

User Authentication System

A robust user authentication system built with Node.js and Express, featuring secure registration, login, session management, and role-based access control. This project demonstrates key security practices, including password hashing and secure route protection, to ensure a reliable and secure user experience.

Key Features:

- **User Registration:** Secure registration process with password hashing using bcrypt.
- **Login Authentication:** Verify user credentials and manage sessions.
- **Role-Based Access Control:** Differentiate between regular users and admin users with protected routes.
- **Session Management:** Handle user sessions with express-session and UUID for unique session IDs.
- **Secure Routes:** Restrict access to sensitive routes based on user roles and authentication status.
- **Error Handling:** Comprehensive error handling for improved reliability and user feedback.

Technologies Used:

- Node.js
- Express
- bcrypt
- express-session
- UUID

Documentation

This documentation provides a comprehensive overview of this project, highlighting its features and setup instructions and will guide you through the setup, installation, error handling and usage of the project.

Setup Instructions:

1. Clone the repository: `git clone <repository-url>`
2. Install dependencies: `npm install`
3. Start the server: `npm start` or `npm run devStart`

For detailed usage instructions and testing examples, please refer to the request.rest file included in the repository.

Prerequisites:

- Node.js and npm installed on your machine.

Installation:

1. Clone the repository:

```
git clone <repository-url>  
cd <repository-directory>
```

2. Install the dependencies:

To run this project, ensure you have the following dependencies installed:

- **express:** Fast, unopinionated, minimalist web framework for Node.js.
- **bcrypt:** Library to help you hash passwords.
- **express-session:** Session middleware for Express.
- **uuid:** Library to generate unique identifiers.

Command: npm install express bcrypt express-session uuid

Development Dependencies

- **nodemon:** Tool that helps develop Node.js-based applications by automatically restarting the node application when file changes in the directory are detected.

Command: npm install --save-dev nodemon

Your package.json file should look like, including all the dependencies:

```
{  
  "name": "admin",  
  "version": "1.0.0",  
  "main": "index.js",  
  "scripts": {  
    "devStart": "nodemon server.js",  
    "start": "node server.js"  
  },  
  "keywords": [],  
  "author": "",  
  "license": "ISC",  
  "dependencies": {  
    "bcrypt": "^5.1.1",  
    "express": "^4.19.2",  
    "express-session": "^1.18.0",  
    "uuid": "^9.0.1"  
  },  
  "devDependencies": {  
    "nodemon": "^2.0.20"  
  },  
  "description": ""  
}
```

3. Start the server by running server.js:

For production:

npm start

For development with nodemon:

npm run devStart

Usage & Testing API:

1. Register a User

POST /users

Registers a new user. By default, users are assigned the 'user' role unless specified otherwise.

Request:

```
{  
  
  "name": "username",  
  "password": "userpassword",  
  "role": "admin" // Optional  
}
```

Response:

- 201 Created on successful registration.
- 500 Internal Server Error on failure.

2. Log in a User

POST /users/login

Authenticates a user and starts a session.

Request:

```
{  
  "name": "username",  
  "password": "userpassword"  
}
```

Response:

- 200 OK on successful login.
- 400 Bad Request if the user is not found or the password is incorrect.
- 500 Internal Server Error on failure.

3. Get All Users (Admin Only)

GET /users

Returns a list of all registered users. Requires authentication and admin role.

Response:

- 200 OK with user data.
- 401 Unauthorized if not authenticated.
- 403 Forbidden if not an admin.

4. Access Protected Route

GET /protected

A route that requires user authentication.

Response:

- 200 OK for authenticated users.
- 401 Unauthorized if not authenticated.

5. Access Admin Route

GET /admin

A route that requires admin authentication.

Response:

- 200 OK for authenticated admins.
- 401 Unauthorized if not authenticated.
- 403 Forbidden if not an admin.

