

# Output file

Running on all microservices on localhost:

Catalog and order csv files before running client instances:

```
src > catalog > catalog_data > catalog.csv > data
1 name,price,quantity
2 Tux,15.99,350
3 Whale,25.99,250
4 Fox,12.99,450
5 Python,20.99,400

src > order > order_data > order_log.csv
1
```

Running 2 client instances concurrently:

Output of all microservices:

The screenshot shows the VS Code interface with four terminal panes and a sidebar. The sidebar on the right is titled "JavaSE-21 - order" and contains a tree view with nodes: JavaSE-21 catalog, JavaSE-21 front\_end\_service, JavaSE-21 order (which is selected), and JavaSE-21 src.

```
(base) simranmalik@simrans-MacBook-Pro catalogn % python3 catalog.py Starting catalog service on port 12501...
(base) simranmalik@simrans-MacBook-Pro front_end_service % python3 front_end_service.py Starting front-end server on localhost:12503...
(base) simranmalik@simrans-MacBook-Pro order % python3 order.py Starting order service on port 12502...
(base) simranmalik@simrans-MacBook-Pro -Pro src % python3 client.py & python3 client.py &
```

The screenshot shows the VS Code interface with four terminal panes and a sidebar. The sidebar on the right is titled "JavaSE-21 - order" and contains a tree view with nodes: JavaSE-21 catalog, JavaSE-21 front\_end\_service, JavaSE-21 order (which is selected), and JavaSE-21 src.

```
(base) simranmalik@simrans-MacBook-Pro catalog % python3 catalog.py Starting catalog service on port 12501...
127.0.0.1 - - [03/Apr/2024 23:24:23] "GET /Whale HTTP/1.1" 200 -
127.0.0.1 - - [03/Apr/2024 23:24:23] "GET /Tux HTTP/1.1" 200 -
127.0.0.1 - - [03/Apr/2024 23:24:23] "GET /Python HTTP/1.1" 200 -
127.0.0.1 - - [03/Apr/2024 23:24:23] "GET /Fox HTTP/1.1" 200 -
(base) simranmalik@simrans-MacBook-Pro front_end_service % python3 front_end_service.py Starting front-end server on localhost:12503...
Thread ID 6150533120 handling request from ('127.0.0.1', 52107)
Thread ID 6167359488 handling request from ('127.0.0.1', 52108)
(base) simranmalik@simrans-MacBook-Pro order % python3 order.py Starting order service on port 12502...
127.0.0.1 - - [03/Apr/2024 23:24:23] "POST /orders HTTP/1.1" 200 -
127.0.0.1 - - [03/Apr/2024 23:24:23] "POST /orders HTTP/1.1" 200 -
127.0.0.1 - - [03/Apr/2024 23:24:23] "POST /orders HTTP/1.1" 200 -
127.0.0.1 - - [03/Apr/2024 23:24:23] "GET /catalog HTTP/1.1" 404
```

## Focusing on client output:

```
(base) simranmalik@simrans-MacBook-Pro ~ % python3 client.py & python3 client.py &
[1] 7743
[2] 7744
(base) simranmalik@simrans-MacBook-Pro ~ % Query result for Fox: {'data': {'name': 'Fox', 'price': 12.99, 'quantity': 450}}
placing order for Fox , 35
Query result for Python: {'data': {'name': 'Python', 'price': 20.99, 'quantity': 400}}
placing order for Python , 20
Order result for Python: {'data': {'order_number': 0}}
Order result for Fox: {'data': {'order_number': 1}}
Query result for Whale: {'data': {'name': 'Whale', 'price': 25.99, 'quantity': 250}}
Query result for Fox: {'data': {'name': 'Fox', 'price': 12.99, 'quantity': 415}}
placing order for Fox , 29
Query result for Tux: {'data': {'name': 'Tux', 'price': 15.99, 'quantity': 350}}
placing order for Tux , 33
Order result for Fox: {'data': {'order_number': 2}}
Order result for Tux: {'data': {'order_number': 3}}
Query result for Python: {'data': {'name': 'Python', 'price': 20.99, 'quantity': 380}}
Query result for Tux: {'data': {'name': 'Tux', 'price': 15.99, 'quantity': 317}}
Query result for Tux: {'data': {'name': 'Tux', 'price': 15.99, 'quantity': 317}}
placing order for Tux , 37
Query result for Python: {'data': {'name': 'Python', 'price': 20.99, 'quantity': 380}}
Query result for Whale: {'data': {'name': 'Whale', 'price': 25.99, 'quantity': 250}}
placing order for Whale , 35
Order result for Tux: {'data': {'order_number': 4}}
Query result for Tux: {'data': {'name': 'Tux', 'price': 15.99, 'quantity': 280}}
Order result for Whale: {'data': {'order_number': 5}}
Query result for Tux: {'data': {'name': 'Tux', 'price': 15.99, 'quantity': 280}}
Query result for Python: {'data': {'name': 'Python', 'price': 20.99, 'quantity': 380}}
Query result for Tux: {'data': {'name': 'Tux', 'price': 15.99, 'quantity': 280}}
placing order for Tux , 12
Query result for Python: {'data': {'name': 'Python', 'price': 20.99, 'quantity': 380}}
placing order for Python , 41
Order result for Tux: {'data': {'order_number': 6}}
Order result for Python: {'data': {'order_number': 7}}
Query result for Whale: {'data': {'name': 'Whale', 'price': 25.99, 'quantity': 215}}
placing order for Whale , 24
Query result for Fox: {'data': {'name': 'Fox', 'price': 12.99, 'quantity': 386}}
placing order for Fox , 12
Order result for Whale: {'data': {'order_number': 8}}
Order result for Fox: {'data': {'order_number': 9}}
Query result for Python: {'data': {'name': 'Python', 'price': 20.99, 'quantity': 339}}
Query result for Fox: {'data': {'name': 'Fox', 'price': 12.99, 'quantity': 374}}
Query result for Whale: {'data': {'name': 'Whale', 'price': 25.99, 'quantity': 191}}
Query result for Python: {'data': {'name': 'Python', 'price': 20.99, 'quantity': 339}}
placing order for Python , 39
Query result for Python: {'data': {'name': 'Python', 'price': 20.99, 'quantity': 339}}
Order result for Python: {'data': {'order_number': 10}}
Query result for Tux: {'data': {'name': 'Tux', 'price': 15.99, 'quantity': 268}}
placing order for Tux , 38
Query result for Fox: {'data': {'name': 'Fox', 'price': 12.99, 'quantity': 374}}
Order result for Tux: {'data': {'order_number': 11}}
Query result for Whale: {'data': {'name': 'Whale', 'price': 25.99, 'quantity': 191}}
placing order for Whale , 20
Query result for Whale: {'data': {'name': 'Whale', 'price': 25.99, 'quantity': 191}}
placing order for Whale , 43
Order result for Whale: {'data': {'order_number': 12}}
Order result for Whale: {'data': {'order_number': 13}}
Query result for Tux: {'data': {'name': 'Tux', 'price': 15.99, 'quantity': 230}}
placing order for Tux , 14
Query result for Fox: {'data': {'name': 'Fox', 'price': 12.99, 'quantity': 374}}
placing order for Fox , 39
Order result for Tux: {'data': {'order_number': 14}}
Order result for Fox: {'data': {'order_number': 15}}
Query result for Tux: {'data': {'name': 'Tux', 'price': 15.99, 'quantity': 216}}
Query result for Tux: {'data': {'name': 'Tux', 'price': 15.99, 'quantity': 216}}
Query result for Tux: {'data': {'name': 'Tux', 'price': 15.99, 'quantity': 216}}
placing order for Tux , 11
Query result for Fox: {'data': {'name': 'Fox', 'price': 12.99, 'quantity': 335}}
Order result for Tux: {'data': {'order_number': 16}}
Query result for Python: {'data': {'name': 'Python', 'price': 20.99, 'quantity': 300}}
placing order for Python , 36
```

