Welcome to the

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Authentication with JWT

The session will start shortly...

Questions? Drop them in the chat. We'll have dedicated moderators answering questions.

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Full Stack Web Development Session Housekeeping

- The use of disrespectful language is prohibited in the questions, this is a supportive, learning environment for all - please engage accordingly. **(Fundamental British Values: Mutual Respect and Tolerance)**
- No question is daft or silly - **ask them!**
- There are **Q&A sessions** midway and at the end of the session, should you wish to ask any follow-up questions. Moderators are going to be answering questions as the session progresses as well.
- If you have any questions outside of this lecture, or that are not answered during this lecture, please do submit these for upcoming Academic Sessions. You can submit these questions here: **Questions**

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Full Stack Web Development Session Housekeeping cont.

- For all **non-academic questions**, please submit a query: www.hyperiondev.com/support
- Report a **safeguarding** incident: www.hyperiondev.com/safeguardreporting
- We would love your **feedback** on lectures: Feedback on Lectures
- You can turn on live captions on your browser settings incase you are having difficulty in hearing what's being lectured.

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Safeguarding & Welfare

We are committed to all our students and staff feeling safe and happy; we want to make sure there is always someone you can turn to if you are worried about anything.

If you are feeling upset or unsafe, are worried about a friend, student or family member, or you feel like something isn't right, speak to our safeguarding team:

Ian Wyles
Designated Safeguarding Lead

Simone Botes

Nurhaan Snyman

Rafiq Manan

Ronald Munodawafa

Tevin Pitts

Scan to report a safeguarding concern

or email the Designated Safeguarding Lead:
Ian Wyles
safeguarding@hyperiondev.com

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What are the three parts of a JWT?

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What is the purpose of the header in a JWT?

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Implementing JWT

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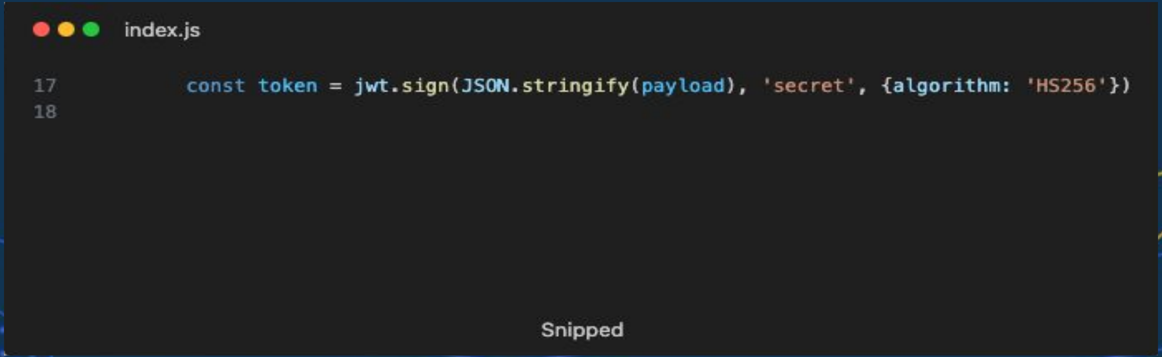
JSON Web Tokens (JWT)

Implementing JWT.

- We will use a popular library to implement JWTs in our application, it makes it easier to sign the tokens and reduces boilerplate code.
- You first need to install it in an already existing express application.
  - `npm install jsonwebtoken`
- Implementing JWT with the library becomes straightforward in this manner



index.js

```
        const token = jwt.sign(JSON.stringify(payload), 'secret', {algorithm: 'HS256'})
```

