

The word "Remix" is written in a bold, sans-serif font. Each letter is a different color: R is blue, e is green, m is yellow, i is pink, and x is red. The letters are slightly overlapping, creating a sense of depth. The background is black.

Recap - The RACE Remix Track



- ES Lint Config
- Remix Data Flow
- Remix Auth
  - Route Protection & Restriction
  - AuthorizationError
- Form validation & Error Messages
- Destructuring in Remix: loaders & actions
- Querying with Mongoose

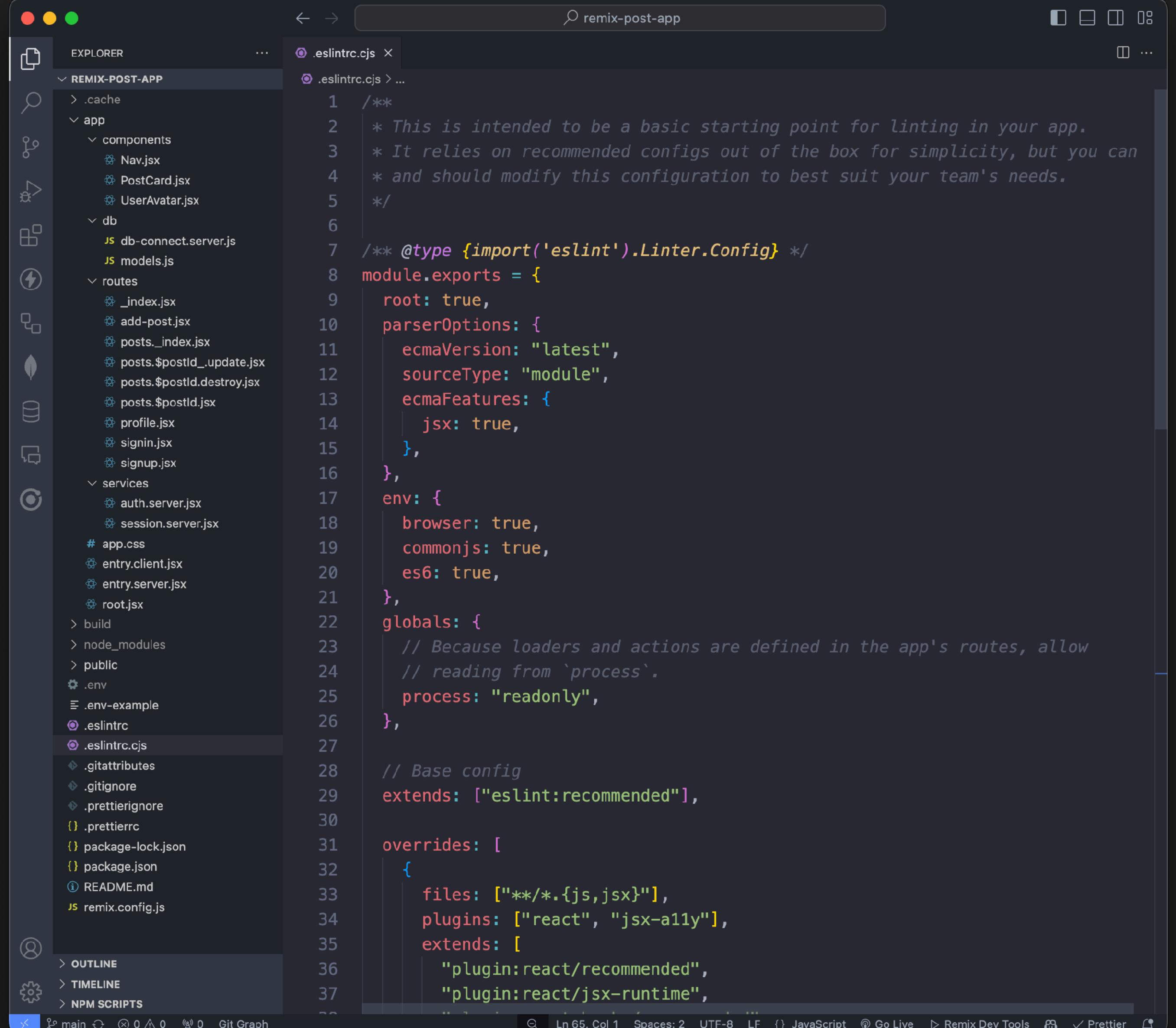
# Remix

ES Lint Config: .eslintrc.js



# ES Lint Config

- Copy and paste into your `.eslintrc.cjs`:  
<https://github.com/cederdorff/remix-post-app/blob/main/.eslintrc.cjs>



The screenshot shows a dark-themed code editor interface with the title bar "remix-post-app". The left sidebar is the "EXPLORER" view, showing the project structure of "REMIX-POST-APP" with folders like ".cache", "app" (containing "components", "db", "routes", "services"), "build", "node\_modules", "public", ".env", ".env-example", ".eslintrc", ".eslintrc.cjs" (which is selected), ".gitattributes", ".gitignore", ".prettierignore", ".prettierrc", "package-lock.json", "package.json", "README.md", and "remix.config.js". The right pane is the "EDITOR" view, displaying the content of the ".eslintrc.cjs" file:

```
/* This is intended to be a basic starting point for linting in your app.
 * It relies on recommended configs out of the box for simplicity, but you can
 * and should modify this configuration to best suit your team's needs.
 */

/** @type {import('eslint').Linter.Config} */
module.exports = {
  root: true,
  parserOptions: {
    ecmaVersion: "latest",
    sourceType: "module",
    ecmaFeatures: {
      jsx: true,
    },
  },
  env: {
    browser: true,
    commonjs: true,
    es6: true,
  },
  globals: {
    // Because loaders and actions are defined in the app's routes, allow
    // reading from `process`.
    process: "readonly",
  },
}

// Base config
extends: ["eslint:recommended"],

overrides: [
  {
    files: ["**/*.js,jsx"],
    plugins: ["react", "jsx-a11y"],
    extends: [
      "plugin:react/recommended",
      "plugin:react/jsx-runtime",
    ],
  },
]
```

The status bar at the bottom shows "Ln 65, Col 1" and other standard editor status indicators.