Example Requests (request.rest)

```
# Create an admin user
POST http://localhost:4000/users
Content-Type: application/json
```

```
{
  "name": "Kaysan",
  "password": "adminpassword",
  "role": "admin"
}
```

```
###
```

```
# Create a regular user
```

POST http://localhost:4000/users
Content-Type: application/json

```
{  
  "name": "KaysanShaikh",  
  "password": "userpassword"  
}
```

Create a different regular user with same credentials

POST http://localhost:4000/users
Content-Type: application/json

```
{  
  "name": "AnotherKaysanShaikh",  
  "password": "userpassword"  
}
```

###

Get all users (admin only)

GET http://localhost:4000/users
Content-Type: application/json

###

Log in as Regular User

POST http://localhost:4000/users/login
Content-Type: application/json

```
{  
  "name": "KaysanShaikh",  
  "password": "userpassword"  
}
```

###

Attempt to access the /admin route as a Regular User

GET http://localhost:4000/admin

###

Log in as Admin User

POST http://localhost:4000/users/login
Content-Type: application/json

```
{  
  "name": "Kaysan",  
  "password": "adminpassword"  
}
```

###

Access the /admin route as an Admin User

GET <http://localhost:4000/admin>

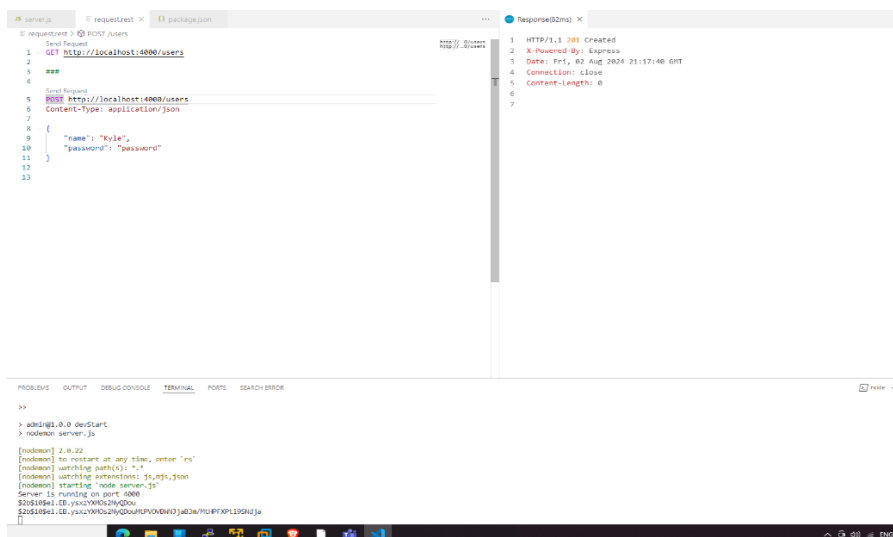
Error Handling:

The application includes comprehensive error handling to ensure reliability and provide useful feedback to users. Error responses include appropriate HTTP status codes and descriptive messages.

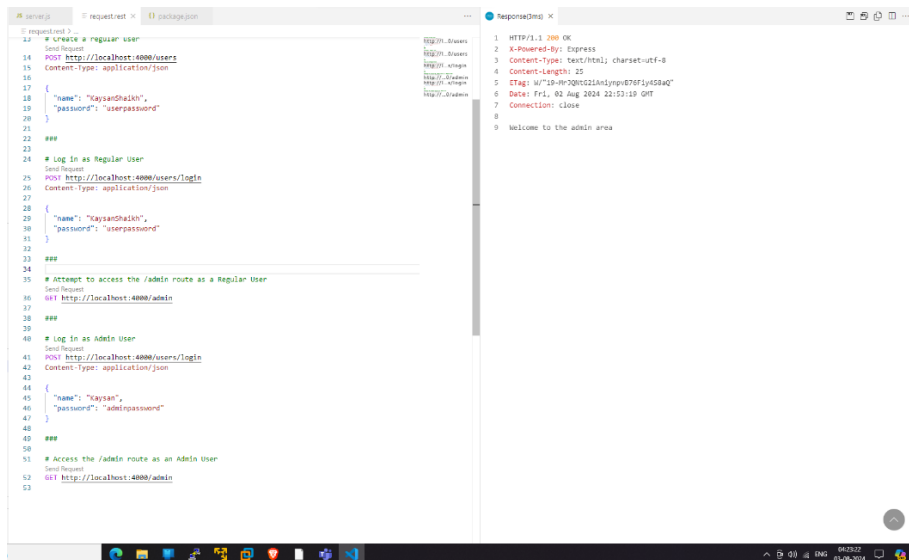
Security:

- Passwords are hashed using bcrypt before storing them in the server memory.
- User sessions are managed using express-session with UUID for unique session IDs.
- Sensitive routes are protected by authentication and role-based access control middleware.

Examples of Output for reference:



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server.js  requestrest  package.json  Response(201) X
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Contributing:

Contributions are welcome! Please fork the repository and submit a pull request with your changes.