Project Title: Secure Note-Taking API with JWT Authentication

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1. Introduction

- Description: A secure Web API that allows users to register, log in, and manage their personal notes.
- Purpose: Ensure that only authenticated users can access their own notes using JWT-based authentication.

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2. Tools and Technologies

- ASP.NET Core Web API
- C#
- Entity Framework Core (InMemory/SQL Server)
- JWT (JSON Web Token) for authentication
- Swagger/Postman for testing

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3. Project Structure

- Controllers:
    - AuthController → handles registration & login
    - NotesController → handles add, retrieve, update, delete notes
- Models: User, Note, RegisterModel, LoginModel
- Services: Authentication & JWT Token generation
- Program.cs / Startup.cs → configures authentication & middleware

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4. Implementation Details

4.1 User Registration

- Endpoint: POST /api/auth/register
- Stores username & hashed password in DB.
- Validates unique username & strong password.

4.2 User Login

- Endpoint: POST /api/auth/login
- Verifies username & password.
- On success, returns JWT Token (with expiry time).

4.3 Manage Notes

- Endpoints:
  - POST /api/notes → Add note
  - GET /api/notes → Get all notes of logged-in user
  - PUT /api/notes/{id} → Update note
  - DELETE /api/notes/{id} → Delete note
- Only works if request contains valid JWT token in Authorization header.

4.4 Security Features

- Passwords stored using hashing.
- JWT ensures only authenticated users can access their data.
- Input validation for username & password strength.

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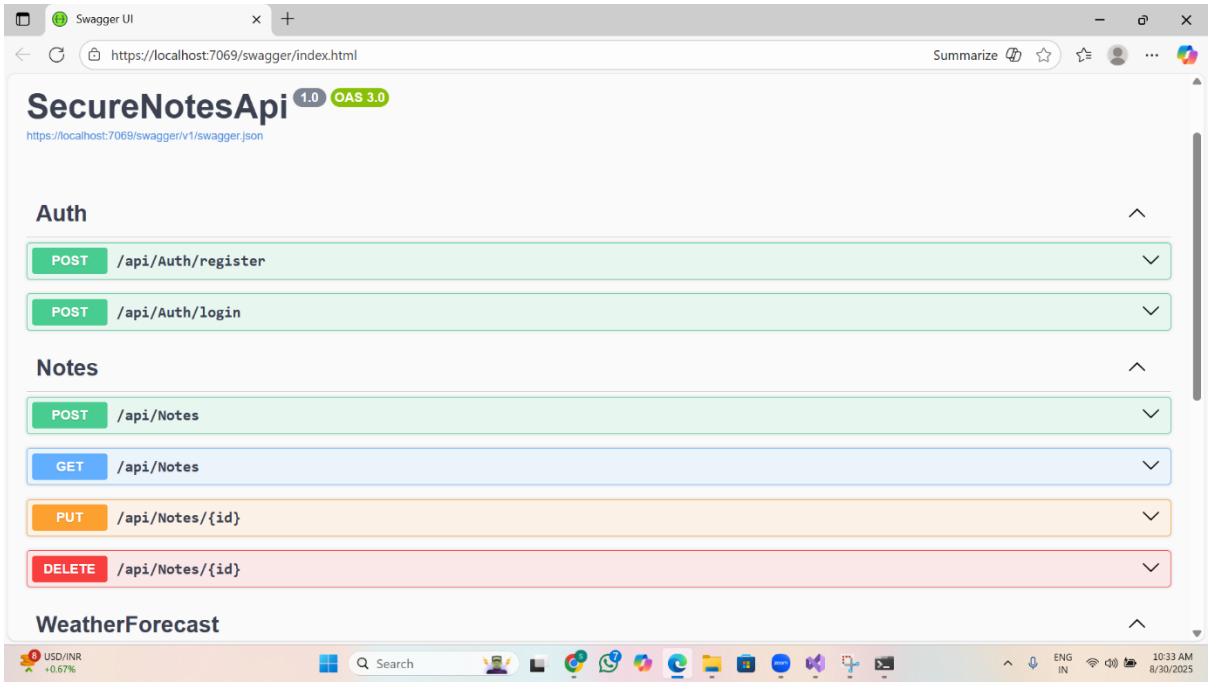
5. Sample Input & Output

Registration Input

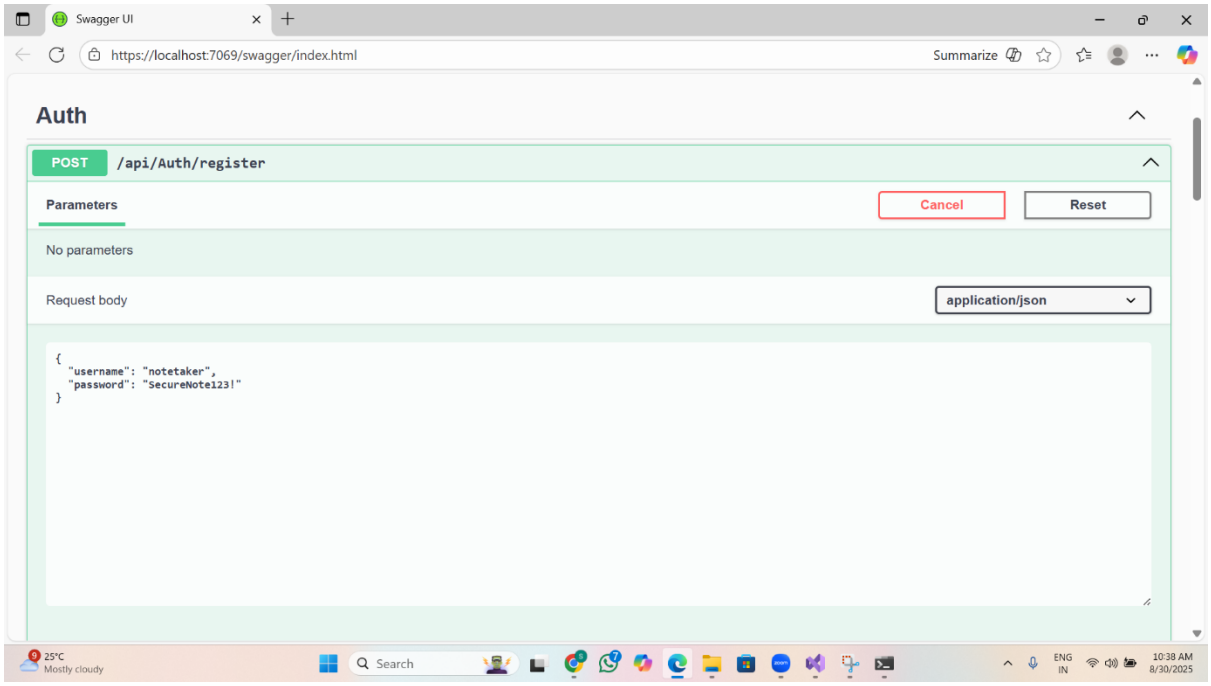


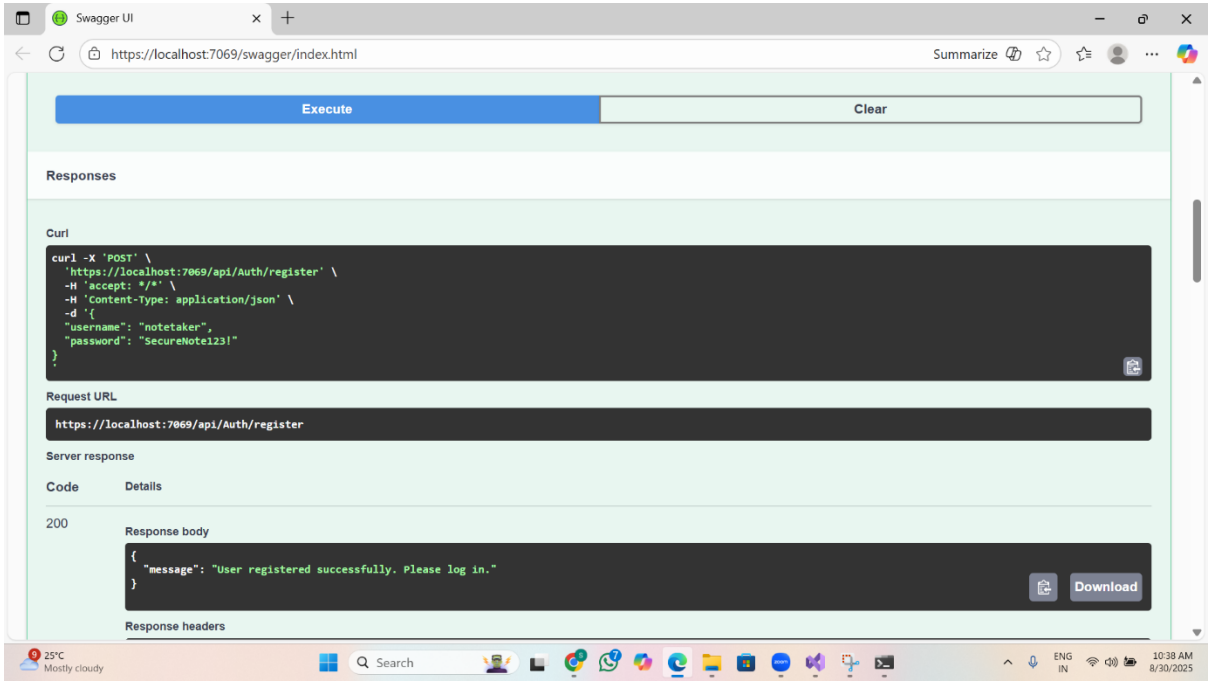
POST /api/auth/register

```
{
  "username": "notetaker",
  "password": "SecureNote123!"
}
```

Response

```
{ "message": "User registered successfully. Please log in." }
```





Login Input

POST /api/auth/login

{

"username": "notetaker",

"password": "SecureNote123!"

}

Response

{

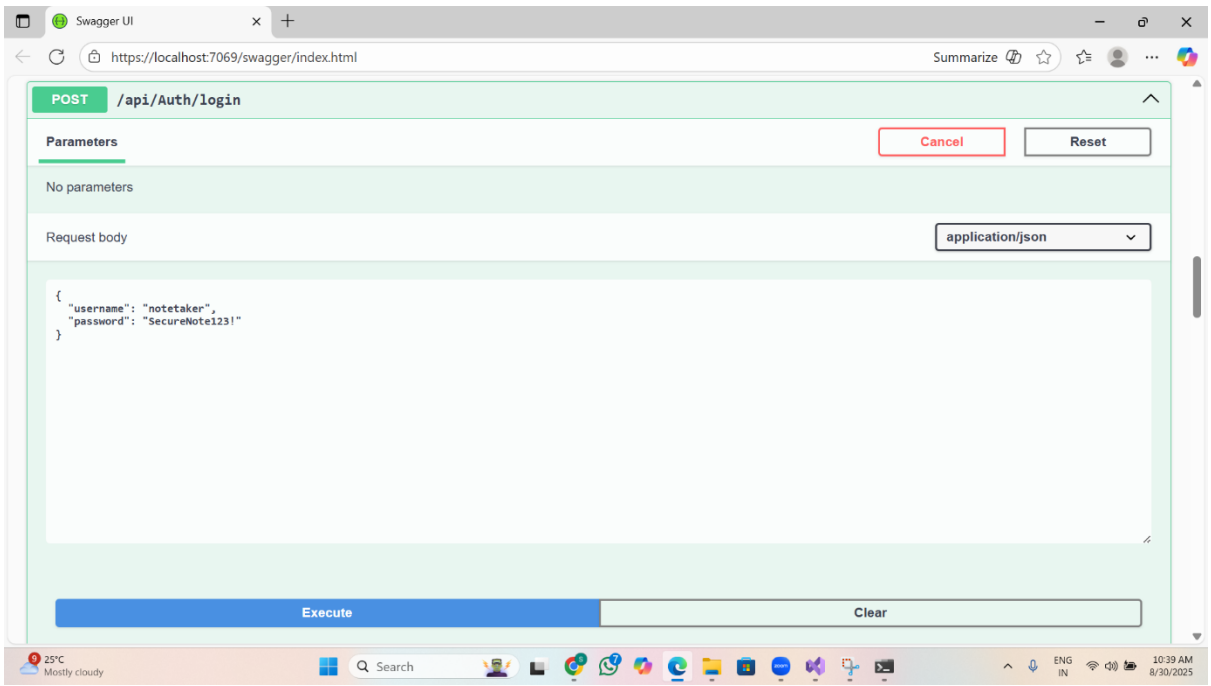
"token": "<jwt-token>",

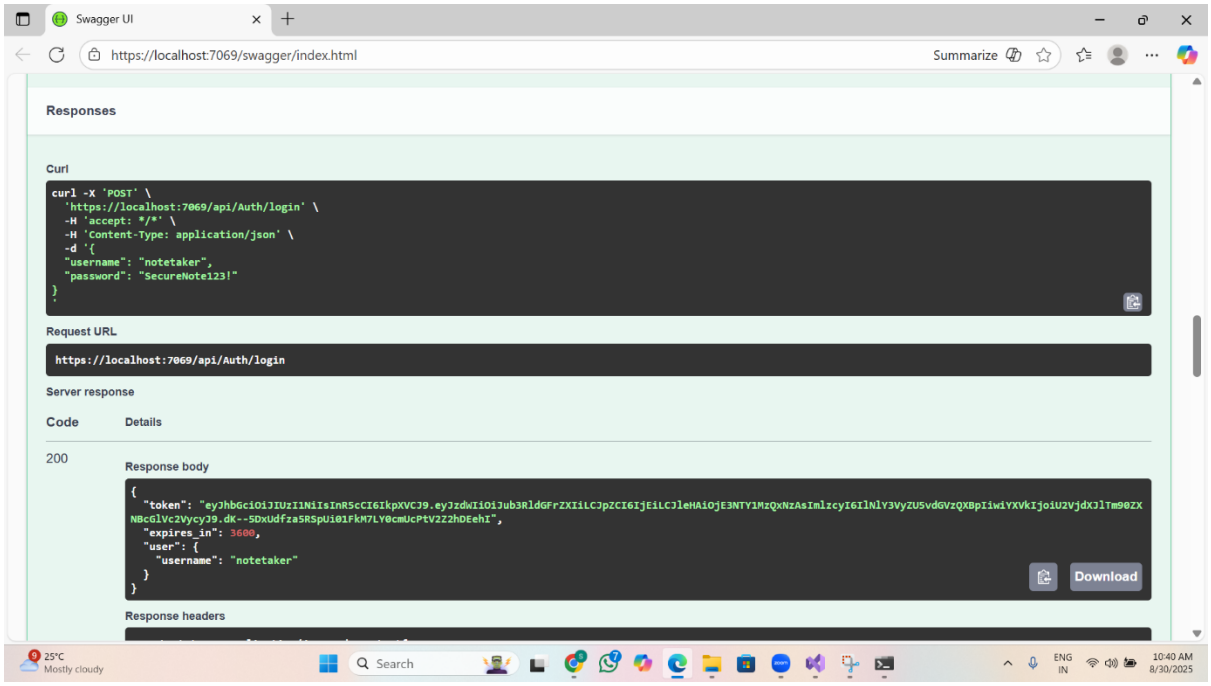
"expires_in": 3600,

"user": { "username": "notetaker" }

}

Add Note Input (with JWT token)