# remix

Data Flow

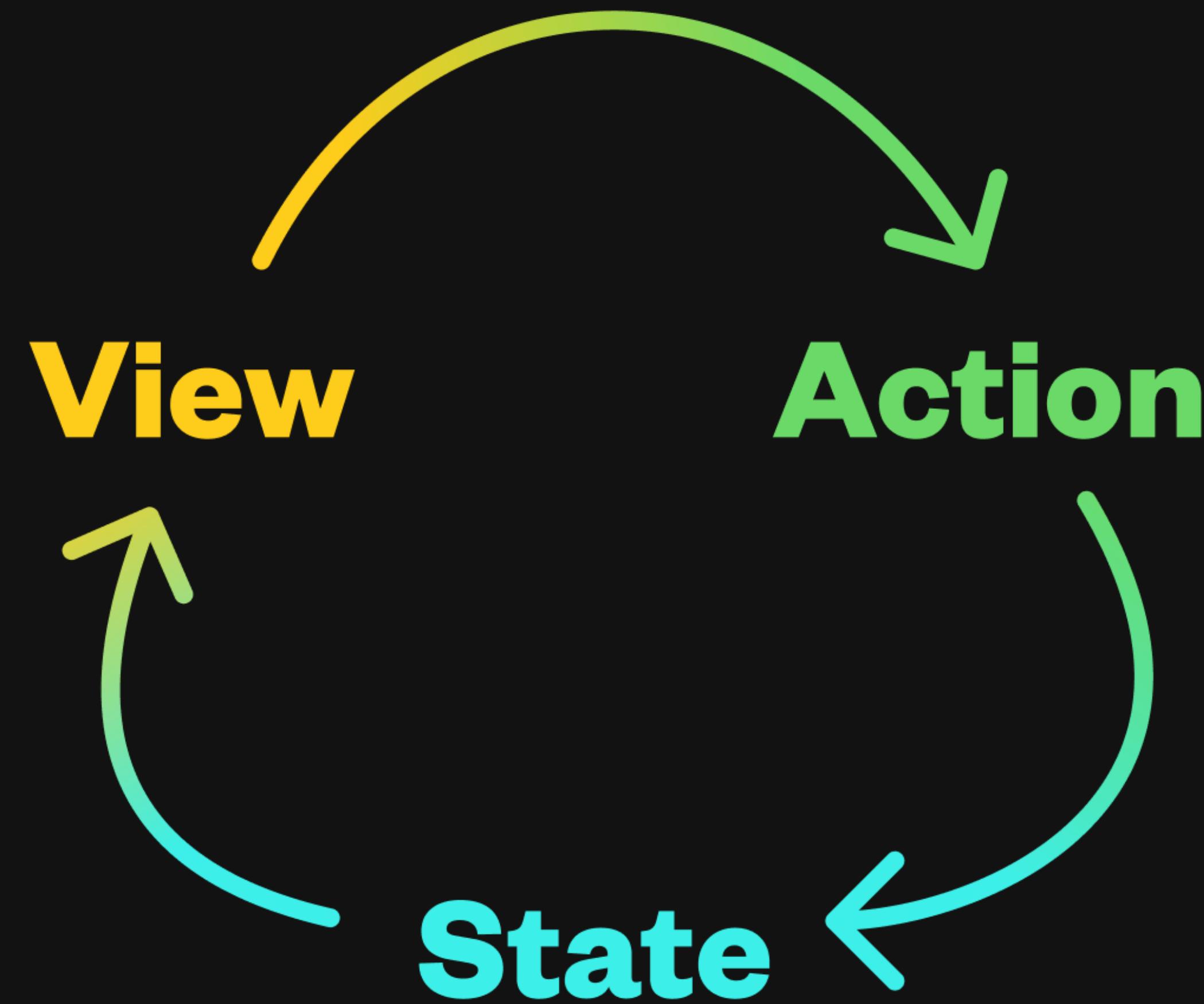
“

***Build Better Websites, Sometimes with Remix.***

**If you get good at Remix, you will accidentally  
get good at web development in general.**

**Get good at Remix, get good at the web.**

# React: UI is a function of state



# State management: Keep in sync

Across the network to the database.



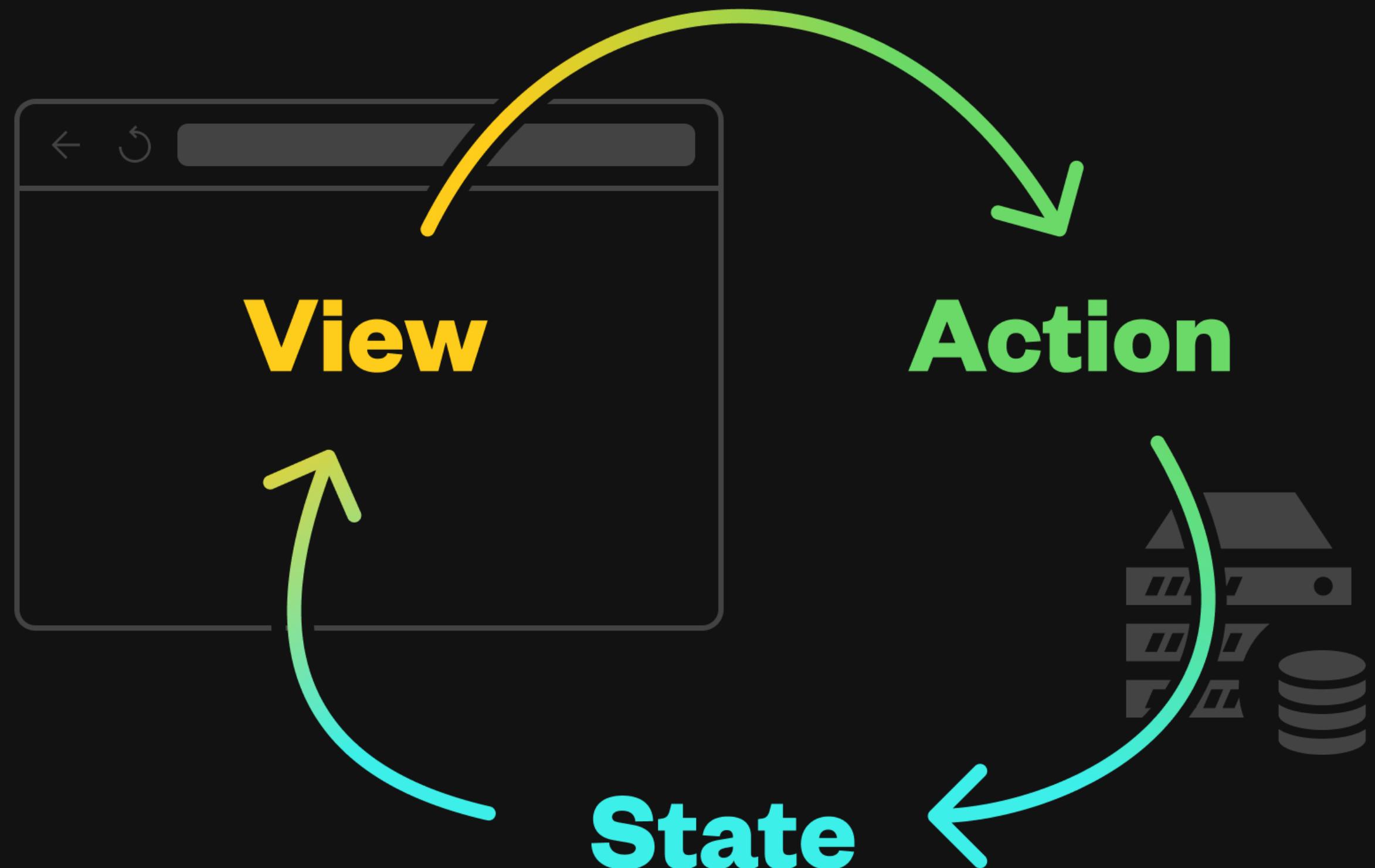
# State management: Keep in sync

How do we keep the database in sync with UI?



# Remix to the rescue

Remix simplifies the interactions with the server to get the data into the component.



