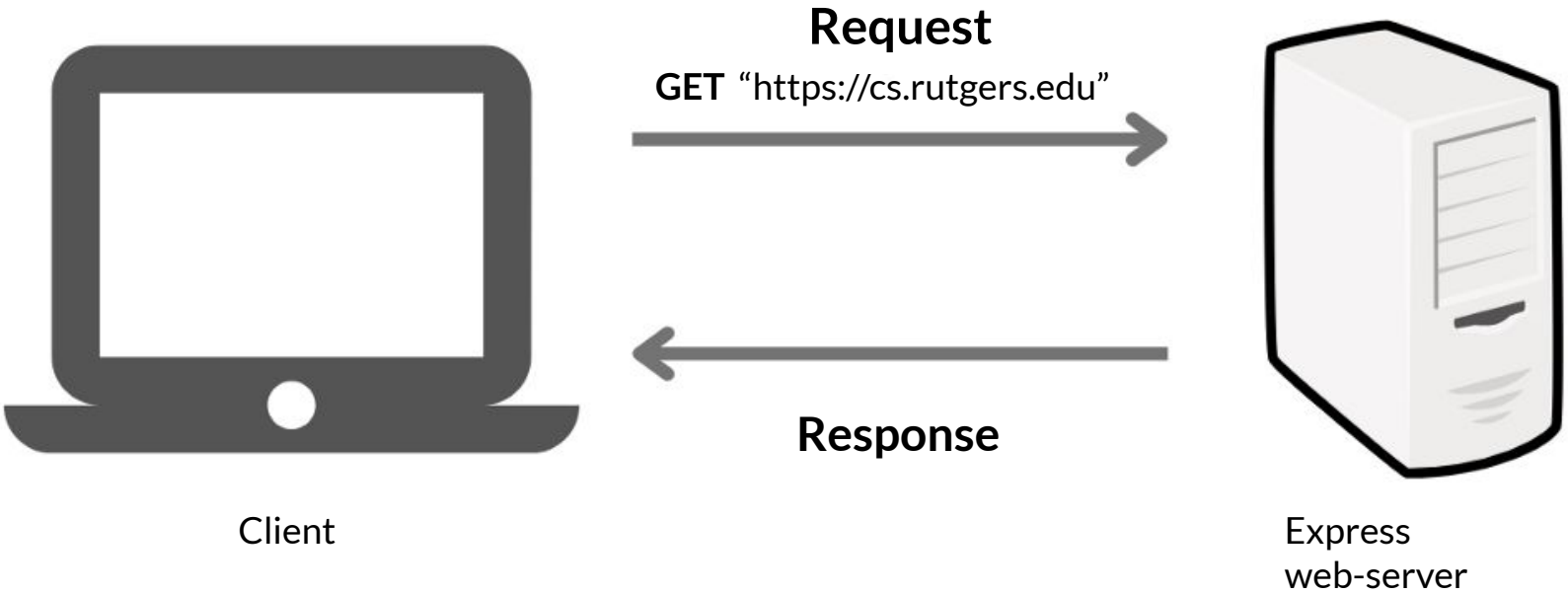
Requests

About web-applications

- A computer that stores and delivers the content for a website / API
- Common client is a web browser program
- Operates based on different requests, primarily:
  - GET
  - POST

There are more types, but I won't cover them. Feel free to ask me after or look up them:

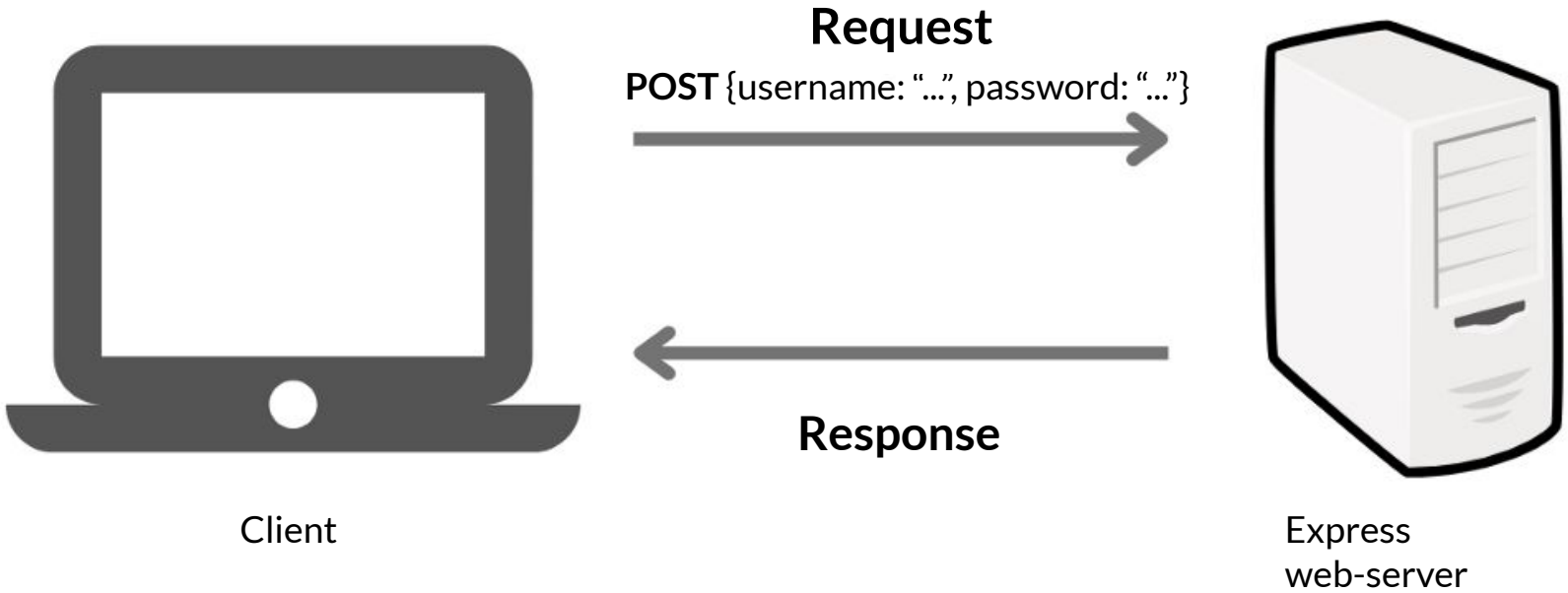
- HEAD
- PUT
- DELETE



Live example: https://www.cs.rutgers.edu/

What's a GET request?

- Gets content from a page
- Can contain arguments / subpaths
  - example.com/api**?arg1=my_argument**
  - example.com/api/**my_argument**
- Use cases:
  - Display a web page on a browser
  - Access information on an API endpoint
- Examples:
  - Visiting https://www.cs.rutgers.edu/
  - Searching for a class on DegreeNav
  - *What are some more examples?*



Live example: https://weblogin.cs.rutgers.edu/

What's a POST request?

- **Posts** data at URL
- Data posted by client is handled according to server specification
  - Commonly JSON
- Use cases:
  - Posting comment (*upload comment to URL*)
  - Logging in (*submit username and password*)
  - Specific query on API

What's a POST request? (2)

- Examples:
  - Logging into DegreeNav with user/pass
  - Adding a course to your schedule
  - *What are some more examples?*

Test Your Understanding 1

Which of the following statements accurately describes the primary purpose of a GET request?

a) GET requests are primarily used for submitting sensitive information such as passwords.
b) GET requests are great for modifying and adding items to a database.
c) GET requests are used to retrieve data from a server.
d) GET requests are interchangeable with POST requests and can be used in all scenarios.

Test Your Understanding 1

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Test Your Understanding 2

You go on Google and you type something into the search bar, then search - what type of request is happening?