Snipped

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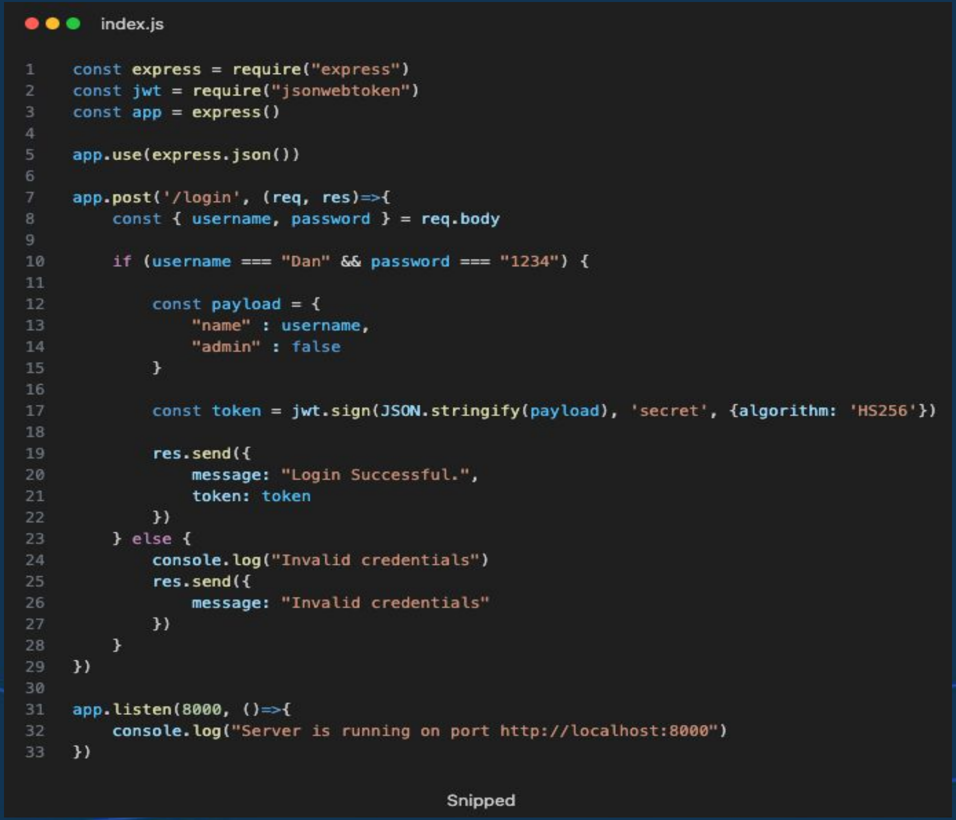
JSON Web Tokens (JWT)

Implementing JWT.



index.js

```javascript
const express = require("express")
const jwt = require("jsonwebtoken")
const app = express()

app.use(express.json())

app.post('/login', (req, res)=>{
    const { username, password } = req.body

    if (username === "Dan" && password === "1234") {

        const payload = {
            "name" : username,
            "admin" : false
        }

        const token = jwt.sign(JSON.stringify(payload), 'secret', {algorithm: 'HS256'})

        res.send({
            message: "Login Successful.",
            token: token
        })
    } else {
        console.log("Invalid credentials")
        res.send({
            message: "Invalid credentials"
        })
    }
})

app.listen(8000, ()=>{
    console.log("Server is running on port http://localhost:8000")
})
```

Snipped

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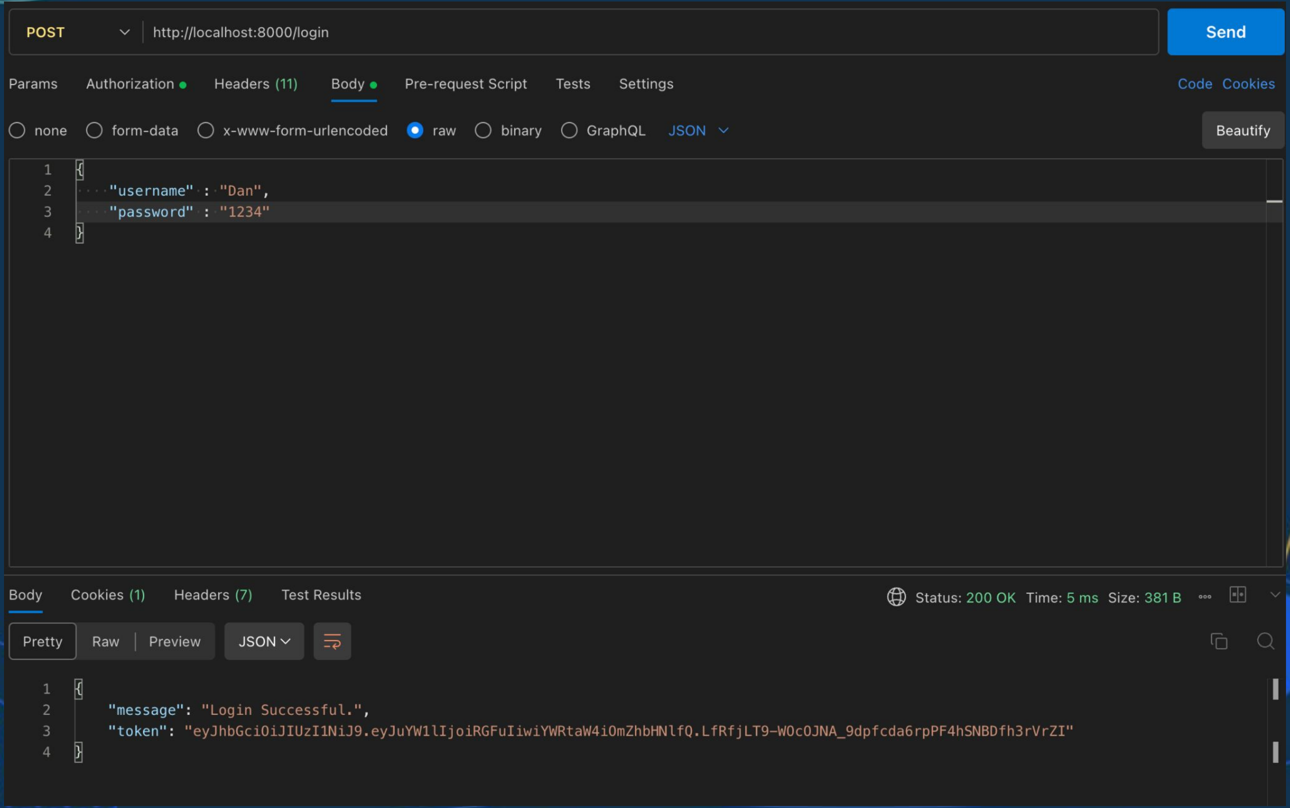
JSON Web Tokens (JWT)

Login Request With Postman



POST http://localhost:8000/login

Body: ( ) none ( ) form-data ( ) x-www-form-urlencoded [✓ raw] ( ) binary ( ) GraphQL JSON

```json
{
    "username" : "Dan",
    "password" : "1234"
}
```

Status: 200 OK Time: 5 ms Size: 381 B

```json
{
    "message": "Login Successful.",
    "token": "eyJhbGciOiJIUzI1NiJ9.eyJuYW1lIjoiRGFuIiwiYWRtaW4iOmZhbHNlfQ.LfRfjLT9-WOcOJNA_9dpfcda6rpPF4hSNBDfh3rVrZI"
}
```

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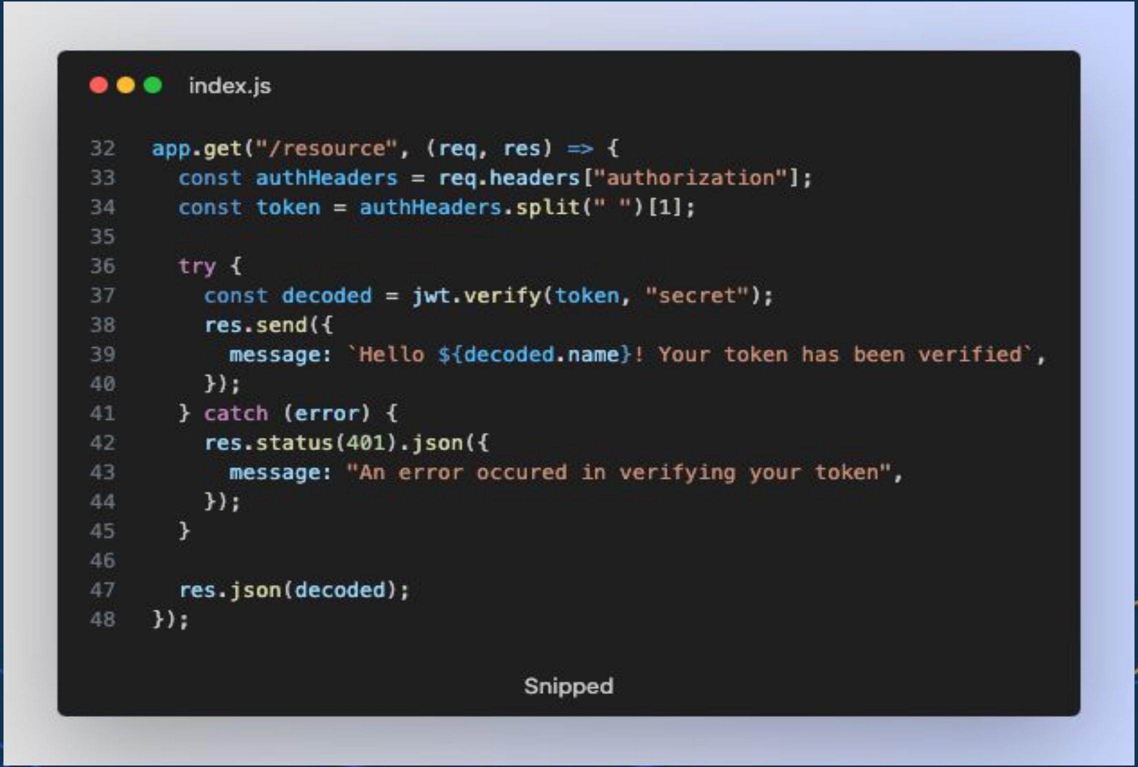
JSON Web Tokens (JWT)

Verifying token



index.js

```javascript
app.get("/resource", (req, res) => {
  const authHeaders = req.headers["authorization"];
  const token = authHeaders.split(" ")[1];

  try {
    const decoded = jwt.verify(token, "secret");
    res.send({
      message: `Hello ${decoded.name}! Your token has been verified`,
    });
  } catch (error) {
    res.status(401).json({
      message: "An error occured in verifying your token",
    });
  }

  res.json(decoded);
});
```

