Form Submission & POST Requests

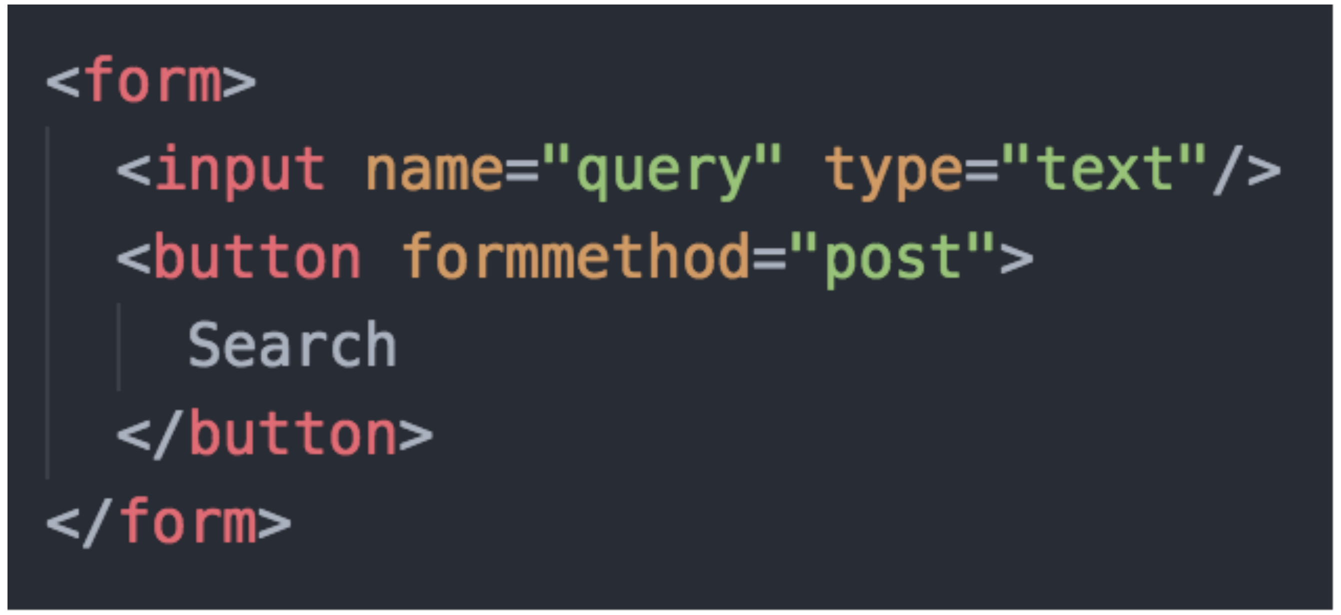
What We Know So Far

- We can pass data to Express by using the URL as arguments
- The POST and PUT http method types are meant for creating and altering entities, respectively
- Using these arguments, we could put them in to SQL queries or other functions
- So how do we put all of this together?