CONSOLE TERMINAL PORTS

```
placing order for Python , 36
Query result for Fox: {'data': {'name': 'Fox', 'price': 12.99, 'quantity': 335}}
placing order for Fox , 10
Order result for Python: {'data': {'order_number': 17}}
Order result for Fox: {'data': {'order_number': 18}}
Query result for Fox: {'data': {'name': 'Fox', 'price': 12.99, 'quantity': 325}}
Query result for Fox: {'data': {'name': 'Fox', 'price': 12.99, 'quantity': 325}}
Query result for Whale: {'data': {'name': 'Whale', 'price': 25.99, 'quantity': 128}}
Query result for Fox: {'data': {'name': 'Fox', 'price': 12.99, 'quantity': 325}}
Query result for Tux: {'data': {'name': 'Tux', 'price': 15.99, 'quantity': 205}}
placing order for Tux , 36
Query result for Python: {'data': {'name': 'Python', 'price': 20.99, 'quantity': 264}}
Order result for Tux: {'data': {'order_number': 19}}
Query result for Whale: {'data': {'name': 'Whale', 'price': 25.99, 'quantity': 128}}
placing order for Whale , 38
Query result for Whale: {'data': {'name': 'Whale', 'price': 25.99, 'quantity': 128}}
Order result for Whale: {'data': {'order_number': 20}}
Query result for Fox: {'data': {'name': 'Fox', 'price': 12.99, 'quantity': 325}}
placing order for Fox , 45
Query result for Fox: {'data': {'name': 'Fox', 'price': 12.99, 'quantity': 325}}
Order result for Fox: {'data': {'order_number': 21}}
Query result for Fox: {'data': {'name': 'Fox', 'price': 12.99, 'quantity': 280}}
Query result for Fox: {'data': {'name': 'Fox', 'price': 12.99, 'quantity': 280}}
Query result for Fox: {'data': {'name': 'Fox', 'price': 12.99, 'quantity': 280}}
placing order for Fox , 18
Query result for Python: {'data': {'name': 'Python', 'price': 20.99, 'quantity': 264}}
placing order for Python , 49
Order result for Fox: {'data': {'order_number': 22}}
Order result for Python: {'data': {'order_number': 23}}
Query result for Python: {'data': {'name': 'Python', 'price': 20.99, 'quantity': 215}}
Query result for Whale: {'data': {'name': 'Whale', 'price': 25.99, 'quantity': 90}}
placing order for Whale , 26
Query result for Fox: {'data': {'name': 'Fox', 'price': 12.99, 'quantity': 262}}
placing order for Fox , 26
Order result for Whale: {'data': {'order_number': 25}}
Query result for Fox: {'data': {'order_number': 25}}
Query result for Python: {'data': {'name': 'Python', 'price': 20.99, 'quantity': 215}}
placing order for Python , 17
Query result for Whale: {'data': {'name': 'Whale', 'price': 25.99, 'quantity': 64}}
Query result for Python: {'data': {'name': 'Python', 'price': 20.99, 'quantity': 215}}
Order result for Python: {'data': {'order_number': 26}}
Query result for Fox: {'data': {'name': 'Fox', 'price': 12.99, 'quantity': 236}}
Query result for Python: {'data': {'name': 'Python', 'price': 20.99, 'quantity': 198}}
Query result for Fox: {'data': {'name': 'Fox', 'price': 12.99, 'quantity': 236}}
placing order for Fox , 37
Query result for Tux: {'data': {'name': 'Tux', 'price': 15.99, 'quantity': 169}}
placing order for Tux , 9
Order result for Fox: {'data': {'order_number': 27}}
Order result for Tux: {'data': {'order_number': 28}}
Query result for Fox: {'data': {'name': 'Fox', 'price': 12.99, 'quantity': 199}}
placing order for Fox , 29
Query result for Whale: {'data': {'name': 'Whale', 'price': 25.99, 'quantity': 64}}
placing order for Whale , 8
Order result for Fox: {'data': {'order_number': 29}}
Order result for Whale: {'data': {'order_number': 30}}
Query result for Whale: {'data': {'name': 'Whale', 'price': 25.99, 'quantity': 56}}
placing order for Whale , 18
Query result for Tux: {'data': {'name': 'Tux', 'price': 15.99, 'quantity': 160}}
Query result for Fox: {'data': {'name': 'Fox', 'price': 12.99, 'quantity': 170}}
placing order for Fox , 34
Order result for Whale: {'data': {'order_number': 31}}
Query result for Whale: {'data': {'name': 'Whale', 'price': 25.99, 'quantity': 38}}
placing order for Whale , 17
Order result for Fox: {'data': {'order_number': 32}}
Query result for Whale: {'data': {'name': 'Whale', 'price': 25.99, 'quantity': 38}}
placing order for Whale , 7
Order result for Whale: {'data': {'order_number': 33}}
Order result for Whale: {'data': {'order_number': 34}}
Query result for Whale: {'data': {'name': 'Whale', 'price': 25.99, 'quantity': 14}}
placing order for Whale , 15
Query result for Whale: {'data': {'name': 'Whale', 'price': 25.99, 'quantity': 14}}
```