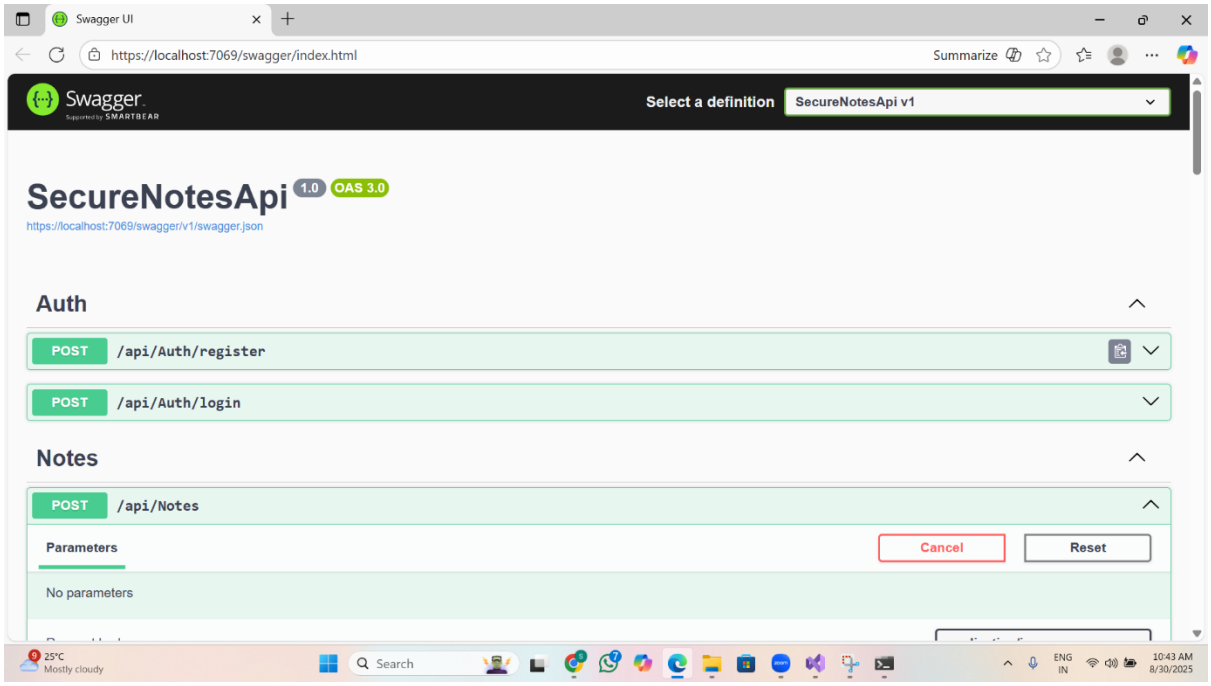


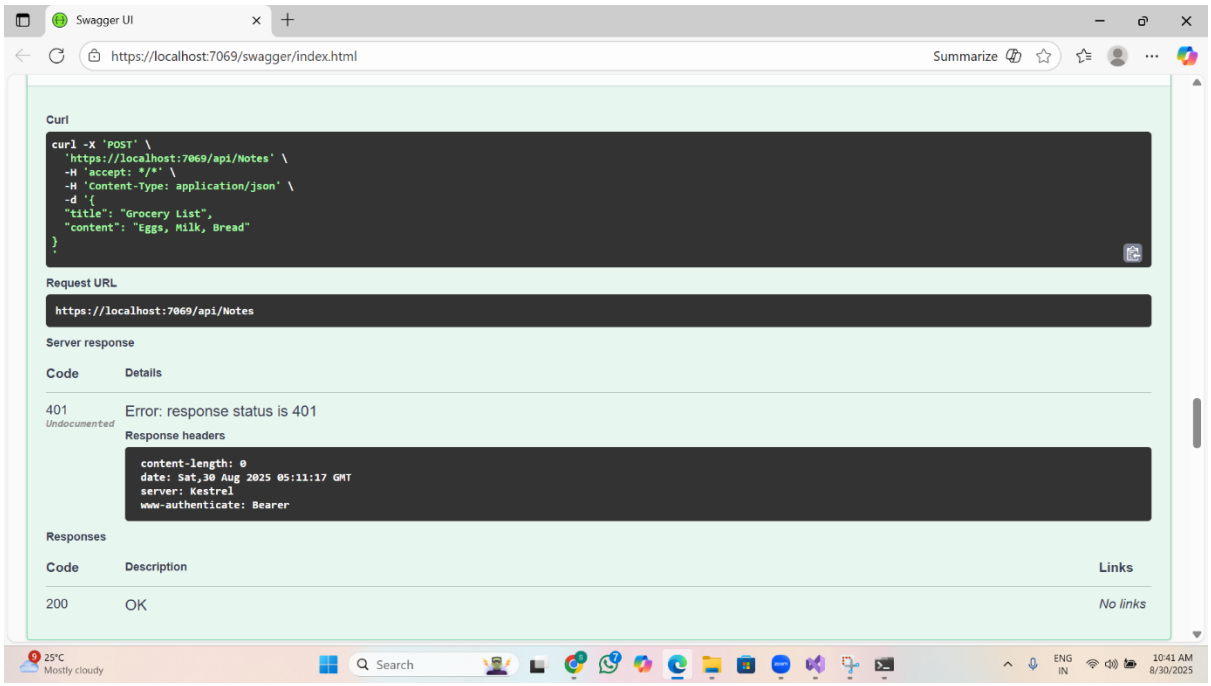
POST /api/notes

```
{
  "title": "Grocery List",
  "content": "Eggs, Milk, Bread"
}
```

Response

```
{
  "message": "Note added successfully.",
  "noteId": 1
}
```


Swagger UI
https://localhost:7069/swagger/index.html
Summarize
Swagger
Supported by SMARTBEAR
Select a definition
SecureNotesApi v1
SecureNotesApi
1.0
OAS 3.0
https://localhost:7069/swagger/v1/swagger.json
Auth
POST
/api/Auth/register
POST
/api/Auth/login
Notes
POST
/api/Notes
Parameters
Cancel
Reset
No parameters
25°C
Mostly cloudy
Search
ENG
IN
10:43 AM
8/30/2025


Swagger UI
https://localhost:7069/swagger/index.html
Summarize
Curl
curl -X 'POST' \
'https://localhost:7069/api/Notes' \
-H 'accept: */*' \
-H 'Content-Type: application/json' \
-d '{
"title": "Grocery List",
"content": "Eggs, Milk, Bread"
}'
Request URL
https://localhost:7069/api/Notes
Server response
Code
Details
401
Undocumented
Error: response status is 401
Response headers
content-length: 0
date: Sat,30 Aug 2025 05:11:17 GMT
server: Kestrel
www-authenticate: Bearer
Responses
Code
Description
Links
200
OK
No links
25°C
Mostly cloudy
Search
ENG
IN
10:41 AM
8/30/2025