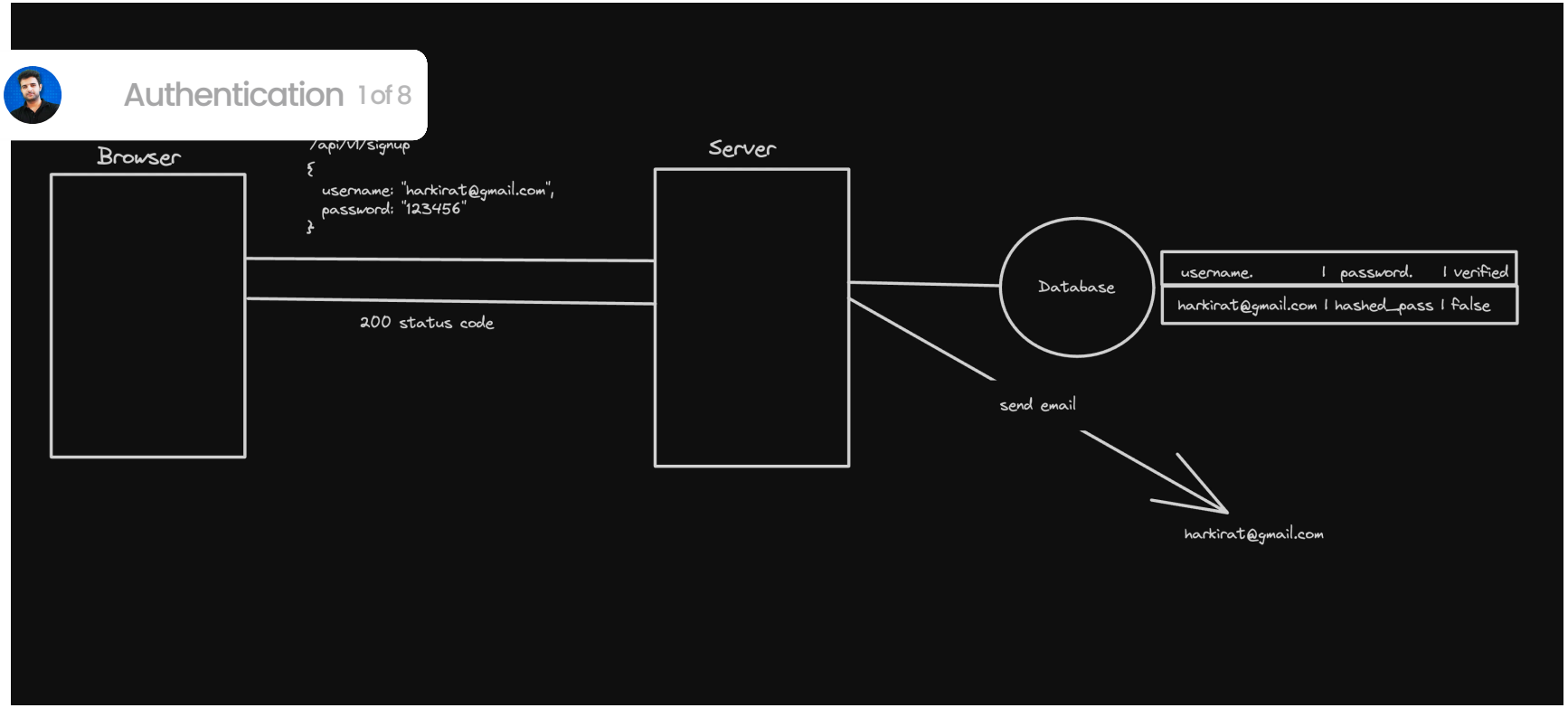
Authentication 1 of 8

What is authentication?

