DESIGN AND IMPLEMENT A RESTFUL API

1) You can download the provided code (Extract Zip folder) OR clone my code from Github Repo. Link: https://github.com/Mehfooz201/Backend-Task---CRUD-RestAPI

2) Instructions on how to set up and run the application on a local environment.

Clone the Repository:

- Begin by cloning the project's GitHub repository to your local machine. You can use the following command, replacing <repository-url> with your actual GitHub repository URL:

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

Create a Virtual Environment (Optional):

- It's a good practice to create a virtual environment for the project. You can create one using venv or virtualenv. For example, using venv:

```
python -m venv venv
```

Activate the Virtual Environment:

- Activate the virtual environment to isolate project dependencies. The activation command depends on your operating system. For example, on Windows:

```
venv\Scripts\activate
```

Install Dependencies:

- Navigate to the project directory and install the required Python dependencies using pip. The requirements.txt file contains a list of all the necessary packages.

```
pip install -r requirements.txt
```

Database Setup:

- If your application uses a database, you may need to create a database, apply migrations, and populate initial data. Use Django management commands for this:

```
python manage.py migrate
python manage.py loaddata initial_data.json  # If you have initial data to load
```

Run the Application:

- Start your Django application using the following command:

```
python manage.py runserver
```

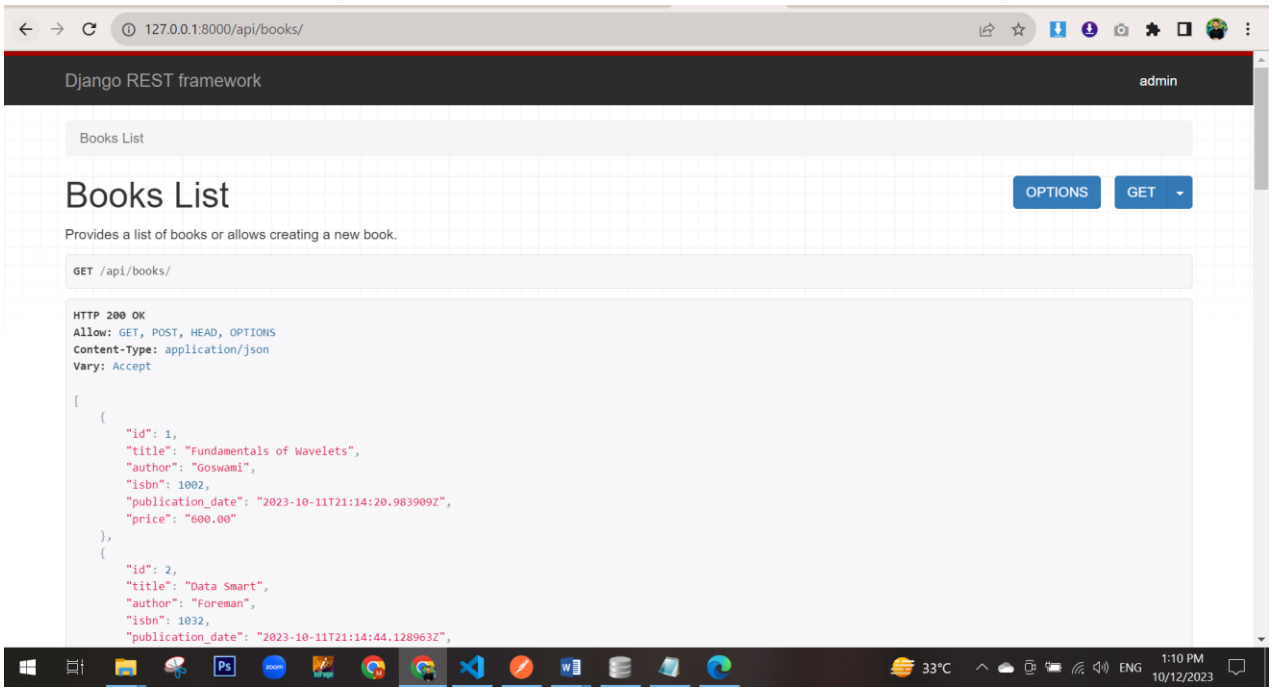
Access the Application:

- Open a web browser and navigate to http://localhost:8000/ or the URL provided by the runserver command. Your application should be up and running.

  Routes: http://localhost:8000/

  API Books Route: http://127.0.0.1:8000/api/books/

  API Specific Book route : http://127.0.0.1:8000/api/books/2



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3) A short document explaining your design choices, including the choice of programming language, framework, and database.

PURPOSE:

- The primary goal of this project is to create simple API endpoints for managing book data, including a list of books and individual book details. The API is designed to facilitate easy access and manipulation of book information.

PROGRAMMING LANGUAGE: PYTHON

- The choice of the programming language is Python. Python is renowned for its simplicity, readability, and a vast ecosystem of libraries. It's an ideal language for web development, and its clean syntax makes it easy to understand.

FRAMEWORK: DJANGO AND DJANGO REST FRAMEWORK

- The web framework chosen is Django, along with Django Rest Framework (DRF). These frameworks were selected for several compelling reasons:
  - ✓ Built-in Features: Django offers a plethora of built-in features, such as user authentication and database ORM, significantly speeding up development.
  - ✓ Security: Django provides robust security measures to protect against common web vulnerabilities.
  - ✓ Scalability: The framework is designed to handle high-traffic applications and offers scalability options.
  - ✓ Community and Documentation: Django has a thriving community and extensive documentation, ensuring that solutions and resources are readily available.

DATABASE: SQLITE3

- ✓ The database selected is SQLite3. The choice of SQLite3 was made due to its lightweight nature and ease of understanding. It's well-suited for a project of this scale and simplifies data management.

API DESIGN:

- ✓ The API design follows RESTful principles. It consists of well-structured endpoints for listing books and retrieving details of individual books. The design aims for simplicity and user-friendliness. There are lots of features for making API's, but I have utilized simple way using Classed Based View for making an API's.

TESTING AND VERIFICATION:

- ✓ The API endpoints have been thoroughly tested using Postman, a widely-used API testing tool. This ensures that the API functions as intended and provides the expected responses.