0:14.3 0:14.5 0:14.6 0:14.7

```

Query result for Whale: {'data': {'name': 'Whale', 'price': 25.99, 'quantity': 14}}
Order result for Whale: {'error': {'code': 404, 'message': 'product not found or is out of stock'}}
Query result for Fox: {'data': {'name': 'Fox', 'price': 12.99, 'quantity': 136}}
placing order for Fox , 18
Query result for Python: {'data': {'name': 'Python', 'price': 20.99, 'quantity': 198}}
placing order for Python , 49
Order result for Fox: {'data': {'order_number': 35}}
Order result for Python: {'data': {'order_number': 36}}
Query result for Whale: {'data': {'name': 'Whale', 'price': 25.99, 'quantity': 14}}
placing order for Whale , 48
Query result for Python: {'data': {'name': 'Python', 'price': 20.99, 'quantity': 149}}
placing order for Python , 26
Order result for Whale: {'error': {'code': 404, 'message': 'product not found or is out of stock'}}
Query result for Python: {'data': {'name': 'Python', 'price': 20.99, 'quantity': 123}}
placing order for Python , 23
Order result for Python: {'data': {'order_number': 37}}
Query result for Python: {'data': {'name': 'Python', 'price': 20.99, 'quantity': 123}}
Order result for Python: {'data': {'order_number': 38}}
Query result for Whale: {'data': {'name': 'Whale', 'price': 25.99, 'quantity': 14}}
Query result for Whale: {'data': {'name': 'Whale', 'price': 25.99, 'quantity': 14}}
Query result for Python: {'data': {'name': 'Python', 'price': 20.99, 'quantity': 100}}
Query result for Python: {'data': {'name': 'Python', 'price': 20.99, 'quantity': 100}}
placing order for Python , 17
Query result for Fox: {'data': {'name': 'Fox', 'price': 12.99, 'quantity': 118}}
placing order for Fox , 27
Order result for Python: {'data': {'order_number': 39}}
Order result for Fox: {'data': {'order_number': 40}}
Query result for Python: {'data': {'name': 'Python', 'price': 20.99, 'quantity': 83}}
placing order for Python , 13
Query result for Whale: {'data': {'name': 'Whale', 'price': 25.99, 'quantity': 14}}
placing order for Whale , 46
Order result for Python: {'data': {'order_number': 41}}
Order result for Whale: {'error': {'code': 404, 'message': 'product not found or is out of stock'}}
Query result for Whale: {'data': {'name': 'Whale', 'price': 25.99, 'quantity': 14}}
placing order for Whale , 30
Query result for Tux: {'data': {'name': 'Tux', 'price': 15.99, 'quantity': 160}}
placing order for Tux , 16
Order result for Whale: {'error': {'code': 404, 'message': 'product not found or is out of stock'}}
Order result for Tux: {'data': {'order_number': 42}}
Query result for Whale: {'data': {'name': 'Whale', 'price': 25.99, 'quantity': 14}}
Query result for Fox: {'data': {'name': 'Fox', 'price': 12.99, 'quantity': 91}}
placing order for Fox , 42
Query result for Python: {'data': {'name': 'Python', 'price': 20.99, 'quantity': 70}}
Query result for Tux: {'data': {'name': 'Tux', 'price': 15.99, 'quantity': 144}}
placing order for Tux , 37
Order result for Fox: {'data': {'order_number': 43}}
Query result for Python: {'data': {'name': 'Python', 'price': 20.99, 'quantity': 70}}
placing order for Python , 25
Order result for Tux: {'data': {'order_number': 44}}
Query result for Whale: {'data': {'name': 'Whale', 'price': 25.99, 'quantity': 14}}
Order result for Python: {'data': {'order_number': 45}}
Query result for Python: {'data': {'name': 'Python', 'price': 20.99, 'quantity': 45}}
Query result for Tux: {'data': {'name': 'Tux', 'price': 15.99, 'quantity': 107}}
Query result for Tux: {'data': {'name': 'Tux', 'price': 15.99, 'quantity': 107}}
Query result for Whale: {'data': {'name': 'Whale', 'price': 25.99, 'quantity': 14}}
Query result for Whale: {'data': {'name': 'Whale', 'price': 25.99, 'quantity': 14}}
Query result for Fox: {'data': {'name': 'Fox', 'price': 12.99, 'quantity': 49}}
placing order for Fox , 32
Query result for Tux: {'data': {'name': 'Tux', 'price': 15.99, 'quantity': 107}}
placing order for Tux , 2
Order result for Fox: {'data': {'order_number': 46}}
***Response Time: 0.35678815841674895 seconds***
Order result for Tux: {'data': {'order_number': 47}}
Query result for Python: {'data': {'name': 'Python', 'price': 20.99, 'quantity': 45}}
placing order for Python , 1

[2] + done      python3 client.py
(base) simranmalik@simrans-MacBook-Pro src % Order result for Python: {'data': {'order_number': 48}}
Query result for Fox: {'data': {'name': 'Fox', 'price': 12.99, 'quantity': 17}}
Query result for Tux: {'data': {'name': 'Tux', 'price': 15.99, 'quantity': 105}}