a. GET Requests
b. POST Requests
c. Neither
d. Both GET and POST requests

Test Your Understanding 2

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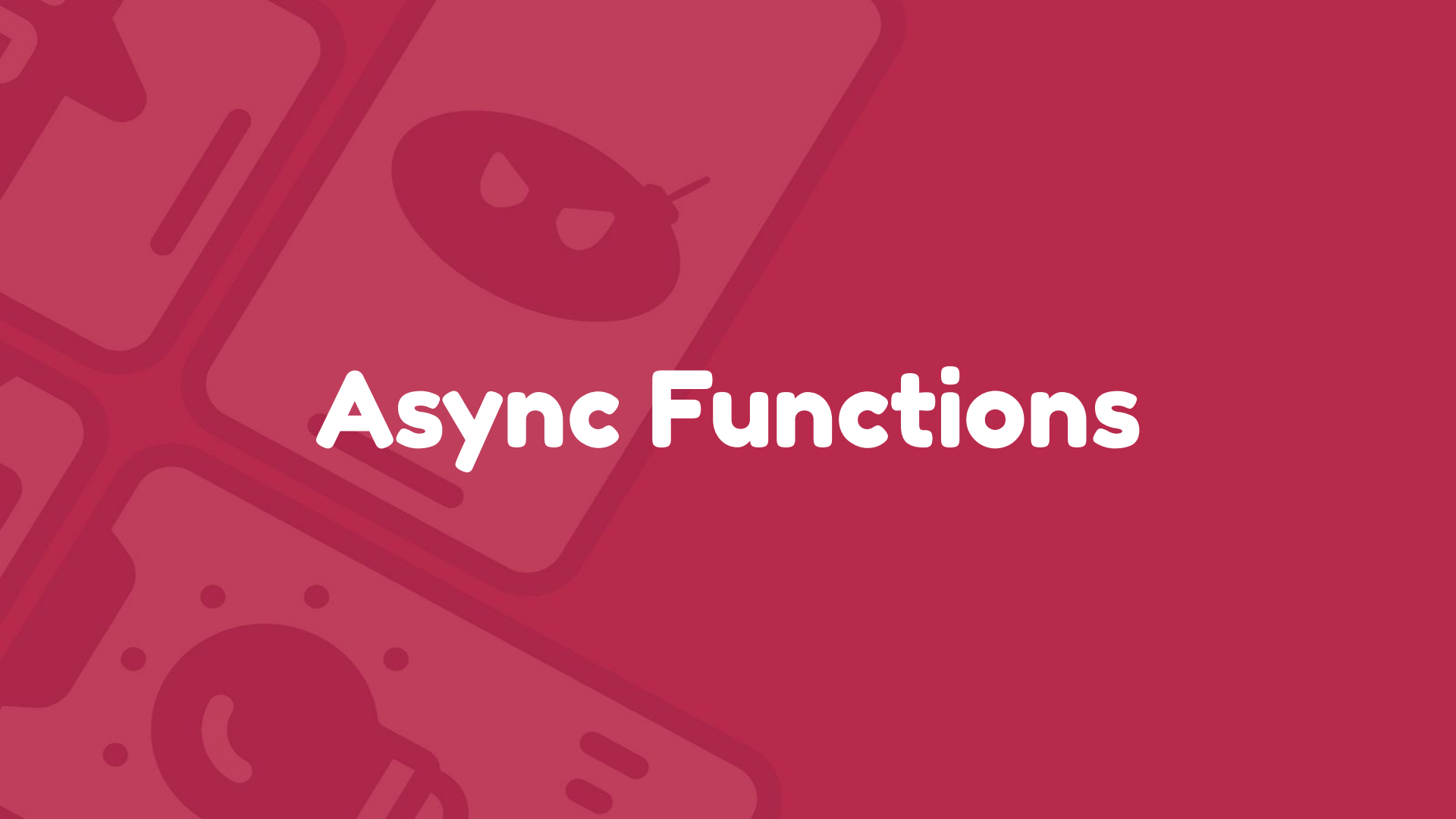

Async Functions

Asynchronous Functions

When requesting data from anywhere, data does not come immediately… (there is a delay)

- This delay is a big no-no when working with *synchronous code*. (Everything you've written so far)
- Code waits for nobody.

Asynchronous Functions - 2

- How do we handle waiting for data?
  - Declare a `async` function.
- A async function declares a function to rely on a "Promise-based" behavior.
  - Enables the code to continue running without needing to wait for something to return.

JavaScript “async” and “await”

What are the following?

- Promise
- async
- await

Promise

> ***"A Promise is a proxy for a value not necessarily known when the promise is created. It allows you to associate handlers with an asynchronous action's eventual success value or failure reason."*** (mdn)

Imagine that you're a top singer, and fans ask day and night for your upcoming song.

To get some relief, you promise to send it to them when it's published. You give your fans a list. They can fill in their email addresses, so that when the song becomes available, all subscribed parties instantly receive it. And even if something goes very wrong, say, a fire in the studio, so that you can't publish the song, they will still be notified. (javascript.info)

Promise

> ***"A Promise is a proxy for a value not necessarily known when the promise is created. It allows you to associate handlers with an asynchronous action's eventual success value or failure reason."*** (mdn)

What is a promise?

- Signifies that something will be returned, whether it's successful or not
- Has three states: pending, fulfilled (success), rejected (failed)
- When completed, return

Why is this important?

Many operations are never instant

- database operations… (we will go over this later)
- practically anything over the internet

Promises allow us to handle things when they are completed.

JavaScript “await” and “async”

await - ‘await’ a promise. yield until promise is fulfilled or rejected
async - this decorator indicates that a function returns a promise

```
const revokeAccess = async () => {
    var revoke = {
        method: 'POST',
        url: 'https://api.vault.netvoyage.com/v1/OAuth/revoke',
        headers: {'content-type': 'application/x-www-form-urlencoded', 'Authorization': `Bearer ${access_token}`},
        data: new URLSearchParams({
            token: access_token
        })
        };
    if(access_token) {
        await axios.request(revoke).then(function (response) {
            console.log(response.data);
        }).catch(function (error) {
            console.error(error);
        });
    } else {console.log("No access token found")}
}
```


Working with Express

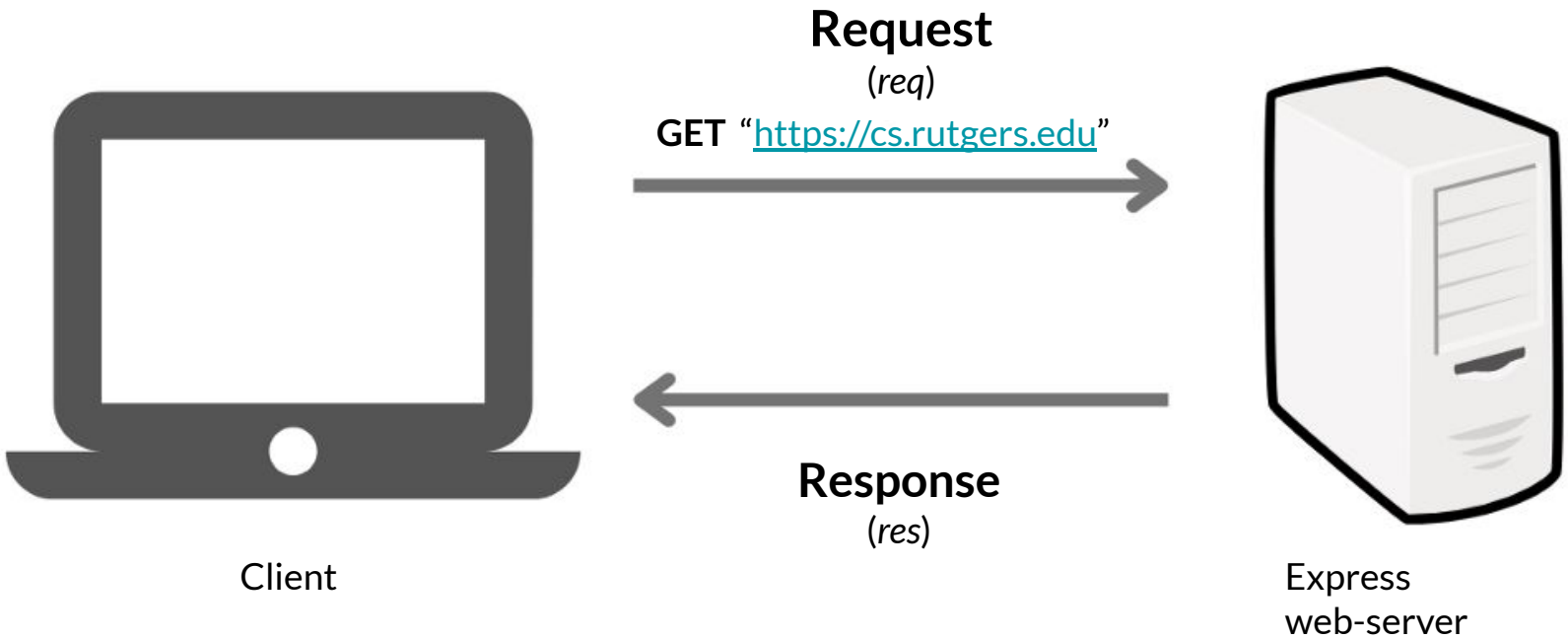
Handling GET requests

How do we handle users requesting data from URLs?

```
const express = require('express')
const app = express()
const port = 3000

app.get('/', (req, res) => {
 res.send('Hello World!')
})

app.listen(port, () => {
 console.log(`Example app listening on port ${port}`)
})
```



Live example: https://www.cs.rutgers.edu/

Handling GET requests (2)

How else can we manage GET requests?

- paths / subpaths
- query strings
- parameters

Utilizing the **req** that Express gives us.

GET Requests Demo

```
const express = require('express')
const app = express()
const port = 3000

// Paths
app.get('/example_path', (req, res) => {
   res.send('We\'ve reached ./example_path!!')
})

// Params
app.get('/api/:example_param', (req, res) => {
   res.send(`We are on a sample API endpoint. Our <b>param</b> is <b>${req.params.example_param}</b>!`)
})

// Query string. e.g.: 0.0.0.0:3000/api?key=1234
app.get('/api/', (req, res) => {
   res.send(`We are on a sample API endpoint. Our <b>query</b> string is <b>${req.query.key}</b>!`)
})

app.listen(port, () => {
   console.log(`Example app listening on port ${port}`)
})
```

Understanding GET requests

Where have you seen these used? How else can they be used?


POST requests

Handling POST requests

How do we handle users posting data to URLs?

```
...
const path = require('path')
...
app.get('/', (req, res) => {
   res.sendFile(path.join(__dirname, './pages/post.html'));
})

app.post('/api/post', (req, res) =>e {
   res.send('POST request to the homepage')
})

app.listen(port, () => {
 console.log(`Example app listening on port  ${port}`)
})
```

Handling POST requests (2.)

Live demonstration. Code can be found on GitHub

Understanding POST requests

Where have you seen these used? How else can they be used?

Questions?

Please fill out the feedback form when you have a chance!

Feedback Form

Next week...

- Introducing Supabase!
  - Experimenting with Supabase
  - Writing queries
  - CRUD operations