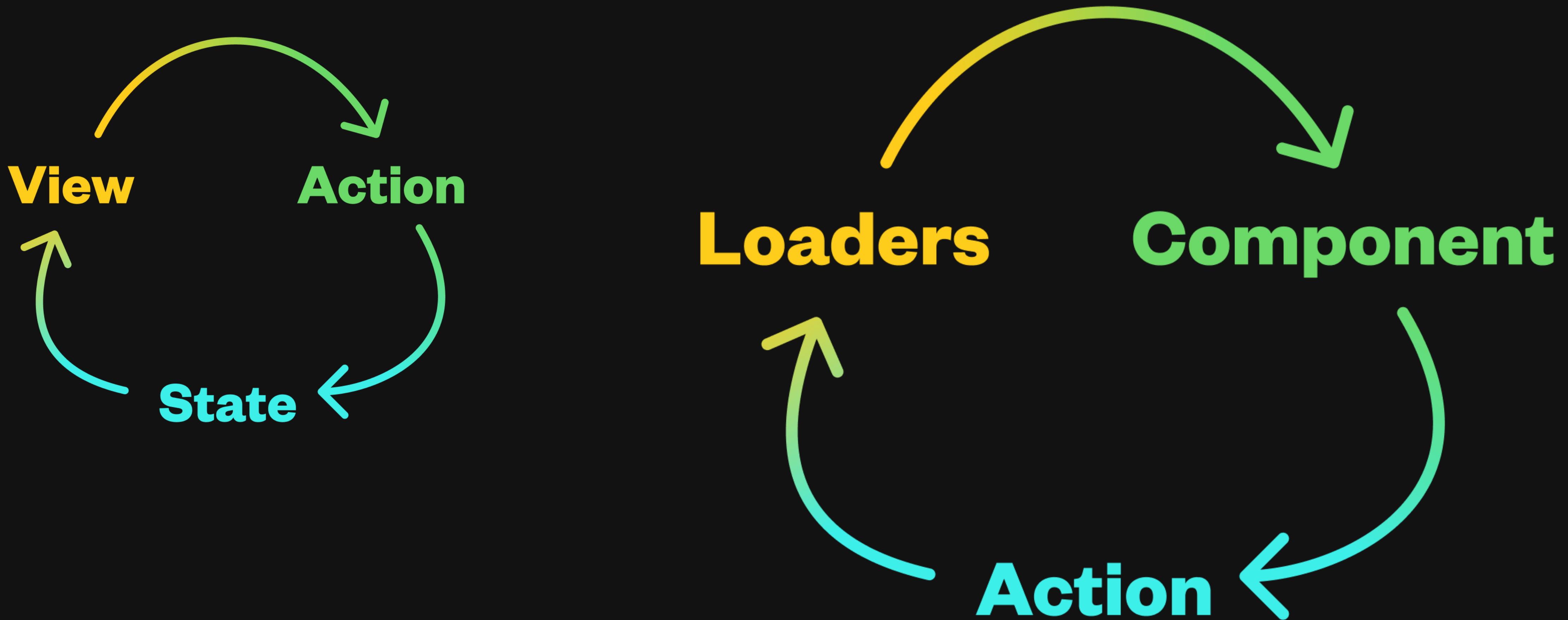
# Local state & Remote state

“UI is a function of your remote state and your local state.”



# Loader -> Component -> Action

From View -> Action -> State



# Loader

# Component

# Action

```
// File (route): /products/$productId/edit

export async function loader({ params }) {
  const { productId } = params;
  const product = await db.products.get(productId);
  return json(product);
}

export default function Route() {
  const product = useLoaderData();
  return (
    <>
      <h2>Edit Product #${product.id}</h2>
      <Form method="post">
        <input type="text" name="name" defaultValue={product.name} />
        <input type="number" name="price" defaultValue={product.price} />
        <button type="submit">Save</button>
      </Form>
    </>
  );
}

export async function action({ params, request }) {
  const { productId } = params;
  const form = await request.formData();
  const name = form.get("name");
  const price = form.get("price");
  const product = await db.products.edit({ id: productId, name, price });
  return redirect(`'/products/${product.id}`);
}
```

The diagram illustrates the data flow between the database and the component and action files. A yellow circle highlights the `product` variable in the `loader` function. A green arrow points from this circle down to the `product` variable in the `useLoaderData` hook of the component. Another green arrow points from the `product` variable in the component down to the `product` variable in the `action` function. A yellow arrow points from the database icon up to the `db.products.get` call in the `loader` function.

## component

```
export async function loader({ params }) {
  const post = await mongoose.models.Post.findById(params.postId);
  return json({ post });
}

export default function UpdatePost() {
  const { post } = useLoaderData();

  return (
    <div className="page">
      <h1>Update Post</h1>
      <Form id="post-form" method="post">
        <input defaultValue={post.caption} name="caption" type="text" />
        <button>Save</button>
      </Form>
    </div>
  );
}
```

## action

```
export async function action({ request, params }) {
  const formData = await request.formData();
  const post = Object.fromEntries(formData);

  await mongoose.models.Post.findByIdAndUpdate(params.postId, post);

  return redirect(`/posts/${params.postId}`);
}
```

## loader

## loader

```
export async function loader({ params }) {
  const post = await mongoose.models.Post.findById(params.postId);
  return json({ post });
}
```

## component

```
export default function UpdatePost() {
  const { post } = useLoaderData();

  return (
    <div className="page">
      <h1>Update Post</h1>
      <Form id="post-form" method="post">
        <input defaultValue={post.caption} name="caption" type="text" />
        <button>Save</button>
      </Form>
    </div>
  );
}
```

## action

```
export async function action({ request, params }) {
  const formData = await request.formData();
  const post = Object.fromEntries(formData);

  await mongoose.models.Post.findByIdAndUpdate(params.postId, post);

  return redirect(`/posts/${params.postId}`);
}
```

# loader

```
export async function loader({ params }) {
  const post = await mongoose.models.Post.findById(params.postId);
  return json({ post });
}
```

# component

```
export default function UpdatePost() {
  const { post } = useLoaderData();

  return (
    <div className="page">
      <h1>Update Post</h1>
      <Form id="post-form" method="post">
        <input defaultValue={post.caption} name="caption" type="text" />
        <button>Save</button>
      </Form>
    </div>
  );
}
```

# action

```
export async function action({ request, params }) {
  const formData = await request.formData();
  const post = Object.fromEntries(formData);

  await mongoose.models.Post.findByIdAndUpdate(params.postId, post);

  return redirect(`/posts/${params.postId}`);
}
```

# backend

# frontend (& backend)

# backend

# loader

```
export async function loader({ params }) {
  const post = await mongoose.models.Post.findById(params.postId);
  return json({ post });
}

export default function UpdatePost() {
```

# component

```
const { post } = useLoaderData();

return (
  <div className="page">
    <h1>Update Post</h1>
    <Form id="post-form" method="post">
      <input defaultValue={post.caption} name="caption" type="text" />
      <button>Save</button>
    </Form>
  </div>
);
```

# action

```
export async function action({ request, params }) {
  const formData = await request.formData();
  const post = Object.fromEntries(formData);

  await mongoose.models.Post.findByIdAndUpdate(params.postId, post);

  return redirect(`/posts/${params.postId}`);
}
```



# loader

```
export async function loader({ params }) {
  const post = await mongoose.models.Post.findById(params.postId);
  return json({ post });
}

export default function UpdatePost() {
```

# component

```
const { post } = useLoaderData();

return (
  <div className="page">
    <h1>Update Post</h1>
    <Form id="post-form" method="post">
      <input defaultValue={post.caption} name="caption" type="text" />
      <button>Save</button>
    </Form>
  </div>
);
```

# action

```
export async function action({ request, params }) {
  const formData = await request.formData();
  const post = Object.fromEntries(formData);

  await mongoose.models.Post.findByIdAndUpdate(params.postId, post);

  return redirect(`/posts/${params.postId}`);
}
```