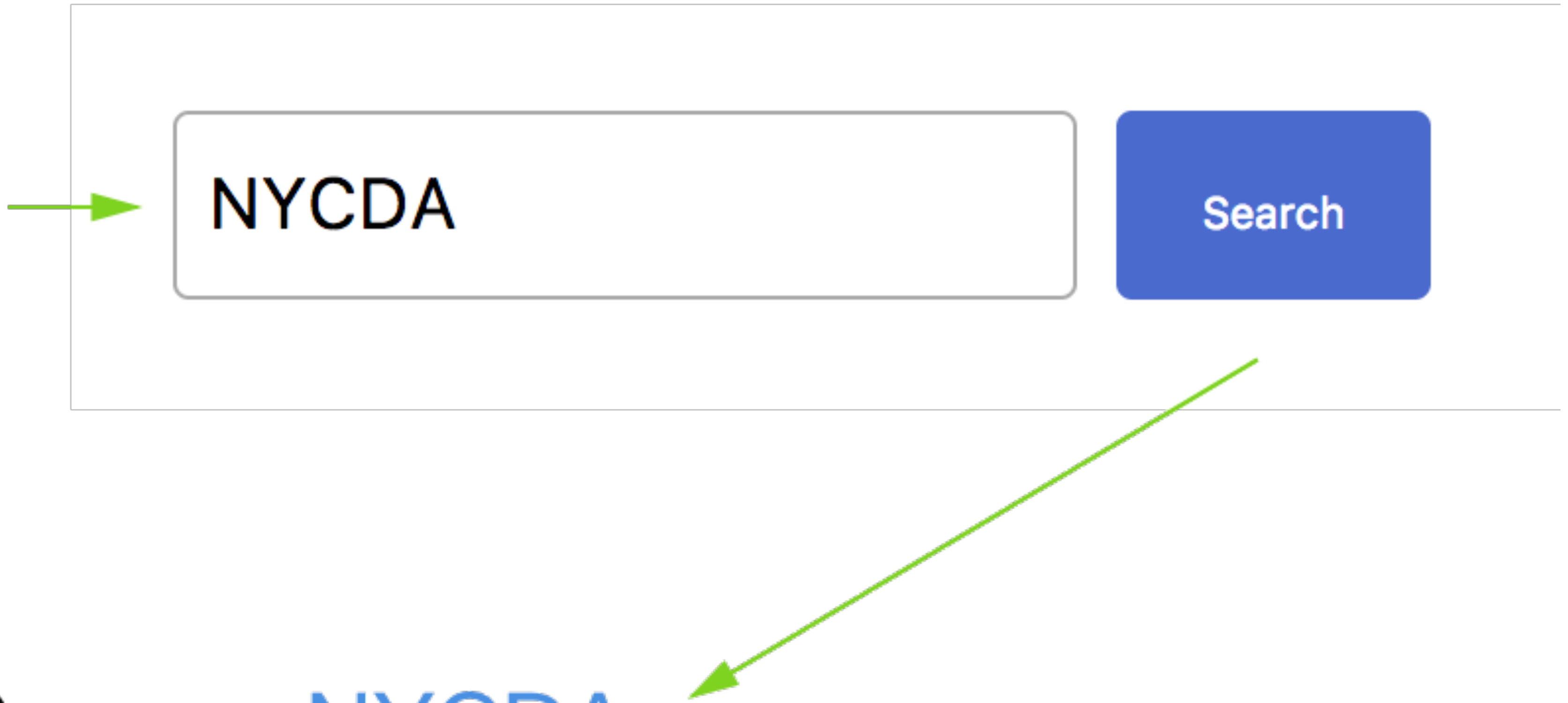
Bringing Back the `<form>` Element

- You should remember the `<input>` and `<form>` elements from previous lessons
- These handle user input and submission to the server, respectively
- The reason that a form, by default, refreshes the page when you hit enter / click a button is making a GET request with the input's data
- GET request parameters are sent either in the path, or in the query

A `<form>` Example (html)



```
<form>
  <input name="query" type="text"/>
  <button formmethod="post">
    Search
  </button>
</form>
```



/search?query=NYCDA

A `<form>` Example (node)

- We then have access to those query parameters in Express, for use as variables (i.e. in this login function)

```
// Render the login form
app.get("/search", function(req, res) {
    let results = [];

    // If they submitted the search, get results for rendering
    if (req.query.query) {
        results = getSearchResults(req.query.query);
    }

    res.render("search", {
        result: results,
    });
});
```

The **`getSearchResults`** *function here is a made up example, don't worry about what it does.*

Form Configuration via Attributes

- The form by default submits all of its inputs in a GET request as ?name=value to the current path
- We can change which path it submits to using the `action="/some/path"` attribute
- We can change the GET to a POST using the `method="post"` attribute (No PUT or DELETE) *

```
<form action="/login" method="post">
    <input name="username" type="text"/>
    <input name="password" type="password"/>
    <button formmethod="post">
        Submit
    </button>
</form>
```

Handling POST Requests

- Now that we can change the method from GET to POST, we should be using that when we want to create a new entity, rather than add some arguments to a GET
- However, POST requests send their data using the **body**, not the query parameters
- This is so that it can send complex data types that aren't limited by fitting in a URL
- This also keeps sensitive information (like a password) out of the URL, and hidden away
- But in order to handle body requests, we need to configure Express to use them
- Afterwards, they'll be available in `req.body`, just like `query` and `param`.

Handling POST Requests (code)

```
# Install the body-parser module
npm install --save body-parser
```

```
const express = require("express");
const bodyParser = require("body-parser");
const app = express();

// Configure your app to correctly interpret POST
// request bodies. The urlencoded one handles HTML
// <form> POSTs. The json one handles jQuery POSTs.
app.use(bodyParser.urlencoded());
app.use(bodyParser.json());

// Login endpoint expects username and
// password in the request's body
app.post("/login", function(req, res) {
    if (login(req.body.username, req.body.password)) {
        res.redirect("/home");
    } else {
        res.status(403).render("/login", {
            error: "Incorrect username or password",
        });
    }
});
```

Form Configuration via Buttons

- The `<button>` element can also add arguments using the `name` and `value` attributes, just like inputs
- You can also override the form's action and method with `formaction` and `formmethod`
- That way, one form can have two different actions based on which button is pressed

```
<!-- edit-blog.ejs -->
<form action="/blog/<%- post.id %>" action="post">
    <input name="title" type="text" value="<%- post.title %>"/>
    <textarea name="content" value="<%- post.content %>"/>

    <button name="save" value="1">Save</button>
    <button name="delete" value="1">Delete</button>
</form>
```

```
// app.js
app.post("/blog/:id", function(req, res) {
    if (req.body.delete) {
        deleteBlogPost(req.params.id);
    }
    else {
        saveBlogPost(req.params.id, req.body.title, req.body.content);
    }
});
```

Succesful Redirects

- Often times when a form submit goes well, we want to take the user somewhere else
- Express will allow you to do this using `res.redirect("/new/path")`
- You can also add some query parameters if you want to indicate what happened

```
app.post("/save", function() {
    res.redirect("/home?saved=1");
});

app.get("/home", function(req, res) {
    let notice = "";

    if (req.query.saved) {
        notice = "Save succesful!"
    }

    res.render("home", {
        // Rendered somewhere in the template
        notice: notice,
    });
});
```

Unsuccesful Submits

- On the flip side, sometimes things go wrong in a form submission
- Maybe a user forgot a field, put too much text, or tried to put letters in a number field
- In this case, we usually want to re-render the form, but with an error message displayed

```
app.post("/conversation", function(req, res) {
    if (req.body.message) {
        // Redirect them back to app.get("/conversation")
        res.redirect("/conversation?sent=1");
    }
    else {
        // Re-render the conversation with an error message
        res.render("conversation", {
            error: "Message is required",
        });
    }
});
```

Exercise: Make a Bulletin Board Form

- Using the Bulletin Board database and code we wrote from the previous class, let's make a form to submit to it
- Create a new template for the form page, and add the necessary elements to it
- Make a `post` Express route that can handle the form submission
- Send the parameters from the POST request to the function for making a new bulletin board post
- If the post is saved succesfully, redirect them back to the list page with a saved message
- If the post had errors (title too long, missing text) re-render the form with an error message

Additional Reading

- MDN's <form> element docs
- MDN's <button> element docs