Snipped

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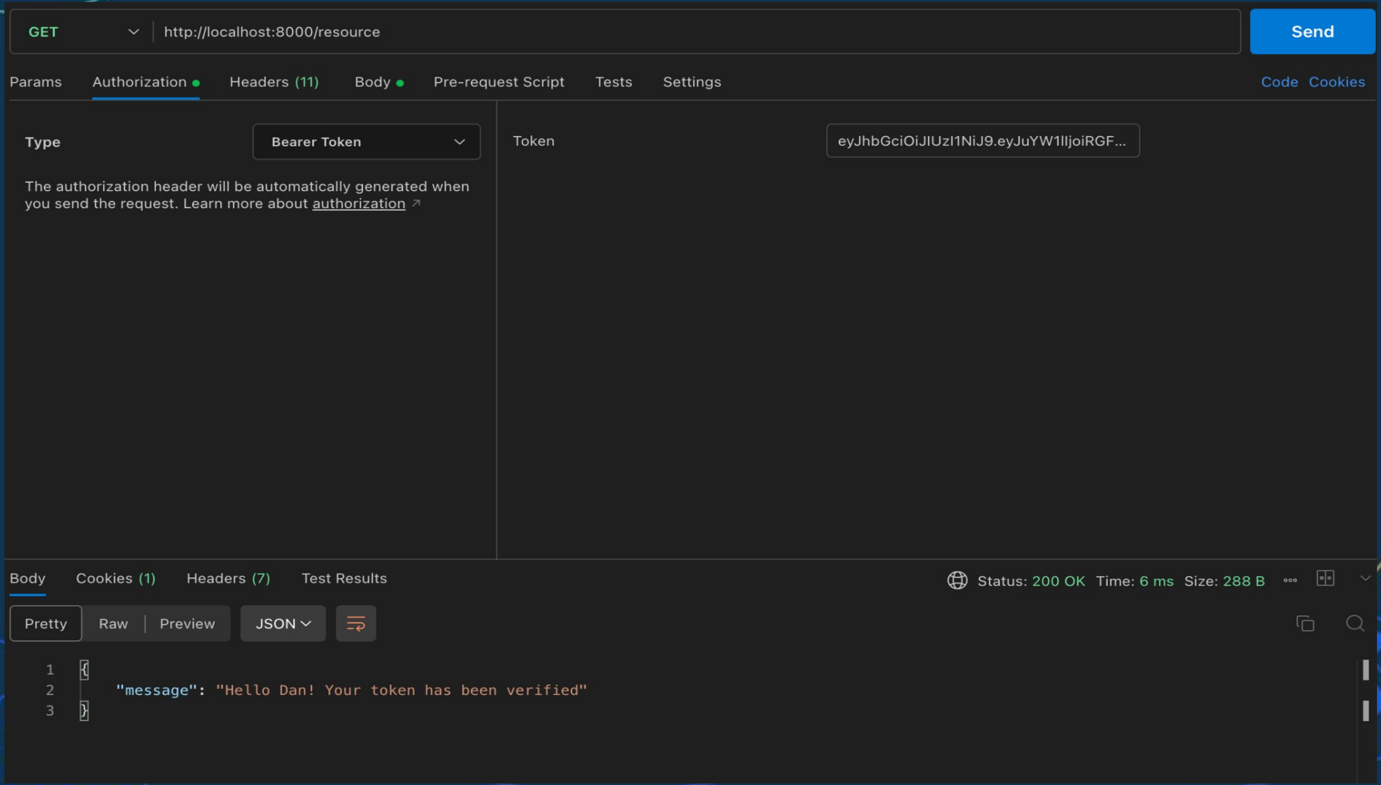
JSON Web Tokens (JWT)

Accessing and verifying request with POSTMAN



http://localhost:8000/resource

Type: Bearer Token

The authorization header will be automatically generated when you send the request. Learn more about authorization

Token: eyJhbGciOiJIUzI1NiJ9.eyJuYW1lIjoiRGF...

Status: 200 OK Time: 6 ms Size: 288 B

```
{
    "message": "Hello Dan! Your token has been verified"
}
```