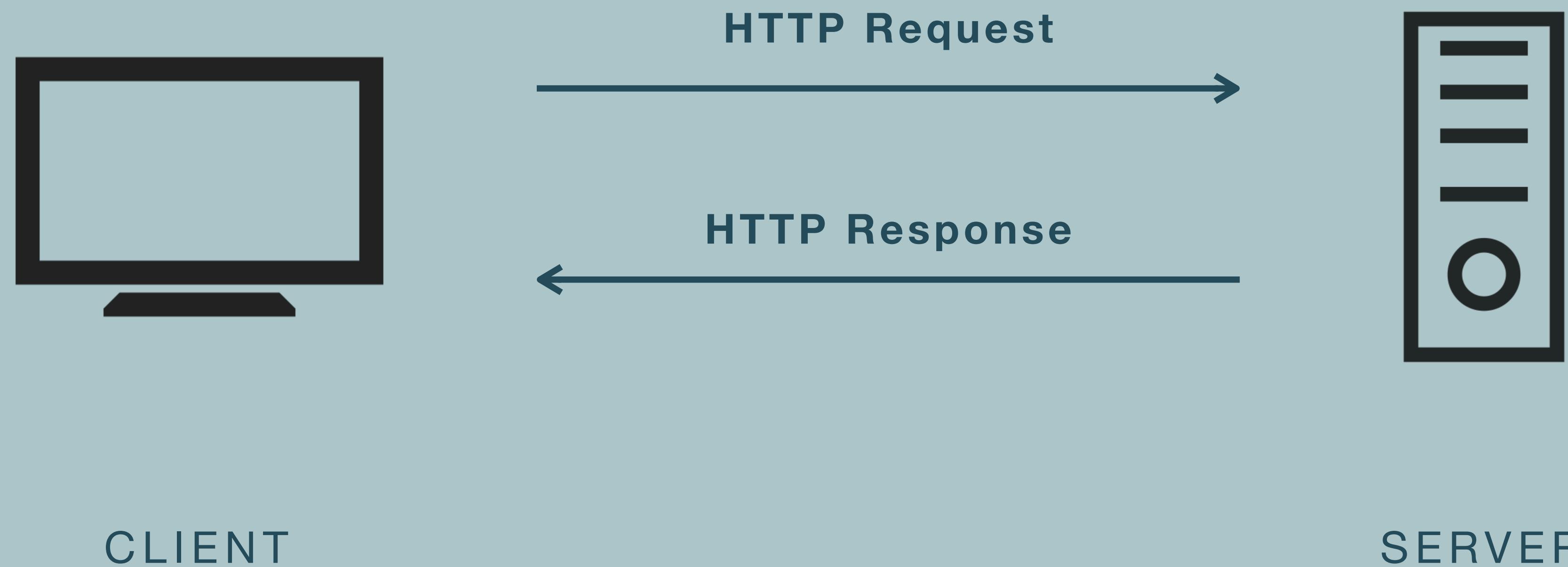


response

request

# Client-Server Model

Communication between web **clients** and web **servers**.



# Client-Server Model

Communication between web **clients** and web **servers**.



loader

```
export async function loader({ params }) {
  const post = await mongoose.models.Post.findById(params.postId);
  return json({ post });
}
```

component

```
export default function UpdatePost() {
  const { post } = useLoaderData();

  return (
    <div className="page">
      <h1>Update Post</h1>
      <Form id="post-form" method="post">
        <input defaultValue={post.caption} name="caption" type="text" />
        <button>Save</button>
      </Form>
    </div>
  );
}
```

action

```
export async function action({ request, params }) {
  const formData = await request.formData();
  const post = Object.fromEntries(formData);

  await mongoose.models.Post.findByIdAndUpdate(params.postId, post);

  return redirect(`/posts/${params.postId}`);
}
```

# Review your routes

# Loader -> Component -> Action

	<b>Function name</b>	<b>Runs in browser</b>	<b>Runs on server</b>
returns html	<code>export default function Component() {}</code>		
load data for route	<code>export function loader() {}</code>		
process form submit + save to db	<code>export function action()</code>		

# Remix

## Auth

# Remix

## Auth

- Remix Auth is a library for implementing authentication in Remix Applications.
- Simplifies the process of adding authentication by providing a structured way to handle user authentication flows, including login, logout, and session management.
- Heavily inspired by Passport.js

# Authentication?

Authentication is the process of **verifying the identity of a user or system**, typically through credentials like **usernames and passwords, biometric data, or security tokens**, to ensure that individuals are who they claim to be before **granting access** to secure systems or information.



# Protected Routes

User navigates  
to protected page



Is there a userId  
in the cookie session?

Yes

Renders  
page

No

Redirects to  
login page

# Login Route

User navigates  
to login page



Is there a userId  
in the cookie session?

Yes

Redirects to  
home page

No

Renders page



## Auth

The core idea is to provide a developer-friendly, secure, and flexible way to add authentication to your Remix applications, leveraging the framework's conventions and the broader ecosystem of authentication providers.

# Authentication Flows

- During the login process, Remix Auth creates a new session for the authenticated user and stores the session ID in a cookie.

```
// Create an instance of the authenticator, pass a generic with
// strategies will return and will store in the session
export let authenticator = new Authenticator(sessionStorage, {
  sessionErrorKey: "sessionErrorKey" // keep in sync
});

// Tell the Authenticator to use the form strategy
authenticator.use(
  new FormStrategy(async ({ form }) => { ... }),
  "user-pass"
);

export async function action({ request }) {
  // we call the method with the name of the strategy we want to
  // request object, optionally we pass an object with the URLs
  // to be redirected to after a success or a failure
  return await authenticator.authenticate("user-pass", request,
    successRedirect: "/posts",
    failureRedirect: "/signin"
  );
}
```

# Authentication Flows

- For logout, it destroys the session on the server and clears the cookie on the client side.

```
// Create an instance of the authenticator, pass a generic with
// strategies will return and will store in the session
export let authenticator = new Authenticator(sessionStorage, {
  sessionErrorKey: "sessionErrorKey" // keep in sync
});

// Tell the Authenticator to use the form strategy
authenticator.use(
  > new FormStrategy(async ({ form }) => { ... })
),
"user-pass"
);

export async function action({ request }) {
  await authenticator.logout(request, { redirectTo: "/signin" })
}
```

# Access Control

- Remix Auth uses the session data to control access to routes within the application.
- It can check if a user is authenticated and authorize access to protected resources based on the session information.

```
// Create an instance of the authenticator, pass a generic with
// strategies will return and will store in the session
export let authenticator = new Authenticator(sessionStorage, {
  sessionErrorKey: "sessionErrorKey" // keep in sync
});
```

```
// Tell the Authenticator to use the form strategy
authenticator.use(
  new FormStrategy(async ({ form }) => { ... }),
  "user-pass"
);
```

```
export async function loader({ request }) {
  return await authenticator.isAuthenticated(request, {
    failureRedirect: "/signin"
  });
}
```

# Remix

Auth: Route protection & restriction

# Protect routes

- Loaders: protect all your loaders!
- Actions: protect all your actions!

```
// app/routes/add-post.jsx

export async function loader({ request }) {
  return await authenticator.isAuthenticated(request, {
    failureRedirect: "/signin",
  });
}

export default function AddPost() { ... }

export async function action({ request }) {
  // Get the authenticated user
  const user = await authenticator.isAuthenticated(request, {
    failureRedirect: "/signin",
  });

  console.log(user);
  const formData = await request.formData();
  const post = Object.fromEntries(formData);

  // Add the authenticated user's id to the post.user field
  post.user = user._id;
  // Save the post to the database
  await mongoose.models.Post.create(post);
```

# Protect routes

- Loaders: protect all your loaders!
- Actions: protect all your actions!

```
// app/routes/posts.$postId.destroy.jsx

export async function loader({ request }) {
  return await authenticator.isAuthenticated(request, {
    failureRedirect: "/signin",
  });
}

export async function action({ request, params }) {
  // Protect the route
  await authenticator.isAuthenticated(request, {
    failureRedirect: "/signin",
  });
  // Delete the post
  await mongoose.models.Post.findByIdAndDelete(params.postId);
  return redirect("/posts");
}
```

Loaders and actions must return a response

# Protect routes

- Loaders: protect all your loaders!
- Actions: protect all your actions!

```
// app/routes/signin.jsx

export async function loader({ request }) {
  // If the user is already authenticated redirect to /posts direct
  await authenticator.isAuthenticated(request, {
    successRedirect: "/posts"
  });

  // Retrieve error message from session if present
  const session = await sessionStorage.getSession(request.headers.cookie);
  // Get the error message from the session
  const error = session.get("sessionErrorKey");
  return json({ error }); // return the error message
}

export default function SignIn() { ... }

export async function action({ request }) {
  return await authenticator.authenticate("user-pass", request, {
    successRedirect: "/posts",
    failureRedirect: "/signin"
  });
}
```