```

```

Query result for Tux: {'data': {'name': 'Tux', 'price': 15.99, 'quantity': 105}}
Query result for Fox: {'data': {'name': 'Fox', 'price': 12.99, 'quantity': 17}}
***Response Time: 0.3809051513671875 seconds***

[1] + done      python3 client.py
(base) simranmalik
○ (base) simranmalik@simrans-MacBook-Pro src %

```

After running client instances, the catalog and order log files are updated successfully, hence code works as expected :

The screenshot shows a terminal window with two tabs open. The top tab displays the contents of `catalog.csv`, which lists items with their names, prices, and quantities. The bottom tab displays the contents of `order_log.csv`, which lists a sequence of purchases with item names and quantities.

```
src > catalog > catalog_data > catalog.csv > data
1 name,price,quantity
2 Tux,15.99,105
3 Whale,25.99,14
4 Fox,12.99,17
5 Python,20.99,44

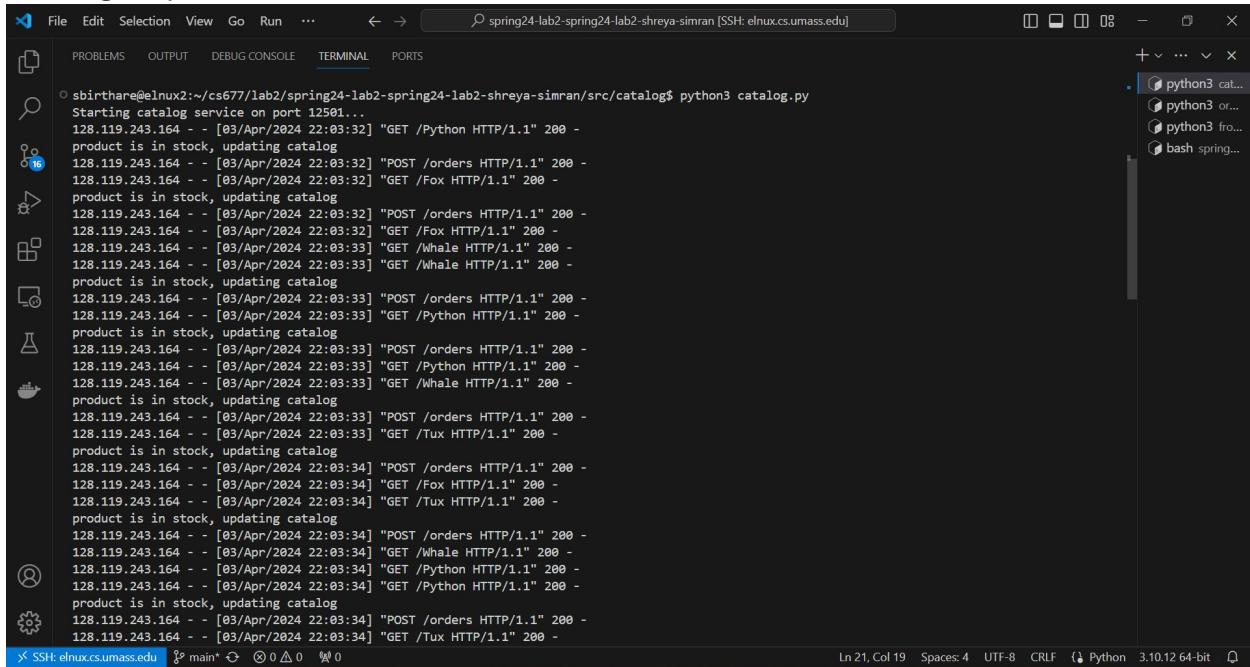
client.py 1 ● README.md . / Design document lab 2 pdf file.pdf U catalog.csv M order_log.csv M ×

src > order > order_data > order_log.csv > data
1 0,Python,20
2 1,Fox,35
3 2,Fox,29
4 3,Tux,33
5 4,Tux,37
6 5,Whale,35
7 6,Tux,12
8 7,Python,41
9 8,Whale,24
10 9,Fox,12
11 10,Python,39
12 11,Tux,38
13 12,Whale,20
14 13,Whale,43
15 14,Tux,14
16 15,Fox,39
17 16,Tux,11
18 17,Python,36
19 18,Fox,10
20 19,Tux,36
21 20,Whale,38
22 21,Fox,45
23 22,Fox,18
24 23,Python,49
25 24,Whale,26
26 25,Fox,26
27 26,Python,17
28 27,Fox,37
29 28,Tux,9
30 29,Fox,29
31 30,Whale,8
32 31,Whale,18
33 32,Fox,34
34 33,Whale,17
35 34,Whale,7
36 35,Fox,18
37 36,Python,49
38 37,Python,26
39 38,Python,23
40 39,Python,17
41 40,Fox,27
42 41,Python,13
43 42,Tux,16
44 43,Fox,42
45 44,Tux,37
46 45,Python,25
47 46,Fox,32
48 47,Tux,2
49 48,Python,1
```

/Users/simranmalik/spring24-lab2-spring24-lab2-shreya-simran/docs/codeOutputs/catalog\_on\_edlab.JPG