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User Permissions

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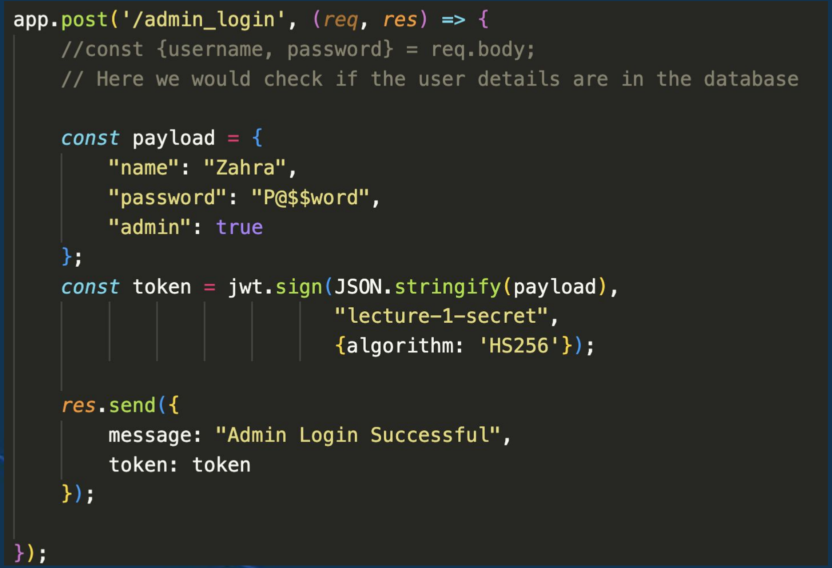
User Permissions

- ❖ By adding an **admin** attribute to the **payload of the auth endpoint**, we can implement user permissions i.e. features or resources only accessible to users with certain privileges.
- ❖ The admin attribute can **only** be added at the endpoint,

User Permissions

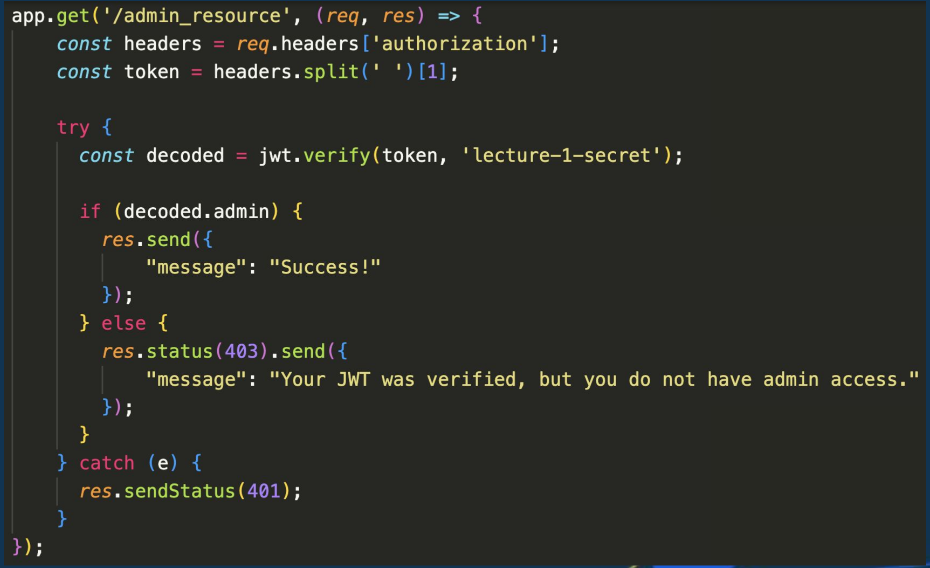


```
app.post('/admin_login', (req, res) => {
    //const {username, password} = req.body;
    // Here we would check if the user details are in the database

    const payload = {
        "name": "Zahra",
        "password": "P@$$word",
        "admin": true
    };
    const token = jwt.sign(JSON.stringify(payload),
                           "lecture-1-secret",
                           {algorithm: 'HS256'});

    res.send({
        message: "Admin Login Successful",
        token: token
    });

});
```



```
app.get('/admin_resource', (req, res) => {
    const headers = req.headers['authorization'];
    const token = headers.split(' ')[1];

    try {
      const decoded = jwt.verify(token, 'lecture-1-secret');

      if (decoded.admin) {
        res.send({
            "message": "Success!"
        });
      } else {
        res.status(403).send({
            "message": "Your JWT was verified, but you do not have admin access."
        });
      }
    } catch (e) {
      res.sendStatus(401);
    }
});
```

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Questions and Answers

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Thank you for attending

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