

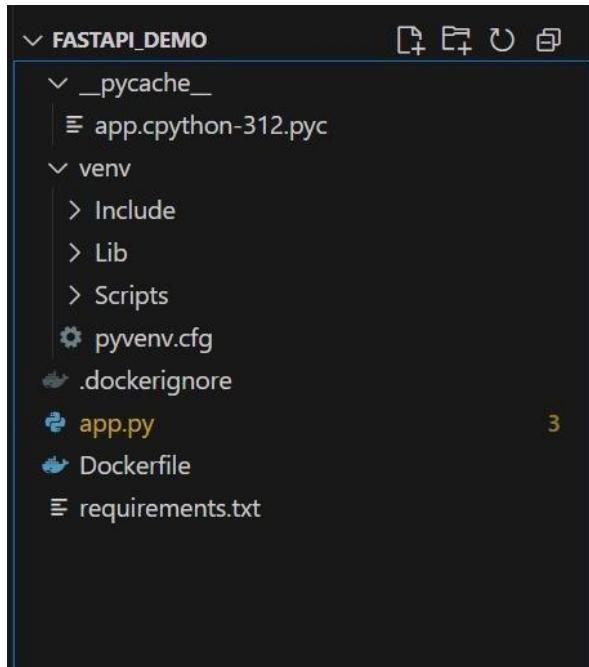
ADVANCED PYTHON PROGRAMMING

API using FastAPI and Docker

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Project Structure:



Application Code - app.py

```
from fastapi import FastAPI, HTTPException, Request from fastapi.middleware.cors import CORSMiddleware from mangum import Mangum import random
```

```
app = FastAPI(title="E-Commerce API", version="1.0")
```

```
# Enable CORS for frontend integration
```

```
app.add_middleware(  
    CORSMiddleware,  
    allow_origins=["*"],
```

```
allow_credentials=True,  
allow_methods=["*"],  
allow_headers=["*"],  
)  
  
# --- API Endpoint ---  
@app.post("/discount_vendor_info")  
async def add_to_cart(request: Request):  
    try:  
        data = await request.json()  
        print(" Received data:", data)  
  
        product_id =  
        data.get("product_id")      name =  
        data.get("name")          price =  
        data.get("price")  
  
        if not all([product_id, name, price]):  
            raise HTTPException(status_code=400, detail="Missing product details")  
  
        # Generate random discount and vendor      discount = random.choice([0, 5, 10,  
        15, 20])      vendor = random.choice(["TechWorld", "ShopEase", "ElectroMart",  
        "MegaDeals"])  
  
        if discount > 0:  
            message = f"{discount}% discount available from {vendor} for {name}."  
        else:  
            message = f"No current discounts for {name}."
```

```
    return {"message": message}

except Exception as e:
    raise HTTPException(status_code=500, detail=f"Processing failed: {str(e)}")

# --- AWS Lambda handler ---

lambda_handler = Mangum(app)
```

Docker Configuration

Dockerfile

```
FROM public.ecr.aws/lambda/python:3.11

WORKDIR /var/task

# Install system dependencies
RUN yum install -y gcc make rust cargo && \
python3.11 -m pip install --upgrade pip setuptools wheel

# Install dependencies
COPY requirements.txt .

RUN python3.11 -m pip install --no-cache-dir -r requirements.txt

# Copy source code
COPY ..

# Set entry point for AWS Lambda
CMD ["ECommerce_API.lambda_handler"]
```

.dockerignore

```
# Ignore virtual environment
```

```
venv/
```

```
.env/
```

```
ENV/
```

```
.venv/
```

```
# Ignore Python cache and compiled files
```

