

Student Management System

The **Student Management System** is a backend application built with **Node.js**, **Express**, and **MongoDB**. It allows administrators and teachers to manage student records, including creating, updating, retrieving, and deleting student information. The system also includes user authentication and authorization features.

Features

1. **User Authentication:**
 - Sign up and log in for administrators and teachers.
 - JWT-based authentication with secure cookies.
 2. **Student Management:**
 - Create, update, retrieve, and delete student records.
 - Filter, sort, and paginate student data.
 3. **Role-Based Access Control:**
 - Admins can manage all students.
 - Teachers can only manage students they created.
 4. **Validation:**
 - Input validation using **Zod** for both user and student data.
 5. **Environment Configuration:**
 - Secure environment variables for database connection, JWT secrets, and more.
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Technologies Used

- **Node.js**: Runtime environment.
- **Express**: Web framework.
- **MongoDB**: NoSQL database.
- **Mongoose**: MongoDB object modeling.
- **Zod**: Schema validation.
- **Bcrypt**: Password hashing.
- **JSON Web Token (JWT)**: Authentication.

- **CORS:** Cross-Origin Resource Sharing.
 - **Dotenv:** Environment variable management.
 - **Cookie-Parser:** Cookie handling.
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Prerequisites

Before running the project, ensure you have the following installed:

- **Node.js** (v16 or higher)
 - **MongoDB** (local or cloud instance)
 - **Postman** or any API testing tool (for testing endpoints)
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Setup Instructions

1. Clone the Repository

```
git clone https://github.com/saurav11sarkar/Student-Management-System.git
cd student-management-system
```

2. Install Dependencies

```
npm install
```

3. Set Up Environment Variables

Create a `.env` file in the root directory and add the following variables:

```
NODE_ENV=production
PORT=8080
DB_URL=mongodb+srv://<username>:<password>@cluster0.uzsuh.mongodb.net/student-management?retryWrites=true&w=majority
SALT_ROUNDS=10
JWT_SECRET=your-secret-key
JWT_EXPIRES_IN=1d
```

Replace `<username>` "selopia" and `<password>` "selopia123" with your MongoDB credentials.

4. Run the Application

npm start

The server will start on the specified port (default: 8080).

API Documentation

Base URL

http://localhost:8080/

<!-- Live deployment -->

https://student-management-api-theta.vercel.app/

Authentication

Sign Up (Create User)

- Endpoint: POST /signup

Request Body:

```
{
  "username": "admin",
  "password": "admin123",
  "role": "admin"
}
```

-

Response:

```
{
  "success": true,
  "message": "User created successfully",
  "data": {
    "_id": "64f1a2b3c9e8b4a3f4e5d6c7",
    "username": "admin",
    "role": "admin"
  }
}
```

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Log In

- **Endpoint:** `POST /login`

Request Body:

```
{  
  "username": "admin",  
  "password": "admin123"  
}
```

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Response:

```
{  
  "success": true,  
  "message": "User logged in successfully",  
  "data": {  
    "token": "eyJhbGciOiJIUzI1NiIsInR5cCI6IkpXVCJ9...",  
    "user": {  
      "_id": "64f1a2b3c9e8b4a3f4e5d6c7",  
      "username": "admin",  
      "role": "admin"  
    }  
  }  
}
```

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Student Management

Create Student

- **Endpoint:** `POST /students/`
- **Headers:** `Authorization: <token>`

Request Body:

```
{  
  "name": "John Doe",  
  "age": 15,  
  "grade": "10th",  
  "student_photo": "https://example.com/photo.jpg",  
  "student_description": "A brilliant student.",  
  "createdBy": "64f1a2b3c9e8b4a3f4e5d6c7"  
}
```

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Error Handling

The API returns structured error responses for invalid requests or server errors. Example:

```
{
  "success": false,
  "message": "Route not found",
  "errorMessages": [
    {
      "path": "/invalid-route",
      "message": "API not found"
    }
  ]
}
```

Contributing

Contributions are welcome! Please follow these steps:

1. Fork the repository.
2. Create a new branch (`git checkout -b feature/YourFeatureName`).
3. Commit your changes (`git commit -m 'Add some feature'`).
4. Push to the branch (`git push origin feature/YourFeatureName`).
5. Open a pull request.

License

This project is licensed under the MIT License. See the [LICENSE](#) file for details.

Contact

For any questions or feedback, please contact:

- **Your Name:** sarkar15-4285@diu.edu.bd
- **GitHub:** <https://github.com/saurav11sarkar>
- **Live deployment link:** <https://student-management-api-theta.vercel.app/>

Enjoy managing your students with this system! 🚀