Usecase on API with CRUD operations

Usecase details:

Flask Hands-On

1.Create a Flask app that performs **CRUD (Create, Read, Update, Delete)** operations on the following list of users. Each user has a `name`, `age`, `score`, and `id`. You need to implement the following operations:

1. **GET**: Retrieve all users.
2. **POST**: Add a new user.
3. **PUT**: Update an existing user by ID.
4. **DELETE**: Delete a user by ID.

users = [{"id": 1, "name": "sugu", "age": 25, "score": 85}, {"id": 2, "name": "mani", "age": 30, "score": 90}, {"id": 3, "name": "vijay", "age": 22, "score": 78}, {"id": 4, "name": "uva", "age": 28, "score": 92}]

List of Packages to install

Install Flask by running:

```
`pip install Flask`

`import Flask, jsonify, request`
```

Create the Flask App with the CRUD operations as requested

Input - Sample data can be either from file formate say for e.g. csv or Data Base. In this usecase we are using a python List & Dictonary function .

```
users = [
    {"id": 1, "name": "sugu", "age": 25, "score": 85},
    {"id": 2, "name": "mani", "age": 30, "score": 90},
    {"id": 3, "name": "vijay", "age": 22, "score": 78},
    {"id": 4, "name": "uva", "age": 28, "score": 92}
]
```

GET /users:

o Returns all users in JSON format.

o Example: curl http://localhost:5000/users

```
# GET: Retrieve all users
@app.route('/users', methods=['GET'])
def get_users():
    return jsonify(users)
```

POST /users:

o Adds a new user.

o The new user data must be passed in JSON format.

```
# POST: Add a new user
@app.route('/users', methods=['POST'])
def add_user():
    new_user = request.json
    users.append(new_user)
    return jsonify({"message": "User added successfully", "user": new_user}), 201
```

PUT /users/:

o Updates an existing user by ID.

```
# PUT: Update an existing user by ID
@app.route('/users/<int:user_id>', methods=['PUT'])
def update_user(user_id):
    user = find_user(user_id)
    if user is None:
        return jsonify({"message": "User not found"}), 404
        data = request.json
    user.update(data)  # Update the user with the new data
    return jsonify({"message": "User updated successfully", "user": user})
```

DELETE /users/:

o Deletes a user by their ID.

```
# DELETE: Delete a user by ID
@app.route('/users/<int:user_id>', methods=['DELETE'])
def delete_user(user_id):
    user = find_user(user_id)
    if user is None:
        return jsonify({"message": "User not found"}), 404
```

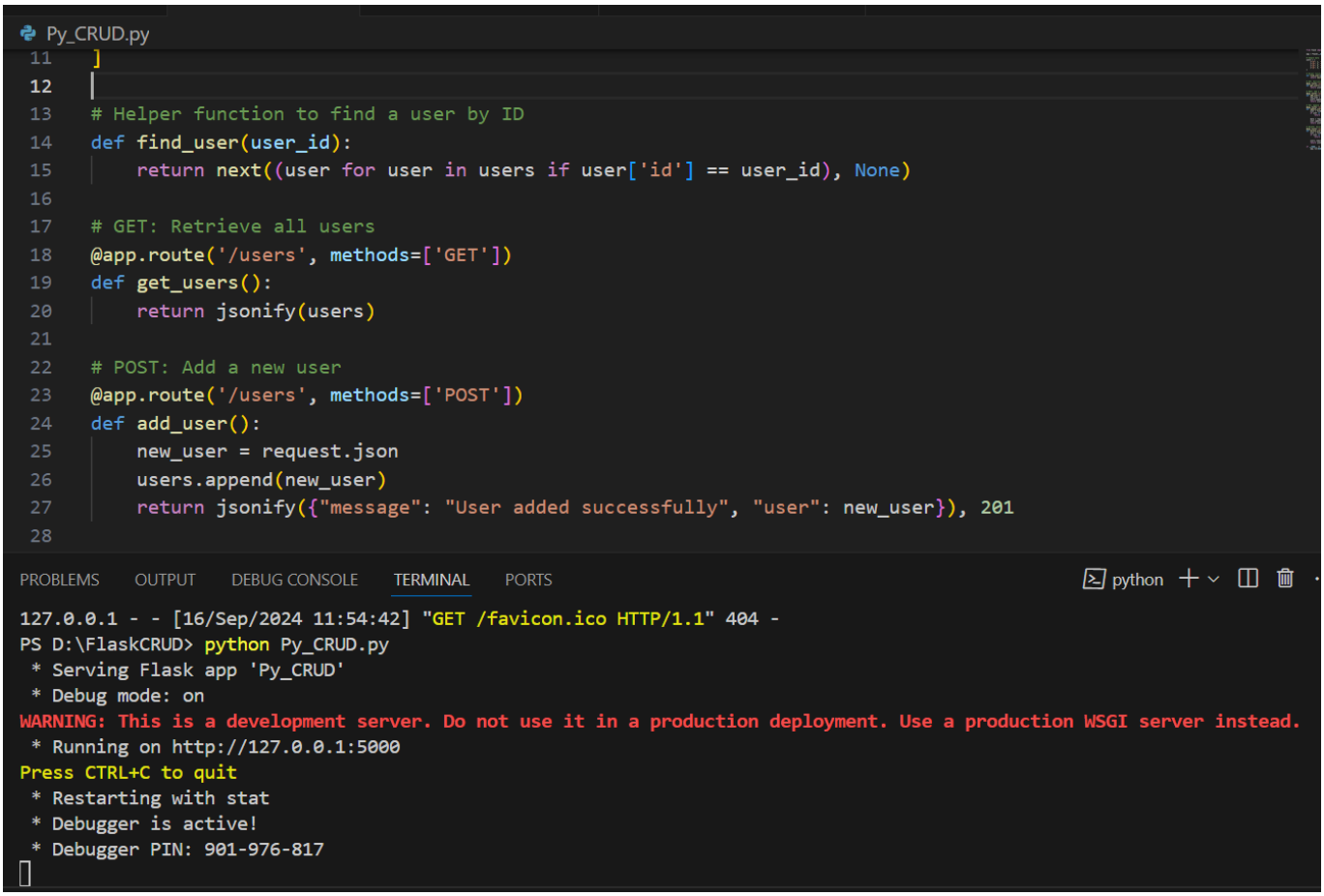
```
    users.remove(user)
    return jsonify({"message": "User deleted successfully"})
```

API Main code for CRUD Operation

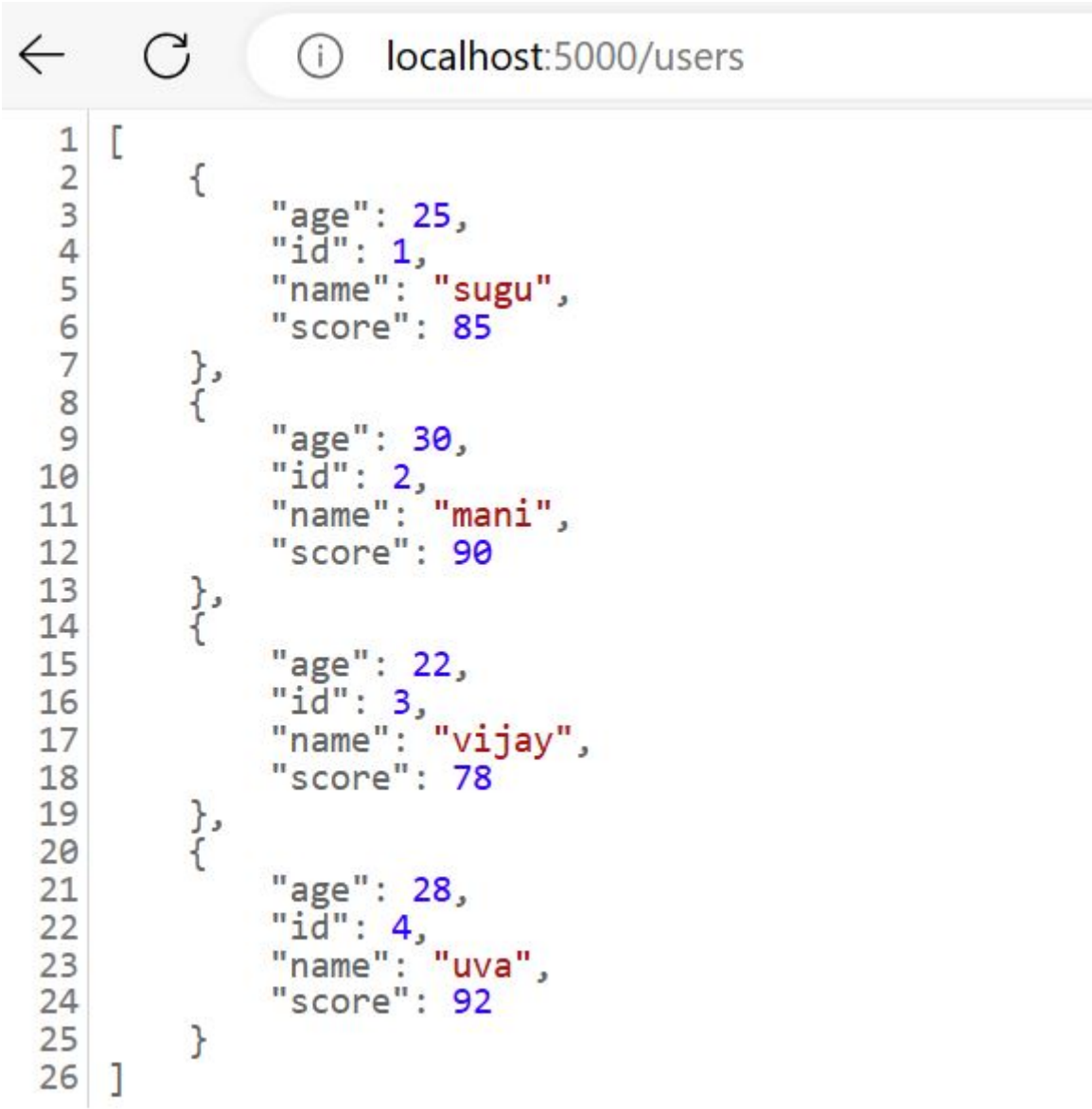
```
from flask import Flask, jsonify, request
app = Flask(__name__)
# Sample data
users = [
    {"id": 1, "name": "sugu", "age": 25, "score": 85},
    {"id": 2, "name": "mani", "age": 30, "score": 90},
    {"id": 3, "name": "vijay", "age": 22, "score": 78},
    {"id": 4, "name": "uva", "age": 28, "score": 92}
]
# Helper function to find a user by ID
def find_user(user_id):
    return next((user for user in users if user['id'] == user_id), None)
# GET: Retrieve all users
@app.route('/users', methods=['GET'])
def get_users():
    return jsonify(users)
# POST: Add a new user
@app.route('/users', methods=['POST'])
def add_user():
    new_user = request.json
    users.append(new_user)
    return jsonify({"message": "User added successfully", "user": new_user}), 201
# PUT: Update an existing user by ID
@app.route('/users/<int:user_id>', methods=['PUT'])
def update_user(user_id):
    user = find_user(user_id)
    if user is None:
        return jsonify({"message": "User not found"}), 404
    data = request.json
    user.update(data)  # Update the user with the new data
    return jsonify({"message": "User updated successfully", "user": user})
# DELETE: Delete a user by ID
@app.route('/users/<int:user_id>', methods=['DELETE'])
def delete_user(user_id):
    user = find_user(user_id)
    if user is None:
        return jsonify({"message": "User not found"}), 404
    users.remove(user)
    return jsonify({"message": "User deleted successfully"})

if __name__ == '__main__':
    app.run(debug=True)
```

Output of Main API



Main API Data retrevial from web page

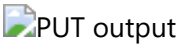


CRUD Operations

EitherRun the below Curl command for CRUD operation by using curl support for example Postman, Git Bash, VS Code, Powershell

o Example for PUT:

```
curl -X PUT -H "Content-Type: application/json" -d
'{"name":"updated_user","age":29}' http://localhost:5000/users/1
```


PUT output

o Example for POST:

```
curl -X POST -H "Content-Type: application/json" -d
'{"id":5,"name":"new_user","age":26,"score":88}' http://localhost:5000/users
```

o Example for DELETE:

```
curl -X DELETE http://localhost:5000/users/2
```

Summary

Code Repository in Git Hub refer the below link https://github.com/vadivel1975/vadi_learnings.git API - Interface for batch - source can in Database, File formate like csv, online - Kafka streaming

Special Thanks

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