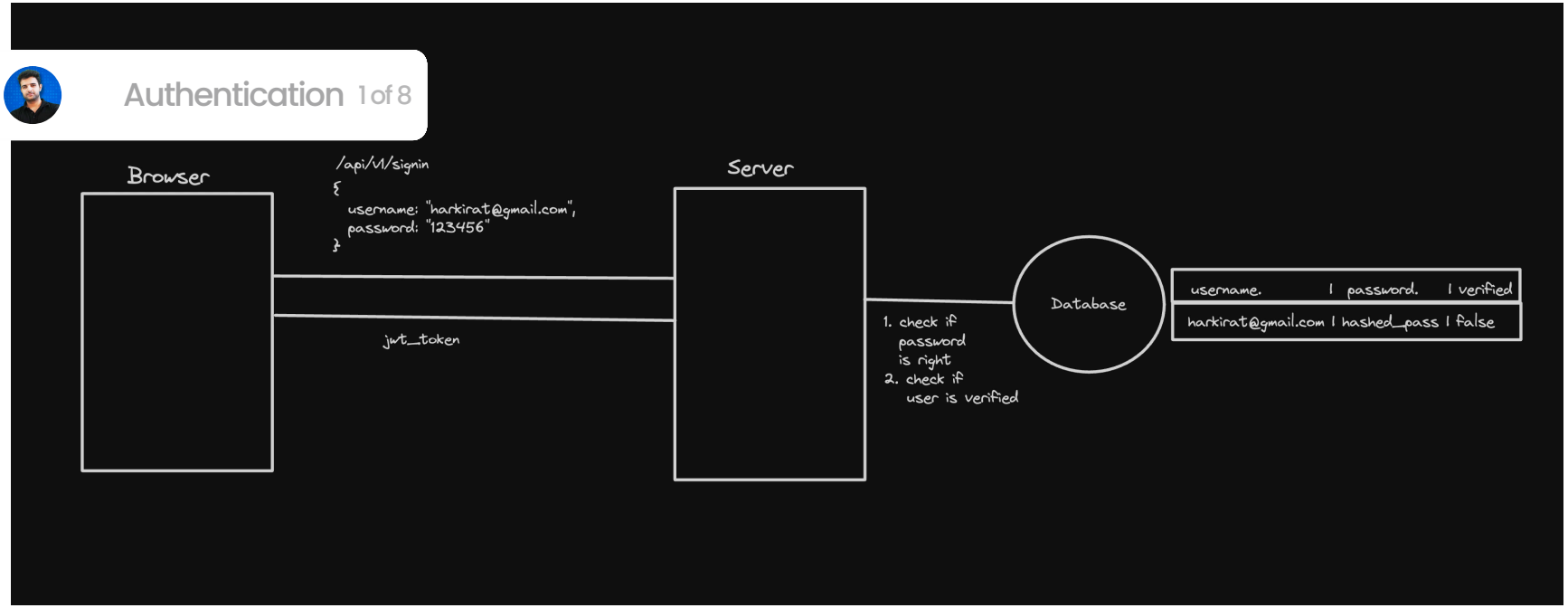
Authentication is the process of letting users signup/signin into websites via Authentication 1 of 8 sword or using SSO (single sign on)

Authentication using jwt + localstorage

Signup


Authentication 1 of 8
Browser
/api/v1/signup
{
username: "harkirat@gmail.com",
password: "123456"
}
200 status code
Server
Database
username. | password. | verified
harkirat@gmail.com | hashed_pass | false
send email
harkirat@gmail.com

Signin



Authentication using cookies (Part 1)

What are cookies

website
e the user

is browsing. They are designed to be a reliable mechanism for websites to

Authentication 1 of 8)s (very similar to local storage)

1. **Session Management:** Cookies allow websites to identify users and track their individual session states across multiple pages or visits.
2. **Personalization:** Websites use cookies to personalize content and ads. For instance, cookies might store information about a user's preferences, allowing the site to tailor content or advertisements to those interests.
3. **Tracking:** Cookies can track users across websites, providing insights into browsing behavior. This information can be used for analytics purposes, to improve website functionality, or for advertising targeting.
4. **Security:** Secure cookies can be used to enhance the security of a website by ensuring that the transmission of information is only done over an encrypted connection, helping to prevent unauthorized access to user data.

We will be focussing on point 4

Why not local storage?

Cookies and LocalStorage both provide ways to store data on the client-side, but they serve different purposes and have different characteristics.

wser) (you

don’t have to explicitly add a header to the fetch call)

This point becomes super important in Next.js, we'll see later why

Authentication 1 of 8

https://github.com/100xdevs-cohort-2/paytm/blob/complete-solution/frontend/src/pages/SendMoney.jsx#L45

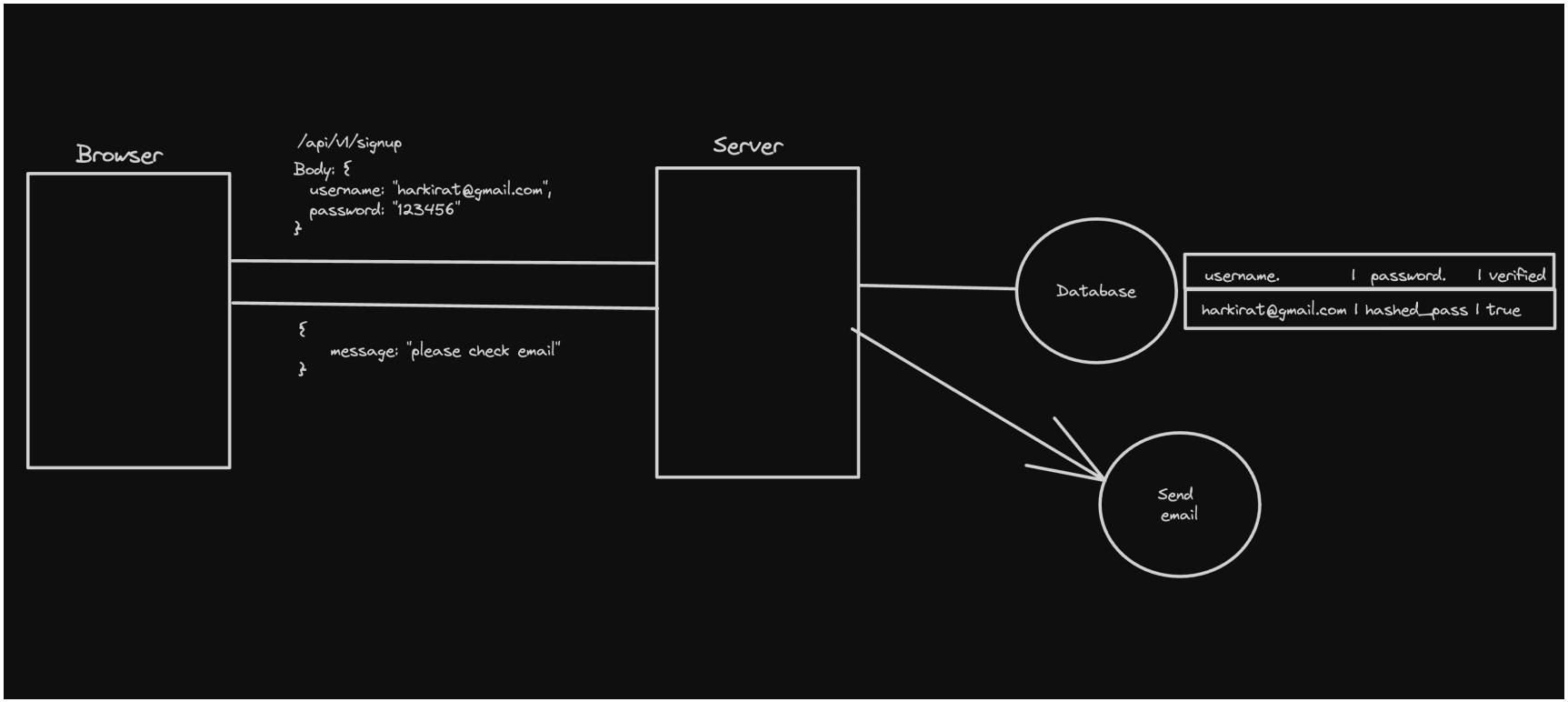
```
axios.post("http://localhost:3000/api/v1/account/transfer", {
    to: id,
    amount
}, {
    headers: {
        Authorization: "Bearer " + localStorage.getItem("token")
    }
})
```

1. Cookies can have an expiry attached to them
2. Cookies can be be restricted to only https and to certain domains

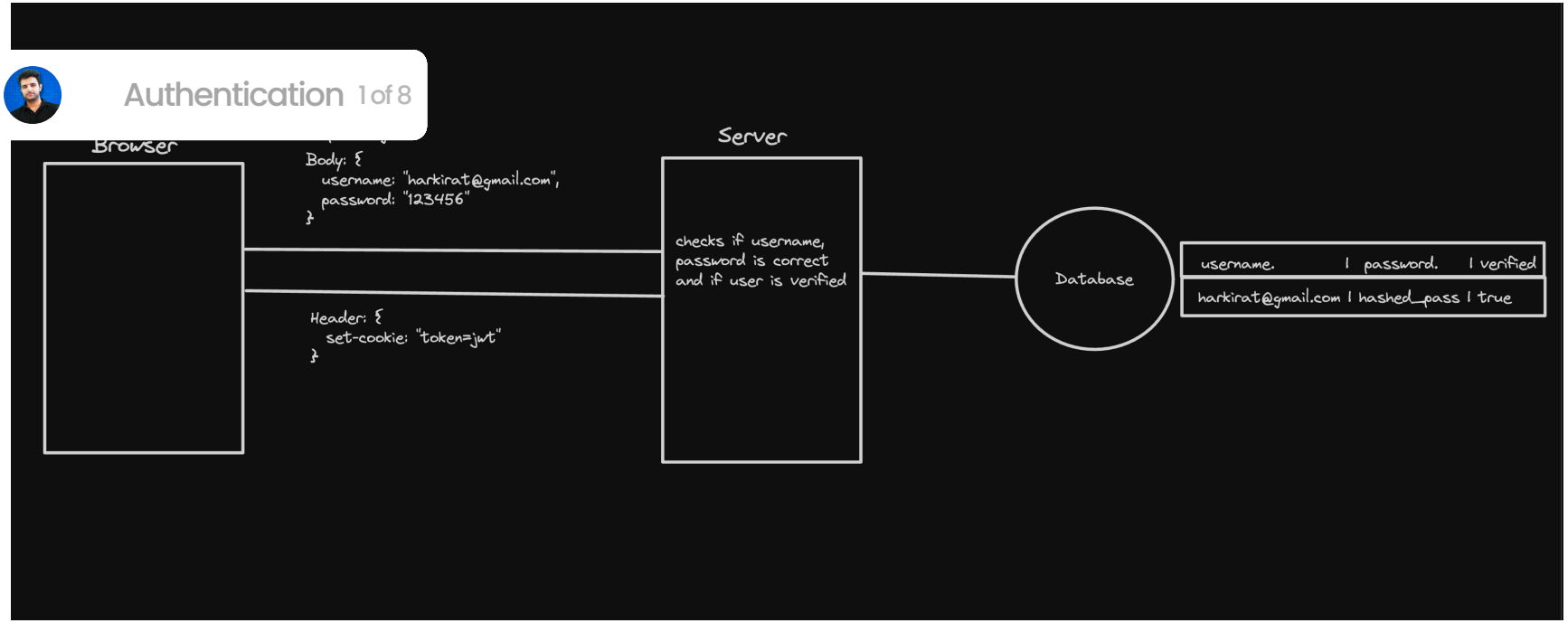
Authentication with cookies (Part 2)

Authentication 1 of 8

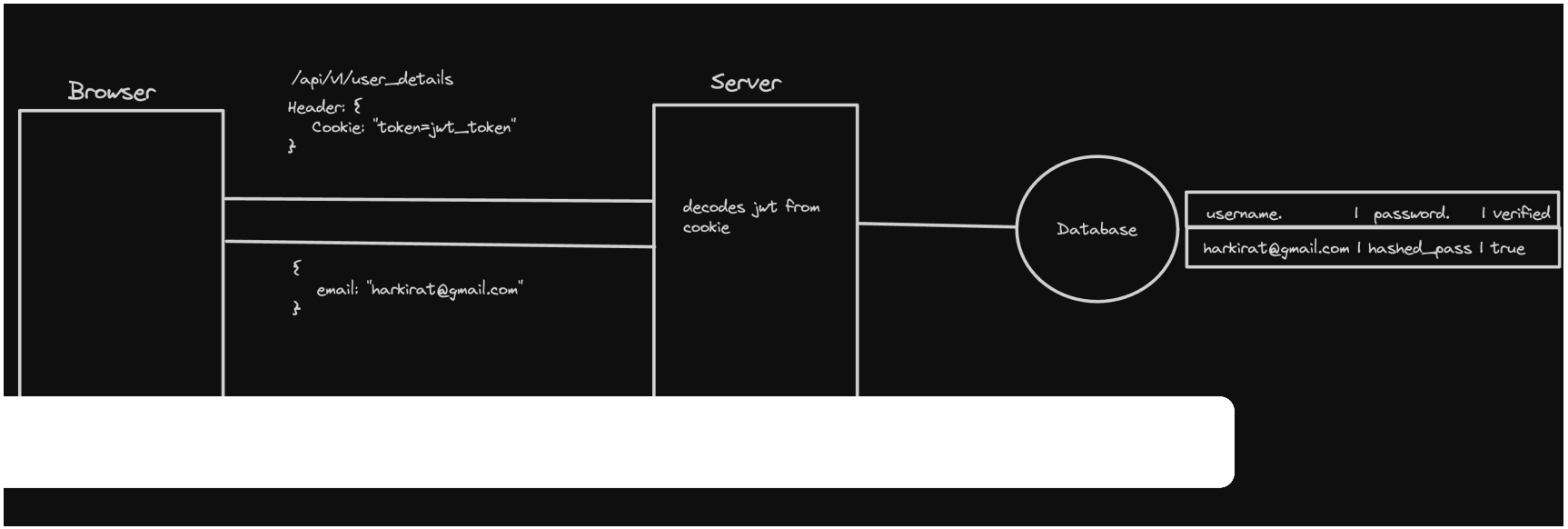
Signup



Signin



Auth endpoints



y set the cookie header in the browser. It's automatically set by the browser in every request

Properties of cookies

Types of cookies

1. Persistent - Stay even if u close the window
2. Session - Go away after the window closes
3. **Secure - S**ent only over secure, encrypted connections (HTTPS).