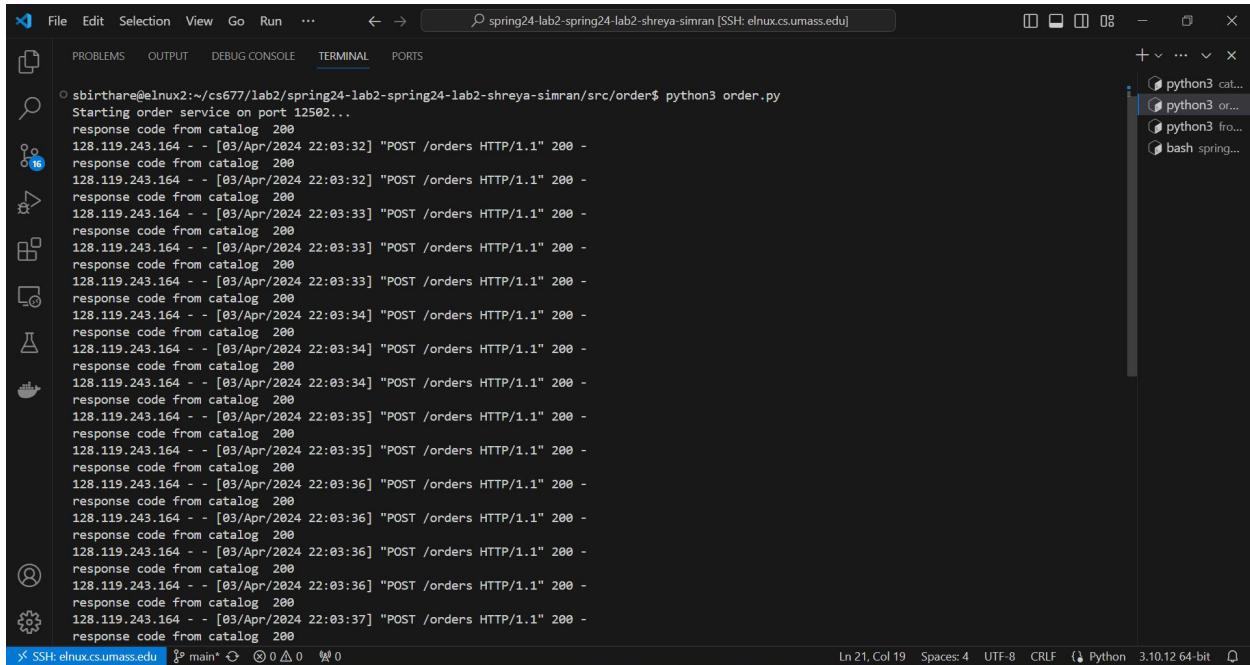
Other outputs:

Catalog output on edlab:



```
File Edit Selection View Go Run ... ← → ⌘ spring24-lab2-spring24-lab2-shreya-simran [SSH: elinux.cs.umass.edu] PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS + ⌘ python3 cat... ⌘ python3 or... ⌘ python3 fro... ⌘ bash spring... sbirthare@elinux2:~/cs677/lab2/spring24-lab2-spring24-lab2-shreya-simran/src/catalog$ python3 catalog.py Starting catalog service on port 12501... 128.119.243.164 - - [03/Apr/2024 22:03:32] "GET /Python HTTP/1.1" 200 - product is in stock, updating catalog 128.119.243.164 - - [03/Apr/2024 22:03:32] "POST /orders HTTP/1.1" 200 - 128.119.243.164 - - [03/Apr/2024 22:03:32] "GET /Fox HTTP/1.1" 200 - product is in stock, updating catalog 128.119.243.164 - - [03/Apr/2024 22:03:32] "POST /orders HTTP/1.1" 200 - 128.119.243.164 - - [03/Apr/2024 22:03:32] "GET /Fox HTTP/1.1" 200 - 128.119.243.164 - - [03/Apr/2024 22:03:33] "GET /Whale HTTP/1.1" 200 - 128.119.243.164 - - [03/Apr/2024 22:03:33] "GET /Whale HTTP/1.1" 200 - product is in stock, updating catalog 128.119.243.164 - - [03/Apr/2024 22:03:33] "POST /orders HTTP/1.1" 200 - 128.119.243.164 - - [03/Apr/2024 22:03:33] "GET /Python HTTP/1.1" 200 - product is in stock, updating catalog 128.119.243.164 - - [03/Apr/2024 22:03:33] "POST /orders HTTP/1.1" 200 - 128.119.243.164 - - [03/Apr/2024 22:03:33] "GET /Python HTTP/1.1" 200 - product is in stock, updating catalog 128.119.243.164 - - [03/Apr/2024 22:03:33] "POST /orders HTTP/1.1" 200 - 128.119.243.164 - - [03/Apr/2024 22:03:33] "GET /Whale HTTP/1.1" 200 - 128.119.243.164 - - [03/Apr/2024 22:03:33] "GET /Whale HTTP/1.1" 200 - product is in stock, updating catalog 128.119.243.164 - - [03/Apr/2024 22:03:33] "POST /orders HTTP/1.1" 200 - 128.119.243.164 - - [03/Apr/2024 22:03:33] "GET /Tux HTTP/1.1" 200 - product is in stock, updating catalog 128.119.243.164 - - [03/Apr/2024 22:03:34] "POST /orders HTTP/1.1" 200 - 128.119.243.164 - - [03/Apr/2024 22:03:34] "GET /Fox HTTP/1.1" 200 - 128.119.243.164 - - [03/Apr/2024 22:03:34] "GET /Tux HTTP/1.1" 200 - product is in stock, updating catalog 128.119.243.164 - - [03/Apr/2024 22:03:34] "POST /orders HTTP/1.1" 200 - 128.119.243.164 - - [03/Apr/2024 22:03:34] "GET /Whale HTTP/1.1" 200 - 128.119.243.164 - - [03/Apr/2024 22:03:34] "GET /Python HTTP/1.1" 200 - product is in stock, updating catalog 128.119.243.164 - - [03/Apr/2024 22:03:34] "POST /orders HTTP/1.1" 200 - 128.119.243.164 - - [03/Apr/2024 22:03:34] "GET /Tux HTTP/1.1" 200 - product is in stock, updating catalog 128.119.243.164 - - [03/Apr/2024 22:03:34] "POST /orders HTTP/1.1" 200 - 128.119.243.164 - - [03/Apr/2024 22:03:34] "GET /Whale HTTP/1.1" 200 - 128.119.243.164 - - [03/Apr/2024 22:03:34] "GET /Python HTTP/1.1" 200 - product is in stock, updating catalog 128.119.243.164 - - [03/Apr/2024 22:03:34] "POST /orders HTTP/1.1" 200 - 128.119.243.164 - - [03/Apr/2024 22:03:34] "GET /Tux HTTP/1.1" 200 - product is in stock, updating catalog
```