Loaders and actions must return a response

# Restrictions

- Assigning Ownership: Assign the Authenticated User to a new post.
- Make sure the authenticated user becomes the owner/creator of a new post.

```
// app/routes/add-post.jsx
export async function action({ request }) {
  // Get the authenticated user
  const user = await authenticator.isAuthenticated(request, {
    failureRedirect: "/signin",
  });

  // Get the form data
  const formData = await request.formData();
  const post = Object.fromEntries(formData);

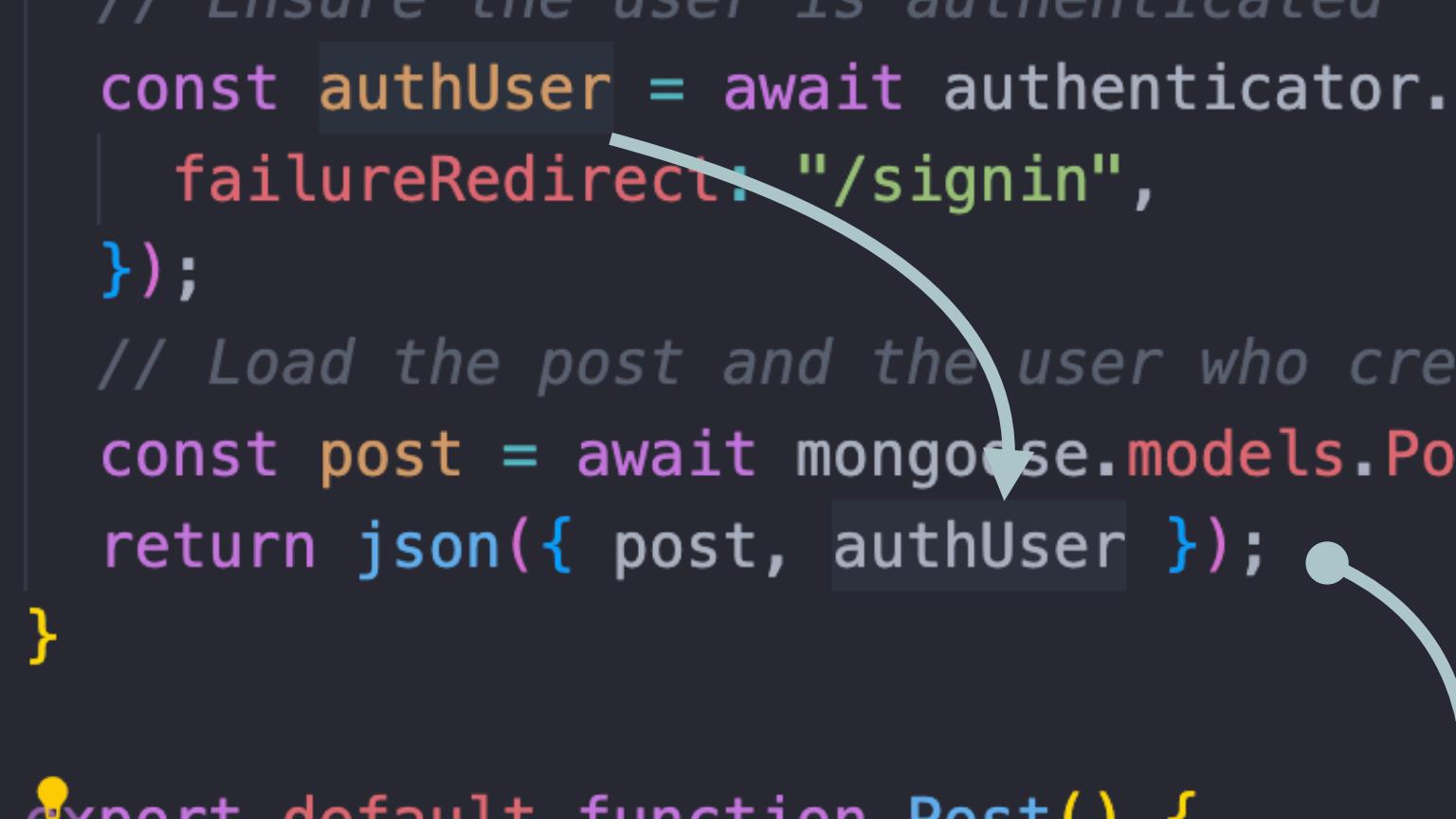
  // Add the authenticated user's id to the post.user field
  post.user = user._id;
  // Save the post to the database
  await mongoose.models.Post.create(post);

  return redirect("/posts");
}
```

# Restrictions

- User Restrictions: a user cannot update and delete other users' posts.
- Make sure only the authenticated/owner/ creator of the post can update and delete.

```
export async function loader({ request, params }) {  
  // Ensure the user is authenticated  
  const authUser = await authenticator.isAuthenticated(request, {  
    failureRedirect: "/signin",  
  });  
  // Load the post and the user who created it  
  const post = await mongoose.models.Post.findById(params.postId);  
  return json({ post, authUser });  
}  
  
export default function Post() {  
  const { post, authUser } = useLoaderData();  
  function confirmDelete(event) {...}  
  return (  
    <div id="post-page" className="page">  
      <h1>{post.caption}</h1>  
      <PostCard post={post} />  
      {authUser._id === post.user._id && (  
        <div className="btns">  
          <Form action="update">  
            <button>Update</button>  
          </Form>  
          <Form action="destroy" method="post" onSubmit={confirmDelete}>  
            <button>Delete</button>  
          </Form>  
        </div>  
      )}  
    </div>  
  );  
}
```



# Restrictions

- Restrict the action handler for update post.
- Ensure only the post's authenticated/owner/creator can update.
- Check the id of the auth user and the user of the post.

```
export async function action({ request, params }) {
  // Protect the route
  const authUser = await authenticator.isAuthenticated(request, {
    failureRedirect: '/signin',
  });

  // Fetch the post to check if the current user is the creator
  const postToUpdate = await mongoose.models.Post.findById(params.postId);

  if (postToUpdate.user.toString() !== authUser._id.toString()) {
    // User is not the creator of the post, redirect
    return redirect(`/posts/${params.postId}`);
  }

  // User is authenticated and is the creator, proceed to update the post
  const formData = await request.formData();
  const post = Object.fromEntries(formData);

  // Since postToUpdate is already the document you want to update,
  // you can directly modify and save it, which can be more efficient than
  postToUpdate.caption = post.caption;
  postToUpdate.image = post.image;
  await postToUpdate.save();

  return redirect(`/posts/${params.postId}`);
}
```

**Remix**

Auth: AuthorizationError

# AuthorizationError

- Set AuthorizationError in authenticator, auth.server.jsx

```
// Tell the Authenticator to use the form strategy
authenticator.use(
  new FormStrategy(async ({ form }) => {
    let mail = form.get("mail");
    let password = form.get("password");

    // do some validation, errors are saved in the sessionErrorKey
    if (!mail || typeof mail !== "string" || !mail.trim()) {
      throw new AuthorizationError("Email is required and must be a string");
    }

    if (!password || typeof password !== "string" || !password.trim()) {
      throw new AuthorizationError("Password is required and must be a string");
    }

    // verify the user
    const user = await verifyUser({ mail, password });
    if (!user) {
      // if problem with user throw error AuthorizationError
      throw new AuthorizationError("User not found");
    }
    console.log(user);
    return user;
  }),
  "user-pass"
);
```

# AuthorizationError

- And set AuthorizationError in verifyUser, auth.server.jsx

```
async function verifyUser({ mail, password }) {  
  const user = await mongoose.models.User.findOne({ mail }).select("+p  
  if (!user) {  
    throw new AuthorizationError("No user found with this email.");  
  }  
  
  const passwordMatch = await bcrypt.compare(password, user.password);  
  if (!passwordMatch) {  
    throw new AuthorizationError("Invalid password.");  
  }  
  // Remove the password from the user object before returning it  
  user.password = undefined;  
  return user;  
}
```

# AuthorizationError

- In loaders, read errors from the session, sessionErrorKey.
- Save error in a variable and return to Component.
- Read error through useLoaderData in the Component.

```
export async function loader({ request }) {  
  // If the user is already authenticated redirect to /posts directly  
  await authenticator.isAuthenticated(request, {  
    successRedirect: "/posts",  
  });  
  // Retrieve error message from session if present  
  const session = await sessionStorage.getSession(request.headers.get("Cookie"));  
  // Get the error message from the session  
  const error = session.get("sessionErrorKey");  
  // Remove the error message from the session after it's been retrieved  
  session.unset("sessionErrorKey");  
  // Commit the updated session that no longer contains the error message  
  const headers = new Headers({  
    "Set-Cookie": await sessionStorage.commitSession(session),  
  });  
  
  return json({ error }, { headers }); // return the error message  
}  
  
export default function SignUp() {  
  // if i got an error it will come back with the loader data  
  const loaderData = useLoaderData();  
  console.log("error:", loaderData?.error);  
}
```

# AuthorizationError

- Reset the sessionErrorKey in loader for signin and signup route.

```
export async function loader({ request }) {  
  // If the user is already authenticated redirect to /posts direct  
  await authenticator.isAuthenticated(request, {  
    successRedirect: "/posts",  
  });  
  // Retrieve error message from session if present  
  const session = await sessionStorage.getSession(request.headers.cookie);  
  // Get the error message from the session  
  const error = session.get("sessionErrorKey");  
  // Remove the error message from the session after it's been returned  
  session.unset("sessionErrorKey");  
  // Commit the updated session that no longer contains the error message  
  const headers = new Headers({  
    "Set-Cookie": await sessionStorage.commitSession(session),  
  });  
  
  return json({ error }, { headers }); // return the error message  
}
```

**Remix**



Form Validation and Error Messages

# Form Validation and Error Messages

Name    
Please enter your first name That's too short

Twitter   
A valid Twitter handle is 1-15 characters

Avatar URL   
That's not a valid image URL

[Save](#) [Cancel](#)

# Define and use “schema errors”

```
export async function action({ params, request }) {
  invariant(params.contactId, "Missing contactId param");
  const formData = await request.formData();
  const contact = await mongoose.models.Contact.findById(params.contactId);
  if (!contact) {
    throw new Response("Contact not found", { status: 404 });
  }
  contact.first = formData.get("first");
  contact.last = formData.get("last");
  contact.twitter = formData.get("twitter");
  contact.avatar = formData.get("avatar");
  try {
    await contact.save();
  } catch (error) {
    return json(
      {
        // Pass the validation errors back to the client to be displayed
        // alongside the relevant form fields. We get these errors from the
        // Mongoose model's validation:
        // https://mongoosejs.com/docs/validation.html#validation-errors
        errors: error.errors,
        // Pass the form data back to the client as "values" so the user doesn't
        // lose their changes in case JavaScript is disabled and the page reloads
        // on submit.
        values: Object.fromEntries(formData),
      },
      { status: 400 },
    );
    return redirect(`/contacts/${params.contactId}`);
  }
}
```

```
const contactSchema = new mongoose.Schema(
{
  first: {
    type: String,
    required: [true, "Please enter your first name"],
    minLength: [2, "That's too short"],
  },
  last: {
    type: String,
    required: [true, "Please enter your last name"],
    minLength: [2, "That's too short"],
  },
  avatar: {
    type: String,
    match: [
      /^https?:\/\/.*\.(?:png|jpg|jpeg|gif|svg|webp)$/i,
      "That's not a valid image URL",
    ],
  },
  twitter: {
    type: String,
    match: [/^@?(\w){1,15}$/i, "A valid Twitter handle is 1-15 characters"],
  },
  favorite: {
    type: Boolean,
    default: false,
  },
  notes: [
    {
      note: {
        type: String,
        required: true,
        minLength: [2, "That's too short"],
      },
    },
  ],
},
// Automatically add `createdAt` and `updatedAt` timestamps:
```

# Read errors in Component

```
export async function action({ params, request }) {
  invariant(params.contactId, "Missing contactId param");
  const formData = await request.formData();
  const contact = await mongoose.models.Contact.findById(params.contactId);
  if (!contact) {
    throw new Response("Contact not found", { status: 404 });
  }
  contact.first = formData.get("first");
  contact.last = formData.get("last");
  contact.twitter = formData.get("twitter");
  contact.avatar = formData.get("avatar");
  try {
    await contact.save();
  } catch (error) {
    return json({
      // Pass the validation errors back to the client to be displayed
      // alongside the relevant form fields. We get these errors from the
      // Mongoose model's validation:
      // https://mongoosejs.com/docs/validation.html#validation-errors
      errors: error.errors,
      // Pass the form data back to the client as "values" so the user doesn't
      // lose their changes in case JavaScript is disabled and the page reloads
      // on submit.
      values: Object.fromEntries(formData),
    },
    { status: 400 },
  );
  return redirect(`/contacts/${params.contactId}`);
}
```

```
export default function EditContact() {
  const { contact } = useLoaderData();
  const actionData = useActionData();
  const navigate = useNavigate();

  return (
    <Form id="contact-form" method="post">
      <p>
        <span>Name</span>
        <Input
          name="first"
          ariaLabel="First name"
          defaultValue={actionData?.values?.first ?? contact.first}
          placeholder="First"
          errorMessage={actionData?.errors?.first?.message}
        />
        <Input
          name="last"
          ariaLabel="Last name"
          defaultValue={actionData?.values?.last ?? contact.last}
          placeholder="Last"
          errorMessage={actionData?.errors?.last?.message}
        />
      </p>
      <label htmlFor="twitter">
        <span>Twitter</span>
        <Input
          name="twitter"
          defaultValue={actionData?.values?.twitter ?? contact.twitter}
          placeholder="Twitter"
          errorMessage={actionData?.errors?.twitter?.message}
        />
      </label>
      <label htmlFor="avatar">
        <span>Avatar URL</span>
        <Input
          name="avatar"
          ariaLabel="Avatar URL"
          defaultValue={actionData?.values?.avatar ?? contact.avatar}
          placeholder="https://example.com/avatar.jpg"
          errorMessage={actionData?.errors?.avatar?.message}
        />
      </label>
    </Form>
  );
}
```

The word "Remix" is written in a bold, sans-serif font. Each letter is a different color: R is blue, e is green, m is yellow, i is pink, and x is red. The letters are slightly overlapping, creating a sense of depth. The background is black.

Destructuring in Remix: loaders & actions

# Destructuring

- A JavaScript feature for unpacking or extracting *values from arrays* or *properties from objects* into distinct *variables*.
- Destructuring enhances code readability and efficiency by reducing the verbosity of accessing data in arrays and objects and simplifying parameter handling in functions.

```
export async function loader({ request }) {
  await authenticator.isAuthenticated(request, {
    failureRedirect: "/signin",
  });

  const posts = await mongoose.models.Post.find()
    .sort({ createdAt: -1 })
    .populate("user");

  return json({ posts });
}

export default function Index() {
  const { posts } = useLoaderData();
  return (
    <div className="page">
      <h1>Posts</h1>
      <section className="grid">
        {posts.map((post) => (
          <Link key={post._id} className="post-link" to={`#${post._id}`}>
            <PostCard post={post} />
          </Link>
        ))}
      </section>
    </div>
  );
}
```



# Destructuring

## 1.7. Destructuring

What: Extract what we need from an existing array or object.

Why: Makes it easy to extract only what we need from an existing array or object.

### Objects

```
const teacher = {
  name: "Morten",
  email: "moab@eaaa.dk"
};

//choose name and email
const { name, email } = teacher;
//name: "Morten"
//email: "moab@eaaa.dk"
```

### Arrays

```
const teachers = ["Rasmus", "Morten", "Dan"];

//choose two names
const [mrFrontend, mrWebComponents] = teachers;
//mrFrontend: "Rasmus"
//mrWebComponents: "Morten"
```

# Array Destructuring

- Allows unpacking elements from an array into separate variables based on their position.
- Can skip elements by leaving gaps in the variable list.
- Example:

```
const [first, second] = [1, 2];
```

```
const names = ["Anne", "Birthe", "Dan", "Kasper"];  
  
// Without destructuring  
const first = names[0]; // Anne  
const second = names[1]; // Birthe  
const third = names[2]; // Dan  
const fourth = names[3]; // Kasper  
  
// With destructuring  
const [first, second, third, fourth] = names;
```

# Object Destructuring

- Enables unpacking properties from objects into variables based on the property name.
- Allows for renaming variables to avoid naming conflicts or for clarity.
- Example:

```
const { name: userName, age } =  
{ name: 'John', age: 30 };
```

```
const person = {  
  name: "John Doe",  
  age: 30,  
};  
  
// Without destructuring  
const name = person.name;  
const age = person.age;  
  
// With destructuring  
const { name, age } = person;
```

# Function Parameter Destructuring

- Simplifies extracting values from an object or array passed as a function parameter.
- Reduces the need for manual extraction within the function body.
- Example: `function greet({ name }) { console.log(name); }`

```
function introduce({ name, age }) {
  console.log(`My name is ${name} and I am ${age} years old.`);
}

const person = {
  name: "John Doe",
  age: 30,
};

introduce(person); // Outputs: My name is John Doe and I am 30 years old.
```

# Destructuring in loaders and actions

- **Function Parameter Destructuring:** Extracts request and params directly in the loader function, simplifying property access.
- **Response Object Destructuring:** Combines post and authUser into a single response in loader, enhancing code clarity.
- **Component Data Destructuring:** The Post component uses destructuring to access post and authUser from useLoaderData(), improving readability.
- **Conditional Rendering with Destructured Data:** Utilizes authUser.\_id and post.user.\_id to conditionally render update/delete buttons, streamlining authorization checks.
- **Readability and Maintenance:** Destructuring at the start of post clarifies data dependencies, aiding in readability and maintenance.

```
export async function loader({ request, params }) {  
  // Ensure the user is authenticated  
  const authUser = await authenticator.isAuthenticated(request, {  
    failureRedirect: "/signin",  
  });  
  // Load the post and the user who created it  
  const post = await mongoose.models.Post.findById(params.postId);  
  return json({ post, authUser });  
}  
  
export default function Post() {  
  const { post, authUser } = useLoaderData();  
  function confirmDelete(event) { ... }  
  return (  
    <div id="post-page" className="page">  
      <h1>{post.caption}</h1>  
      <PostCard post={post} />  
      {authUser._id === post.user._id && (  
        <div className="btns">  
          <Form action="update">  
            <button>Update</button>  
          </Form>  
          <Form action="destroy" method="post" onSubmit={confirmDelete}>  
            <button>Delete</button>  
          </Form>  
        </div>  
      )}  
    </div>  
  );  
}
```

The diagram illustrates the flow of data from the loader function to the Post component. A curved arrow originates from the 'request' parameter in the loader function and points to the 'request' parameter in the 'useLoaderData()' hook call within the Post component. Another curved arrow originates from the 'params' parameter in the loader function and points to the 'params' object in the 'useLoaderData()' hook call. A third curved arrow originates from the 'authUser' variable in the loader function and points to the 'authUser' variable in the 'useLoaderData()' hook call. A fourth curved arrow originates from the 'post' variable in the loader function and points to the 'post' variable in the 'useLoaderData()' hook call. A fifth curved arrow originates from the 'post' variable in the loader function and points to the 'post' prop in the 'PostCard' component. A sixth curved arrow originates from the 'authUser' variable in the loader function and points to the 'authUser' prop in the 'PostCard' component. A seventh curved arrow originates from the 'authUser' variable in the loader function and points to the conditional rendering logic in the Post component's return statement. A eighth curved arrow originates from the 'post' variable in the loader function and points to the conditional rendering logic in the Post component's return statement.

# Querying with Mongoose

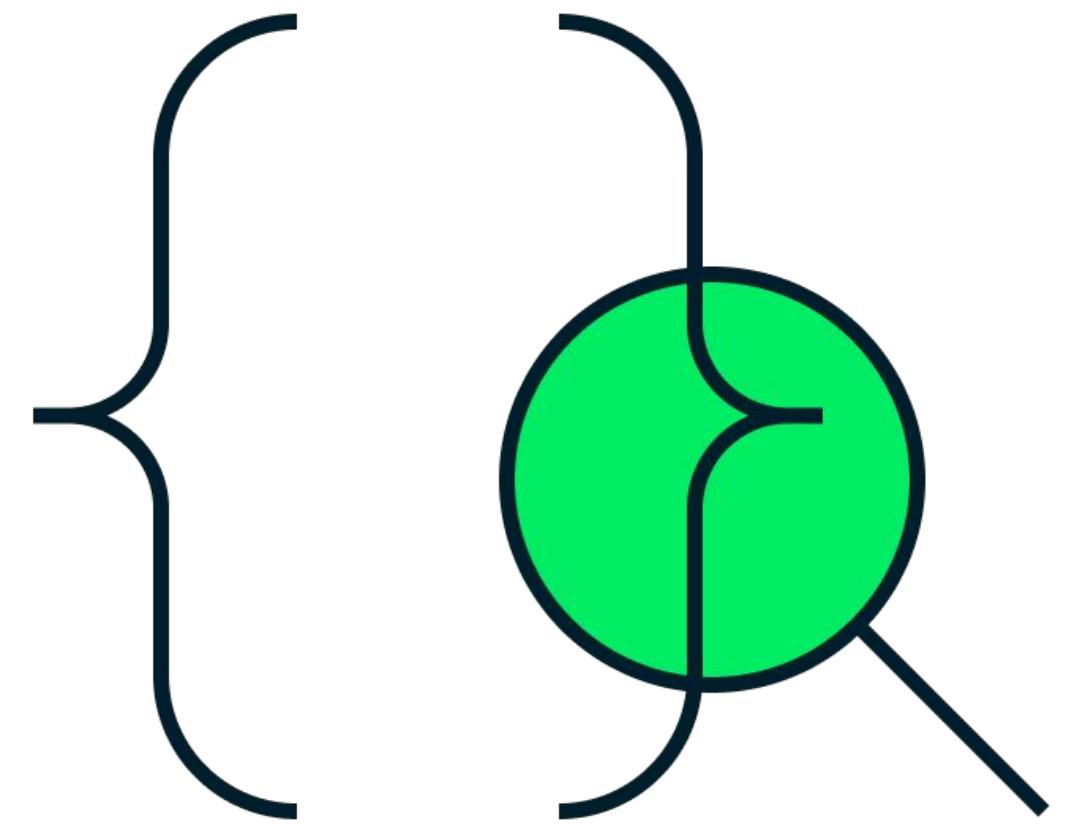




Simple syntax

Designed to query  
documents

Only queries a single  
collection



MongoDB Query  
Language



`$lt`: Exists and less than

`$lte`: Exists and less than or equal to

`$gt`: Exists and greater than

`$gte`: Exists and greater than or equal to

`$ne`: Does not exist or does but not equal to

`$eq`: Exists and equal to

`$in`: Exists and in a set

`$nin`: Does not exist or not in a set

## MQL Query Operators: Comparison



```
db.people.find(  
  {  
    "age": { $lt: 30 }  
  }  
)
```

With the age field  
value being \$lt (less  
than) 30

The screenshot shows a web browser window with the title "MongoDB Query Operators" in the tab bar. The address bar displays the URL "w3schools.com/mongodb...". The page content is from w3schools.com and discusses MongoDB query operators. It includes sections on Logical operators and Evaluation operators, each with a list of operators and their descriptions.