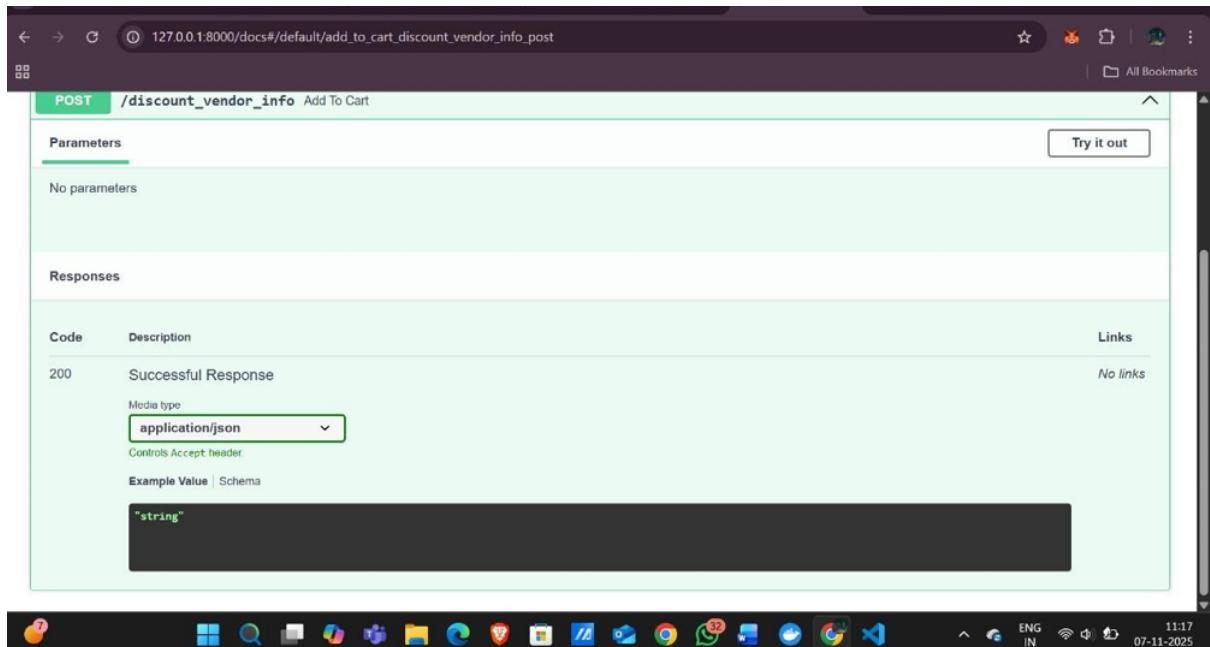
```
__pycache__/
```

Code Execution Commands:

- python -m venv venv
- env\Scripts\activate
- pip install -r requirements.txt
- python -m uvicorn app:app --reload

Result:

The screenshot shows a web browser displaying the E-Commerce API documentation. The URL in the address bar is 127.0.0.1:8000/docs#/default/add_to_cart_discount_vendor_info_post. The page title is "E-Commerce API 1.0 OAS 3.1". Below the title, there is a link to "/openapi.json". The main content area is titled "default". It shows a "POST /discount_vendor_info Add To Cart" endpoint. Under "Parameters", it says "No parameters". Under "Responses", there is a table with one row: "Code" (200) and "Description" (Successful Response). There are "Links" for "No links". A "Try it out" button is also present. The browser's taskbar at the bottom shows various application icons.



```
(.venv) matlab@sjt318scope012:~/cloud$ curl -X 'POST' \
  'http://127.0.0.1:8000/discount_vendor_info' \
  -H 'accept: application/json' \
  -d '{ "product_id": 1, "name": "Product Name", "price": 499 }'
{"message":"5% discount available from ElectroMart for Product Name."}(.venv)
```

Building and Running Docker Image :

```
(.venv) matlab@sjt318scope012:~/cloud$ docker build -t ecommerce_api .
(.venv) matlab@sjt318scope012:~/cloud$ sudo docker build -t ecommerce_api .
```

```
● login canceled
● (.venv) matlab@sjt318scope012:~/cloud$ sudo docker login -u sathishveera012
  ⓘ Info → A Personal Access Token (PAT) can be used instead.
    To create a PAT, visit https://app.docker.com/settings

Password:
WARNING! Your credentials are stored unencrypted in '/root/.docker/config.json'
Configure a credential helper to remove this warning. See
https://docs.docker.com/go/credential-store/
Login Succeeded
```

```
(.venv) matlab@sjt318scope012:~/cloud$ sudo docker tag ecommerce_api sathishveera012/ecommerce_api:latest
(.venv) matlab@sjt318scope012:~/cloud$ sudo docker push sathishveera012/ecommerce_api:latest
The push refers to repository [docker.io/sathishveera012/ecommerce_api]
f0ba7bfa9e5c: Pushed
30f2d01d697c: Pushed
5d09df60fd49: Pushed
b0ed68d1696c: Pushed
589beca3ab4a: Pushed
0d42791a23de: Pushed
7c5a65f222db: Pushed
dbc26eb5da09: Pushed
a4d6a2c814a7: Pushed
186096cd2e83: Pushed
latest: digest: sha256:cff154a40379d43b85da55e858300eb90b0d5fc945517259adea5f4c6f6cee4b size: 2418
```

Docker Container:

