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PHONEBOOK STARTER

- **Description of project:**

- This is a Python code for a RESTful API built with FastAPI that interacts with a SQLite database. The API allows users to add and retrieve and delete phonebook entries, which consist of a person's full name and phone number.
- It uses Pydantic for data validation and SQLAlchemy as the ORM.
- The application uses FastAPI, a Python web framework, for creating the REST API.
- The SQLite database is used for storing the phone book data.

- **Stack Used:**

- Python: Multipurpose programming language with rich library collection
- fastapi: FastAPI is a modern, fast (high-performance) web framework for building APIs with Python 3.7+ based on standard Python type hints.
- uvicorn: Uvicorn is a lightning-fast ASGI server implementation, using uvloop and httptools.
- sqlalchemy: SQLAlchemy is a popular SQL toolkit and ORM for Python. It provides a set of high-level API to work with relational databases.
- pydantic: Pydantic is a data validation and settings management library, which uses Python type annotations to validate and parse data.
- Postman: It is a collaboration platform for API development that allows users to design, test, and document APIs.

- **Instructions for building and running software and unit tests:**

- **Running the code:**

- Open Visual Studio.
- Click on "File" in the top left corner and select "Open Folder".
- Navigate to the folder where your Python code is located and select it.
- If your code requires any dependencies, make sure they are installed in your Python environment.
- Open the "Terminal" tab in Visual Studio by clicking on "View" and then "Terminal".
- Install libraries by using command in terminal: **pip install -r requirements.txt**
- In the terminal, navigate to the folder containing your Python code.
- In our case keep the app.py tab open.
- To run the app, type the command in terminal: **uvicorn app:app --reload**
- Following is output when you run code successfully.

The screenshot shows the Visual Studio Code editor with a file named `app.py` open. The file contains Python code for a FastAPI application. The code includes imports for `FastAPI`, `HTTPException`, `Query`, `BaseModel`, `create_engine`, `Column`, `Integer`, `String`, `declarative_base`, `sessionmaker`, `logging`, `Request`, `as`, and `re`. It defines a `Base` class for the database models and a `Phonebook` model class with fields `id`, `full_name`, `phone_number`, and `token`. The code also creates a FastAPI app, a SQLite database engine, and a sessionmaker. The `main` function is defined at the bottom.

```
1 # Name: Siddhrajsinh Pradumansinh Solanki
2 # Mail ID: 1001957908
3
4 """References
5 1) https://fastapi.tiangolo.com/
6 2) https://github.com/sumanente/python-sample-FastAPI-app
7 3) https://dassum.medium.com/building-rest-apis-using-fast
8 """
9
10 # Import the required modules
11 from fastapi import FastAPI, HTTPException, Query
12 from pydantic import BaseModel, constr
13 from sqlalchemy import create_engine, Column, Integer, String
14 from sqlalchemy.ext.declarative import declarative_base
15 from sqlalchemy.orm import sessionmaker
16 import logging
17 from fastapi import Request
18 import os
19 import re
20
21
22 # Create the FastAPI app
23 app = FastAPI()
24
25 # Create the SQLite database engine
26 engine = create_engine("sqlite:///phonebook.db", echo=True)
27
28 # Create the base class for the database models
29 Base = declarative_base()
30
31 # Create the Phonebook model class
32 class Phonebook(Base):
33     __tablename__ = "phonebook"
34
35     id = Column(Integer, primary_key=True)
36     full_name = Column(String)
37     phone_number = Column(String)
38     token = Column(String)
39
40
41 """def _run_():"
```

The terminal output shows the command `PS C:\Users\Siddh\Desktop\Phonebook_Python_FastAPI> & c:\Users\Siddh\Desktop\Phonebook_Pyth on FastAPI\venv\Scripts\Activate.ps1` and the subsequent output of the application. The output includes a security warning about running scripts, followed by logs from the `uvicorn` server showing the application startup and the first GET request to `/docs` returning a 200 OK status.

```
PS C:\Users\Siddh\Desktop\Phonebook_Python_FastAPI> & c:\Users\Siddh\Desktop\Phonebook_Pyth
on FastAPI\venv\Scripts\Activate.ps1
& T:\Users\Siddh\Desktop\Phonebook_Python_FastAPI\
venv\Scripts\Activate.ps1 cannot be loaded because
running scripts is disabled on this system. For more
information, see about Execution Policies at
https://go.microsoft.com/fwlink/?linkID=135170.
At line:1 char:3
+ & c:\Users\Siddh\Desktop\Phonebook_Python_FastAPI\venv\
Scripts\Activ ...
+ ~~~~~
+ CategoryInfo          : SecurityError: (:) [], PSSe
curityException
+ FullyQualifiedErrorId : UnauthorizedAccess
PS C:\Users\Siddh\Desktop\Phonebook_Python_FastAPI> uvicorn app:app
2023-04-21 20:47:31,365 INFO sqlalchemy.engine.Engine BEGIN (implicit)
2023-04-21 20:47:31,365 INFO sqlalchemy.engine.Engine PRAGMA main.table_info("phonebook")
2023-04-21 20:47:31,369 INFO sqlalchemy.engine.Engine COMMIT
INFO: Started server process [21806]
INFO: Waiting for application startup.
INFO: Application startup complete.
INFO: Uvicorn running on http://127.0.0.1:8000 (Press CTRL+C to quit)
INFO: 127.0.0.1:55262 - "GET /docs HTTP/1.1" 200 OK
INFO: 127.0.0.1:55262 - "GET /openapi.json HTTP/1.1" 200 OK
```

- **Creating Docker image:**
 - Docker files are created and setup.
 - Build it using command: `docker build -t phonebook .`
 - Run image: `docker run -p 8000:8000 phonebook`
 - Once build and run finishes, open browser window.
 - Navigate to: `http://127.0.0.1:8000/docs`