## Logical

The following operators can logically compare multiple queries.

- **\$and** : Returns documents where both queries match
- **\$or** : Returns documents where either query matches
- **\$nor** : Returns documents where both queries fail to match
- **\$not** : Returns documents where the query does not match

## Evaluation

The following operators assist in evaluating documents.

- **\$regex** : Allows the use of regular expressions when evaluating field values
- **\$text** : Performs a text search
- **\$where** : Uses a JavaScript expression to match documents

[https://www.w3schools.com/mongodb/mongodb\\_query\\_operators.php](https://www.w3schools.com/mongodb/mongodb_query_operators.php)

# Query Users

## 1. Find all users:

javascript

 Copy code

```
const allUsers = await User.find();
console.log(allUsers);
```

## 2. Find a specific user by ID:

javascript

 Copy code

```
const specificUser = await User.findById("user_id_here");
console.log(specificUser);
```

## 3. Find users with a specific title:

javascript

 Copy code

```
const usersWithTitle = await User.find({ title: "Senior Lecturer" });
console.log(usersWithTitle);
```

## Query Posts

### 1. Find all posts:

javascript

 Copy code

```
const allPosts = await Post.find();
console.log(allPosts);
```

### 2. Find posts with a specific tag:

javascript

 Copy code

```
const postsWithTag = await Post.find({ tags: "tag_name_here" });
console.log(postsWithTag);
```

### 3. Find posts with multiple tags:

javascript

 Copy code

```
const postsWithTags = await Post.find({ tags: { $in: ["tag1", "tag2"] } });
console.log(postsWithTags);
```

#### 4. Find posts by a specific user:

javascript

 Copy code

```
const userPosts = await Post.find({ user: "user_id_here" });
console.log(userPosts);
```

#### 5. Find posts with a minimum number of likes:

javascript

 Copy code

```
const popularPosts = await Post.find({ likes: { $gte: 100 } });
console.log(popularPosts);
```

## Greater Than and Less Than Queries

1. Find posts with more than 100 likes:

javascript

 Copy code

```
const postsWithMoreThan100Likes = await Post.find({ likes: { $gt: 100 } });
console.log(postsWithMoreThan100Likes);
```

2. Find posts with less than 50 likes:

javascript

 Copy code

```
const postsWithLessThan50Likes = await Post.find({ likes: { $lt: 50 } });
console.log(postsWithLessThan50Likes);
```

3. Find posts with likes between 50 and 100 (inclusive):

javascript

 Copy code

```
const postsWithLikesBetween50And100 = await Post.find({ likes: { $gte: 50, $lte: 100 } });
console.log(postsWithLikesBetween50And100);
```

# One tag

```
export async function loader() {
  const posts = await mongoose.models.Post.find({ tags: "Aarhus" })
    .sort({ createdAt: -1 })
    .populate("user");

  return json({ posts });
}
```

# Multiple tags

```
export async function loader() {
  const posts = await mongoose.models.Post.find({ tags: { $in: ["tag1", "tag2"] } });

  return json({ posts });
}
```

# Multiple tags

```
export async function loader() {
  const posts = await mongoose.models.Post.find({
    tags: { $in: ["Aarhus", "city"] },
  })
    .sort({ createdAt: -1 })
    .populate("user");

  return json({ posts });
}
```

# Post by specific user

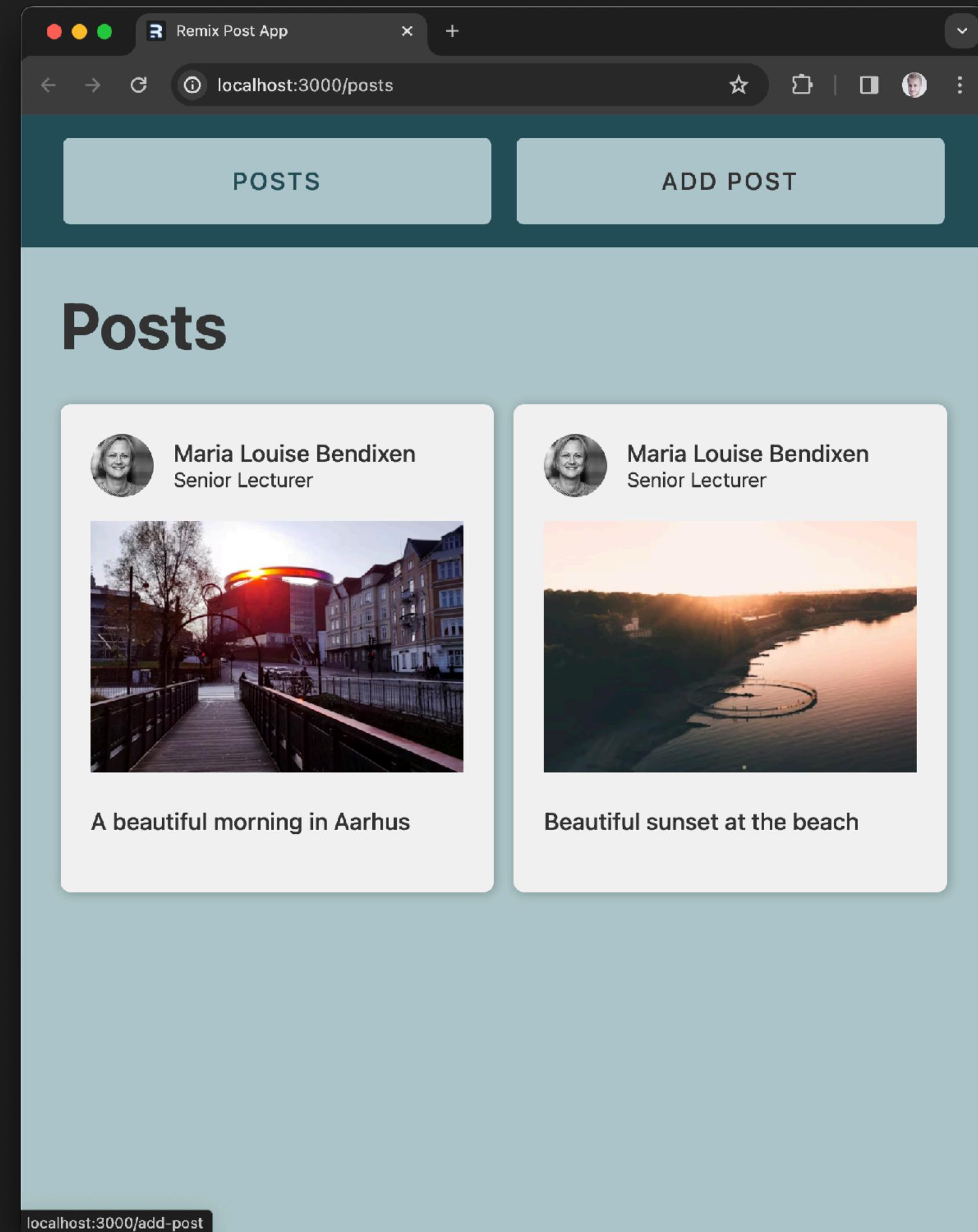
```
export async function loader() {
  const posts = await mongoose.models.Post.find({ user: "65cde4cb0d09cb615a23db17" });

  return json({ posts });
}
```

# Search - caption: “beautiful”

```
export async function loader() {
  const posts = await mongoose.models.Post.find({
    caption: { $regex: "beautiful", $options: "i" }
  })
    .sort({ createdAt: -1 })
    .populate("user");

  return json({ posts });
}
```



# Search - caption: “aarh”

```
export async function loader() {
  const posts = await mongoose.models.Post.find({
    caption: { $regex: "aarh", $options: "i" }
  })
    .sort({ createdAt: -1 })
    .populate("user");

  return json({ posts });
}
```