order\_on\_edlab



```
File Edit Selection View Go Run ... ← → ⌘ spring24-lab2-spring24-lab2-shreya-simran [SSH: elinux.cs.umass.edu] PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS + ⌘ python3 cat... ⌘ python3 or... ⌘ python3 fro... ⌘ bash spring... sbirthare@elinux2:~/cs677/lab2/spring24-lab2-spring24-lab2-shreya-simran/src/order$ python3 order.py Starting order service on port 12502... response code from catalog 200 128.119.243.164 - - [03/Apr/2024 22:03:32] "POST /orders HTTP/1.1" 200 - response code from catalog 200 128.119.243.164 - - [03/Apr/2024 22:03:32] "POST /orders HTTP/1.1" 200 - response code from catalog 200 128.119.243.164 - - [03/Apr/2024 22:03:33] "POST /orders HTTP/1.1" 200 - response code from catalog 200 128.119.243.164 - - [03/Apr/2024 22:03:33] "POST /orders HTTP/1.1" 200 - response code from catalog 200 128.119.243.164 - - [03/Apr/2024 22:03:33] "POST /orders HTTP/1.1" 200 - response code from catalog 200 128.119.243.164 - - [03/Apr/2024 22:03:33] "POST /orders HTTP/1.1" 200 - response code from catalog 200 128.119.243.164 - - [03/Apr/2024 22:03:34] "POST /orders HTTP/1.1" 200 - response code from catalog 200 128.119.243.164 - - [03/Apr/2024 22:03:34] "POST /orders HTTP/1.1" 200 - response code from catalog 200 128.119.243.164 - - [03/Apr/2024 22:03:34] "POST /orders HTTP/1.1" 200 - response code from catalog 200 128.119.243.164 - - [03/Apr/2024 22:03:35] "POST /orders HTTP/1.1" 200 - response code from catalog 200 128.119.243.164 - - [03/Apr/2024 22:03:35] "POST /orders HTTP/1.1" 200 - response code from catalog 200 128.119.243.164 - - [03/Apr/2024 22:03:36] "POST /orders HTTP/1.1" 200 - response code from catalog 200 128.119.243.164 - - [03/Apr/2024 22:03:36] "POST /orders HTTP/1.1" 200 - response code from catalog 200 128.119.243.164 - - [03/Apr/2024 22:03:36] "POST /orders HTTP/1.1" 200 - response code from catalog 200 128.119.243.164 - - [03/Apr/2024 22:03:37] "POST /orders HTTP/1.1" 200 - response code from catalog 200
```

Front end on edlab:

```

sbirthare@elinux2:~/cs677/lab2/spring24-lab2-spring24-lab2-shreya-simran$ cd src/front_end_service/
sbirthare@elinux2:~/cs677/lab2/spring24-lab2-spring24-lab2-shreya-simran/src/front_end_service$ python3 front_end_service.py
Starting front-end server on 128.119.243.164:12503...
Thread ID 139691714319936 handling request from ('75.69.44.230', 58412)
75.69.44.230 - - [03/Apr/2024 22:03:32] "GET /products/Python HTTP/1.1" 200 -
Thread ID 139691714319936 handling request from ('75.69.44.230', 58416)
75.69.44.230 - - [03/Apr/2024 22:03:32] "POST /orders/ HTTP/1.1" 200 -
Thread ID 139691714319936 handling request from ('75.69.44.230', 58428)
75.69.44.230 - - [03/Apr/2024 22:03:32] "GET /products/Fox HTTP/1.1" 200 -
Thread ID 139691714319936 handling request from ('75.69.44.230', 58430)
75.69.44.230 - - [03/Apr/2024 22:03:32] "POST /orders/ HTTP/1.1" 200 -
Thread ID 139691714319936 handling request from ('75.69.44.230', 58446)
75.69.44.230 - - [03/Apr/2024 22:03:32] "GET /products/Fox HTTP/1.1" 200 -
Thread ID 139691714319936 handling request from ('75.69.44.230', 58456)
75.69.44.230 - - [03/Apr/2024 22:03:33] "GET /products/Whale HTTP/1.1" 200 -
Thread ID 139691714319936 handling request from ('75.69.44.230', 58472)
75.69.44.230 - - [03/Apr/2024 22:03:33] "GET /products/Whale HTTP/1.1" 200 -
Thread ID 139691714319936 handling request from ('75.69.44.230', 58484)
75.69.44.230 - - [03/Apr/2024 22:03:33] "POST /orders/ HTTP/1.1" 200 -
Thread ID 139691714319936 handling request from ('75.69.44.230', 58496)
75.69.44.230 - - [03/Apr/2024 22:03:33] "GET /products/Python HTTP/1.1" 200 -
Thread ID 139691714319936 handling request from ('75.69.44.230', 58498)
75.69.44.230 - - [03/Apr/2024 22:03:33] "POST /orders/ HTTP/1.1" 200 -
Thread ID 139691714319936 handling request from ('75.69.44.230', 58498)
75.69.44.230 - - [03/Apr/2024 22:03:33] "GET /products/Whale HTTP/1.1" 200 -
Thread ID 139691714319936 handling request from ('75.69.44.230', 58498)
75.69.44.230 - - [03/Apr/2024 22:03:33] "POST /orders/ HTTP/1.1" 200 -
Thread ID 139691714319936 handling request from ('75.69.44.230', 58498)
75.69.44.230 - - [03/Apr/2024 22:03:33] "GET /products/Tux HTTP/1.1" 200 -
Thread ID 139691714319936 handling request from ('75.69.44.230', 58498)
75.69.44.230 - - [03/Apr/2024 22:03:34] "POST /orders/ HTTP/1.1" 200 -

```

SSH: elinux.cs.umass.edu    main    21 19    Spaces: 4    UTF-8    CRLF    Python 3.10.12 64-bit

## Docker on edlab

```

=> => transferring context: 5.40kB
=> [frontend internal] load build context
=> => transferring context: 4.53kB
=> CACHED [frontend 2/4] WORKDIR /spring24-lab2-spring24-lab2-shreya-simran/src/front_end_service
=> CACHED [frontend 3/4] RUN pip install --no-cache-dir requests
=> CACHED [catalog 2/4] WORKDIR /spring24-lab2-spring24-lab2-shreya-simran/src/catalog
=> CACHED [catalog 3/4] RUN pip install --no-cache-dir requests
=> CACHED [order 2/4] WORKDIR /spring24-lab2-spring24-lab2-shreya-simran/src/order
=> CACHED [order 3/4] RUN pip install --no-cache-dir requests
=> [frontend 4/4] COPY ./front_end_service/front_end_service.py /spring24-lab2-spring24-lab2-shreya-simran/src/front_end_service/front_end_servi
=> [catalog 4/4] COPY ./catalog/catalog.py /spring24-lab2-spring24-lab2-shreya-simran/src/catalog/catalog.py
=> [order 4/4] COPY ./order/order.py /spring24-lab2-spring24-lab2-shreya-simran/src/order/order.py
=> [order] exporting to image
=> => exporting layers
=> => writing image sha256:c5e9ff8d5fedc1fbcc3605bce0361bc02c5a74862ad09bdc8277eb3da3bba659
=> => naming to docker.io/library/src-order
=> [catalog] exporting to image
=> => exporting layers
=> => writing image sha256:0d195037882a3fe7041610bf67d7672da809c90ea4aac25666aa6412bdec3a2c
=> => naming to docker.io/library/src-catalog
=> [frontend] exporting to image
=> => exporting layers
=> => writing image sha256:5069acefcabe919b7e8f1612f5ac392f979a3f33cd715c8e9aba04c48a99b87
=> => naming to docker.io/library/src-frontend
[+] Running 3/3
✓ Container catalog-container Recreated
✓ Container frontend-container Recreated
✓ Container order-container Recreated
Attaching to catalog-container, frontend-container, order-container
catalog-container | Starting catalog service on port 12501...
frontend-container | Starting front-end server on frontend-container:12503...
order-container | Starting order service on port 12502...

```

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## Client product out of stock scenario

```
placing order for Whale , 9
Order result for Whale: {'data': {'name': 'Whale', 'price': 25.99, 'quantity': 150}}
Query result for Whale: {'data': {'name': 'Whale', 'price': 25.99, 'quantity': 150}}
Query result for Tux: {'data': {'name': 'Tux', 'price': 15.99, 'quantity': 5}}
Query result for Python: {'data': {'name': 'Python', 'price': 20.99, 'quantity': 0}}
Query result for Whale: {'data': {'name': 'Whale', 'price': 25.99, 'quantity': 150}}
Query result for Whale: {'data': {'name': 'Whale', 'price': 25.99, 'quantity': 150}}
placing order for Whale , 38
Order result for Whale: {'data': {'order_number': 1626}}
Query result for Fox: {'data': {'name': 'Fox', 'price': 12.99, 'quantity': 442}}
Query result for Python: {'data': {'name': 'Python', 'price': 20.99, 'quantity': 0}}
Query result for Python: {'data': {'name': 'Python', 'price': 20.99, 'quantity': 0}}
Query result for Fox: {'data': {'name': 'Fox', 'price': 12.99, 'quantity': 442}}
Query result for Tux: {'data': {'name': 'Tux', 'price': 15.99, 'quantity': 5}}
placing order for Tux , 43
Order result for Tux: {'error': {'code': 404, 'message': 'product not found or is out of stock'}}
Query result for Tux: {'data': {'name': 'Tux', 'price': 15.99, 'quantity': 5}}
Query result for Python: {'data': {'name': 'Python', 'price': 20.99, 'quantity': 0}}
Query result for Whale: {'data': {'name': 'Whale', 'price': 25.99, 'quantity': 112}}
placing order for Whale , 44
Order result for Whale: {'data': {'order_number': 1628}}
Query result for Python: {'data': {'name': 'Python', 'price': 20.99, 'quantity': 0}}
Query result for Fox: {'data': {'name': 'Fox', 'price': 12.99, 'quantity': 442}}
Query result for Fox: {'data': {'name': 'Fox', 'price': 12.99, 'quantity': 442}}
Query result for Fox: {'data': {'name': 'Fox', 'price': 12.99, 'quantity': 442}}
Query result for Python: {'data': {'name': 'Python', 'price': 20.99, 'quantity': 0}}
Query result for Whale: {'data': {'name': 'Whale', 'price': 25.99, 'quantity': 68}}
Query result for Tux: {'data': {'name': 'Tux', 'price': 15.99, 'quantity': 5}}
placing order for Tux , 44
Order result for Tux: {'error': {'code': 404, 'message': 'product not found or is out of stock'}}
Query result for Fox: {'data': {'name': 'Fox', 'price': 12.99, 'quantity': 442}}
Query result for Fox: {'data': {'name': 'Fox', 'price': 12.99, 'quantity': 442}}
Query result for Fox: {'data': {'name': 'Fox', 'price': 12.99, 'quantity': 442}}
Query result for Tux: {'data': {'name': 'Tux', 'price': 15.99, 'quantity': 5}}
placing order for Tux , 14
Order result for Tux: {'error': {'code': 404, 'message': 'product not found or is out of stock'}}
Query result for Python: {'data': {'name': 'Python', 'price': 20.99, 'quantity': 0}}
***Response Time: 10.334542751312256 seconds**
shreya@DESKTOP-4P0P6TP:/mnt/c/Users/HP/Desktop/ms/677/lab2/spring24-lab2-spring24-lab2-shreya-simran/src$ shreya@DESKTOP-4P0P6TP:/mnt/c/Users/HP/Desktop/ms/677/lab2/spring24-lab2-spring24-lab2-shreya-simran/src$ FRONTEND_HOST=128.119.243.164 sh -c 'python3 client.py'
Query result for Python: {'data': {'name': 'Python', 'price': 20.99, 'quantity': 0}}
Query result for Whale: {'data': {'name': 'Whale', 'price': 25.99, 'quantity': 351}}
placing order for Whale , 17
Order result for Whale: {'data': {'order_number': 1613}}
Query result for Whale: {'data': {'name': 'Whale', 'price': 25.99, 'quantity': 334}}
placing order for Whale , 23
Order result for Whale: {'data': {'order_number': 1614}}
Query result for Whale: {'data': {'name': 'Whale', 'price': 25.99, 'quantity': 311}}
placing order for Whale , 36
Order result for Whale: {'data': {'order_number': 1615}}
Query result for Whale: {'data': {'name': 'Whale', 'price': 25.99, 'quantity': 275}}
Query result for Tux: {'data': {'name': 'Tux', 'price': 15.99, 'quantity': 55}}
placing order for Tux , 49
Order result for Tux: {'data': {'order_number': 1616}}
Query result for Tux: {'data': {'name': 'Tux', 'price': 15.99, 'quantity': 6}}
placing order for Tux , 42
Order result for Tux: {'error': {'code': 404, 'message': 'product not found or is out of stock'}}
Query result for Fox: {'data': {'name': 'Fox', 'price': 12.99, 'quantity': 516}}
placing order for Fox , 14
Order result for Fox: {'data': {'order_number': 1617}}
Query result for Tux: {'data': {'name': 'Tux', 'price': 15.99, 'quantity': 6}}
placing order for Tux , 33
Order result for Tux: {'error': {'code': 404, 'message': 'product not found or is out of stock'}}
Query result for Whale: {'data': {'name': 'Whale', 'price': 25.99, 'quantity': 275}}
placing order for Whale , 44
Order result for Whale: {'data': {'order_number': 1618}}
Query result for Python: {'data': {'name': 'Python', 'price': 20.99, 'quantity': 0}}
Query result for Tux: {'data': {'name': 'Tux', 'price': 15.99, 'quantity': 6}}
placing order for Tux , 38
Order result for Tux: {'error': {'code': 404, 'message': 'product not found or is out of stock'}}
Query result for Python: {'data': {'name': 'Python', 'price': 20.99, 'quantity': 0}}
Query result for Fox: {'data': {'name': 'Fox', 'price': 12.99, 'quantity': 496}}
placing order for Fox , 23
Order result for Fox: {'data': {'order_number': 1619}}
Query result for Python: {'data': {'name': 'Python', 'price': 20.99, 'quantity': 0}}
Query result for Whale: {'data': {'name': 'Whale', 'price': 25.99, 'quantity': 231}}
placing order for Whale , 35
Order result for Whale: {'data': {'order_number': 1620}}
```