Properties of cookies

- HttpOnly - Can not be accessed by client side scripts
- **SameSite - Ensures cookies are not send on cross origin requests**

1. Strict
2. Lax - Only GET requests and on top level navigation

Ref - https://portswigger.net/web-security/csrf/bypassing-samesite-ext=SameSite is a browser security,leaks%2C and some cookie exploits.

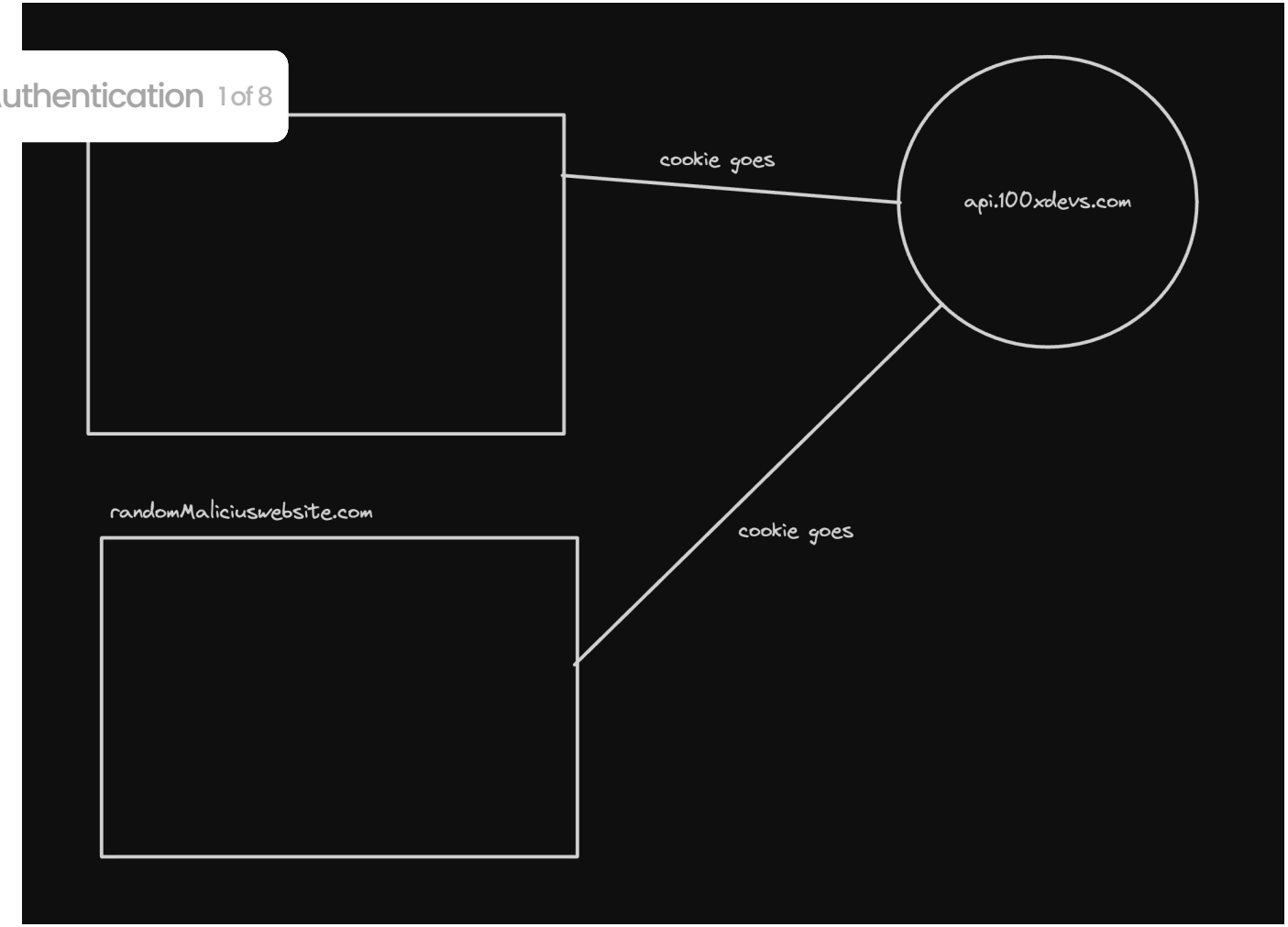
- **Domains** - You can also specify what all domains should the cookie be sent from

CSRF attacks

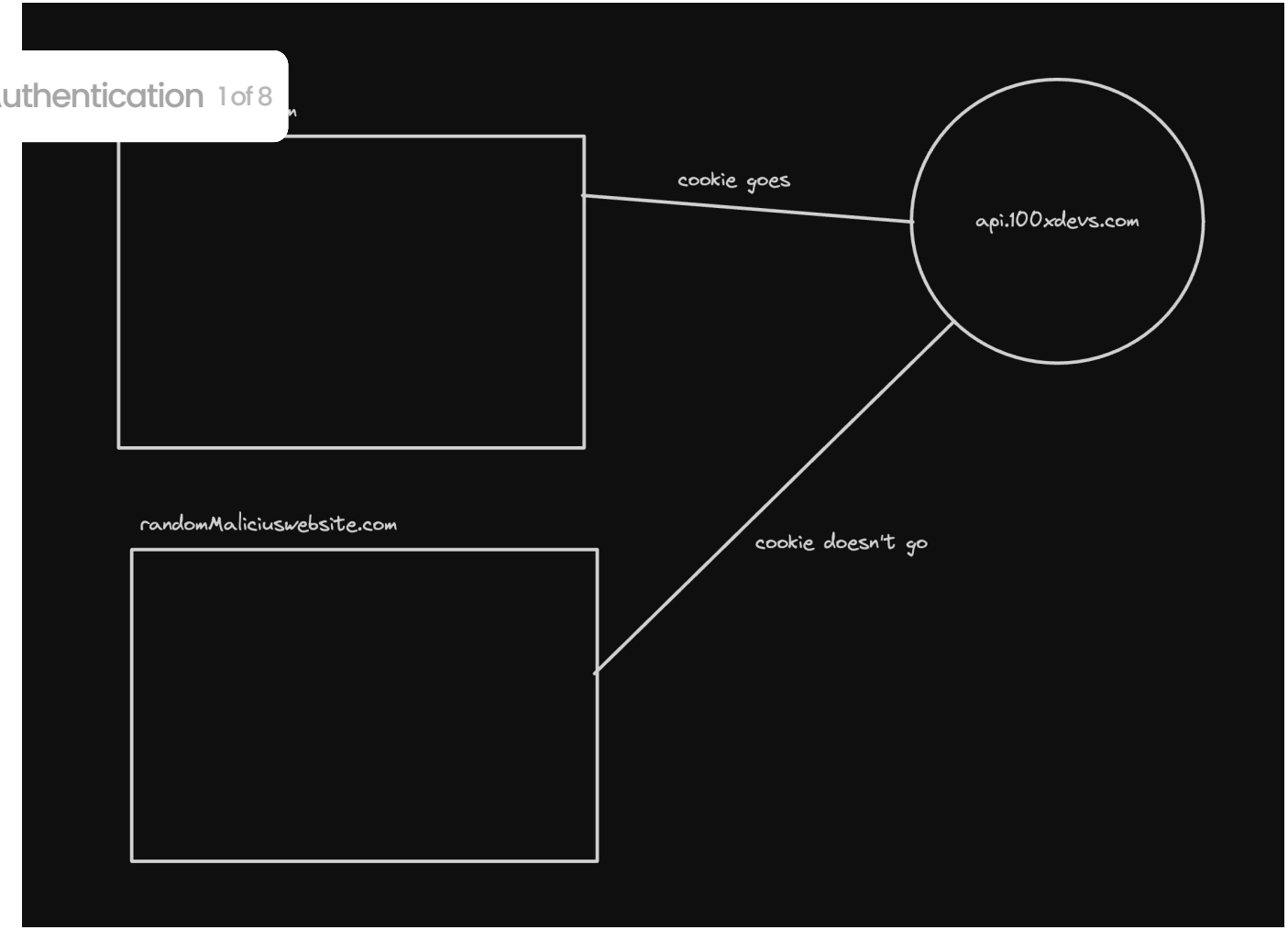
Cross site request forgery attacks were super common because of cookies and hence the SameSite attribute was introduced

Let's see a few cases

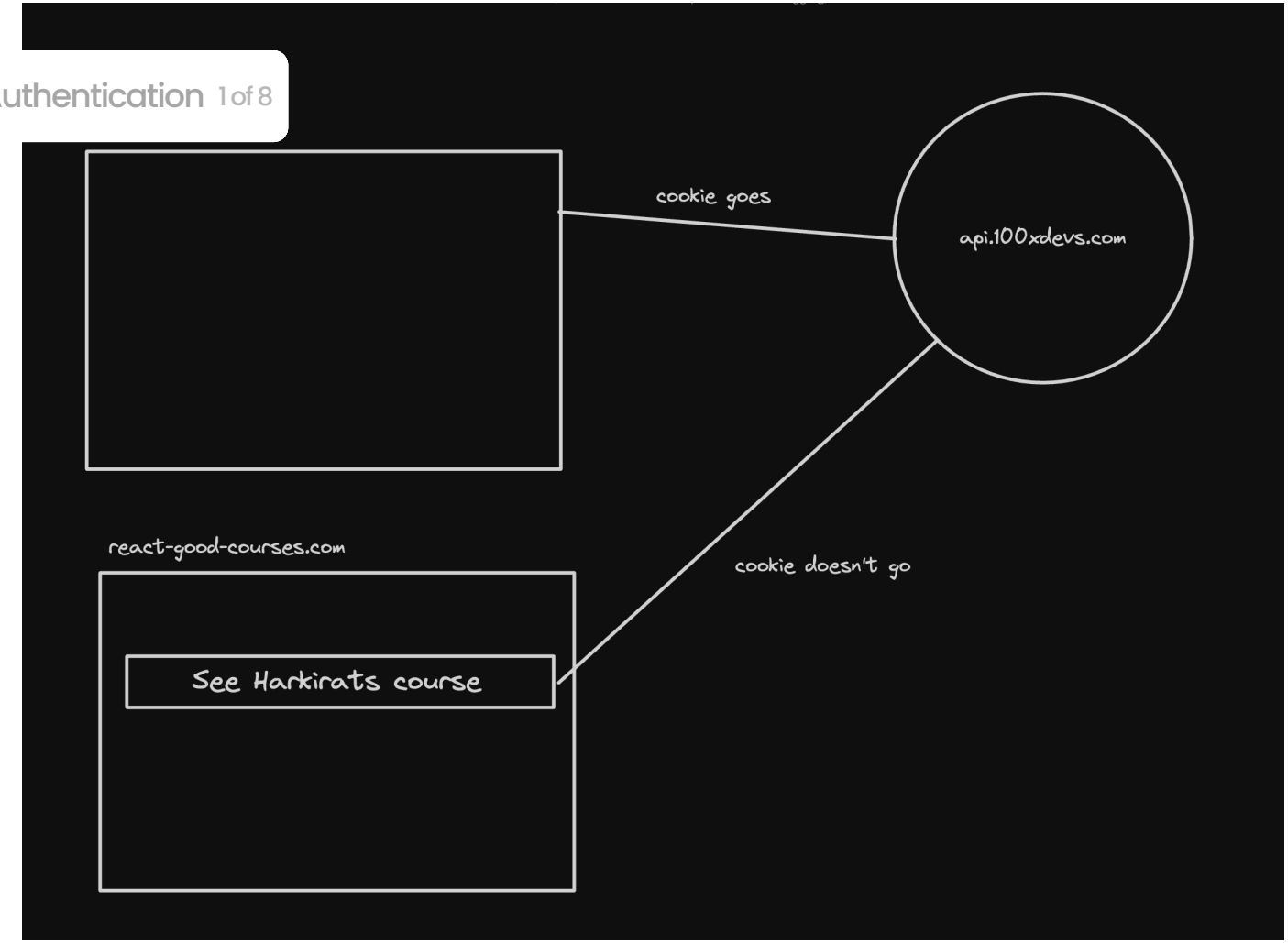
SameSite: none



SameSite: Strict



But there's a problem -



SameSite: Lax

Authentication 1 of 8

Example in express (Backend)

1. Initialize an empty TS project

```
npm init -y
npx tsc --init
```

1. Update rootDir and outDir

```
"roodDir": "./src"
"outDir": "./dist"
```

1. Add required libraries

```
import express from "express";
import cookieParser from "cookie-parser";
import cors from "cors";
import jwt, { JwtPayload } from "jsonwebtoken";
import path from "path";
```

1. Initialize express app, add middlewares

```
const app = express();


app.use(cors({
```

```
    credentials: true,
                p://localhost:5173"
```

Authentication 1 of 8

1. Add a dummy signin endpoint

```
app.post("/signin", (req, res) => {
    const email = req.body.email;
    const password = req.body.password;
    // do db validations, fetch id of user from db
    const token = jwt.sign({
        id: 1
    }, JWT_SECRET);
    res.cookie("token", token);
    res.send("Logged in!");
});
```

1. Add a protected backend route

```
app.get("/user", (req, res) => {
    const token = req.cookies.token;
    const decoded = jwt.verify(token, JWT_SECRET) as JwtPayload;
    // Get email of the user from the database
    res.send({
        userId: decoded.id
    })
});
```

Authentication 1 of 8

```
ogout", (req, res) => {
    res.cookie("token", "ads");
    res.json({
        message: "Logged out!"
    })
});
```

1. Listen on port 3000

```
app.listen(3000);
```

Code - https://github.com/100xdevs-cohort-2/week-16-auth-1

Frontend in React

- Initialize an empty react project

Authentication 1 of 8 page

```
import { useState } from "react"
import { BACKEND_URL } from "../config"
import axios from "axios"

export const Signin = () => {
    const [username, setUsername] = useState("")
    const [password, setPassword] = useState("")

    return <div>
        <input onChange={(e) => {
            setUsername(e.target.value);
        }} type="text" placeholder="username" />
        <input onChange={(e) => {
            setPassword(e.target.value);
        }} type="password" placeholder="password" />
        <button onClick={async () => {
            await axios.post(`${BACKEND_URL}/signin`, {
                username,
                password
            }, {
                withCredentials: true,
            });
            alert("you are logged in")
```

```
</div>
```

Authentication 1 of 8

- Add a user page

```
import axios from "axios";
import { useEffect, useState } from "react"
import { BACKEND_URL } from "../config";

export const User = () => {
  const [userData, setUserData] = useState();

  useEffect(() => {
    axios.get(`${BACKEND_URL}/user`, {
      withCredentials: true,
    })
      .then(res => {
        setUserData(res.data);
      })
  }, []);

  return <div>
    You're id is {userData?.userId}
    <br /><br />
    <button onClick={() => {
      axios.post(`${BACKEND_URL}/logout`, {}, {
        withCredentials: true,
```

```
</div>
```

Authentication 1 of 8

- Add routing

```
import './App.css'

import { BrowserRouter, Route, Routes } from "react-router-dom";
import { Signup } from './components/Signup';
import { Signin } from './components/Signin';
import { User } from './components/User';

function App() {
 return (
  <BrowserRouter>
   <Routes>
    <Route path={"/signup"} element={<Signup />} />
    <Route path={"/signin"} element={<Signin />} />
    <Route path={"/user"} element={<User />} />
   </Routes>
  </BrowserRouter>
 )
}

export default App
```

Code - https://github.com/100xdevs-cohort-2/week-16-auth-1

Authentication 1 of 8

Frontend from express

1. Add an index.html file in src folder of backend

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Login Page</title>
    <script src="https://cdn.jsdelivr.net/npm/axios/dist/axios.min.js"></script>
</head>
<body>

<input id="username" type="text" placeholder="username" />
<input id="password" type="password" placeholder="password" />


<div id="userData"></div>
```

Authentication 1 of 8

```
document.getElementById('loginButton').addEventListener('click', async () =
    const username = document.getElementById('username').value;
    const password = document.getElementById('password').value;

    try {
        await axios.post(`/signin`, {
            username,
            password
        });
        alert("You are logged in");
    } catch (error) {
        console.error('Login failed:', error);
        alert("Login failed");
    }
});

document.getElementById('logoutButton').addEventListener('click', () => {
    axios.post(`/logout`, {}, {
        withCredentials: true,
    }).then(() => {
        console.log('Logged out successfully.');
    }).catch(error => {
        console.error('Logout failed:', error);
```


```
        etchUserData() {
        t(`/user`, {
            withCredentials: true,
        }).then(response => {
            const userData = response.data;
            displayUserData(userData);
        }).catch(error => {
            console.error('Failed to fetch user data:', error);
        });
    }

    function displayUserData(userData) {
        const userDataDiv = document.getElementById('userData');
        // Example: Assumes userData contains a 'name' and 'email'. Adapt bas
        userDataDiv.innerHTML = `<p>Your id is: ${userData.userId}</p>`;
    }
    fetchUserData();
</script>

</body>
</html>
```

1. Add a route that sends this html file

```
app.get("/", (req, res) => {
```

1. Remove credentials from cors

Authentication 1 of 8

s());

Link - https://github.com/100xdevs-cohort-2/week-16-auth-1