## Client output on local with servers on edlab:

```
shreya@DESKTOP-4P0P6TP:/mnt/c/Users/HP/Desktop/ms/677/lab2/spring24-lab2-shreya-simran/src$ shreya@DESKTOP-4P0P6TP:/mnt/c/Users/HP/Desktop/ms/677/lab2/spring24-lab2-shreya-simran/testing$ cd .. /src/
shreya@DESKTOP-4P0P6TP:/mnt/c/Users/HP/Desktop/ms/677/lab2/spring24-lab2-shreya-simran/src$ FRONTEND_HOST=128.119.243.164 sh -c 'python3 client.py'
placing order for Python , 20
Order result for Python: {'data': {'name': 'Python', 'price': 20.99, 'quantity': 800}}
Query result for Fox: {'data': {'name': 'Fox', 'price': 12.99, 'quantity': 600}}
placing order for Fox , 44
Order result for Fox: {'data': {'order_number': 1558}}
Query result for Fox: {'data': {'name': 'Fox', 'price': 12.99, 'quantity': 556}}
Query result for Whale: {'data': {'name': 'Whale', 'price': 25.99, 'quantity': 500}}
Query result for Whale: {'data': {'name': 'Whale', 'price': 25.99, 'quantity': 500}}
placing order for Whale , 31
Order result for Whale: {'data': {'order_number': 1559}}
Query result for Python: {'data': {'name': 'Python', 'price': 20.99, 'quantity': 780}}
placing order for Python , 8
Order result for Python: {'data': {'order_number': 1560}}
Query result for Python: {'data': {'name': 'Python', 'price': 20.99, 'quantity': 772}}
Query result for Whale: {'data': {'name': 'Whale', 'price': 25.99, 'quantity': 469}}
placing order for Whale , 25
Order result for Whale: {'data': {'order_number': 1561}}
Query result for Tux: {'data': {'name': 'Tux', 'price': 15.99, 'quantity': 1000}}
placing order for Tux , 47
Order result for Tux: {'data': {'order_number': 1562}}
Query result for Fox: {'data': {'name': 'Fox', 'price': 12.99, 'quantity': 556}}
Query result for Tux: {'data': {'name': 'Tux', 'price': 15.99, 'quantity': 953}}
placing order for Tux , 28
Order result for Tux: {'data': {'order_number': 1563}}
Query result for Whale: {'data': {'name': 'Whale', 'price': 25.99, 'quantity': 444}}
Query result for Python: {'data': {'name': 'Python', 'price': 20.99, 'quantity': 772}}
Query result for Python: {'data': {'name': 'Python', 'price': 20.99, 'quantity': 772}}
placing order for Python , 37
Order result for Python: {'data': {'order_number': 1564}}
Query result for Tux: {'data': {'name': 'Tux', 'price': 15.99, 'quantity': 933}}
Query result for Fox: {'data': {'name': 'Fox', 'price': 12.99, 'quantity': 556}}
placing order for Fox , 38
Order result for Fox: {'data': {'order_number': 1565}}
Query result for Whale: {'data': {'name': 'Whale', 'price': 25.99, 'quantity': 444}}
Query result for Fox: {'data': {'name': 'Fox', 'price': 12.99, 'quantity': 526}}
Query result for Fox: {'data': {'name': 'Fox', 'price': 12.99, 'quantity': 526}}
placing order for Fox , 35
Order result for Fox: {'data': {'order_number': 1566}'

order result for whale: {'data': {'order_number': 1570}}
Query result for Whale: {'data': {'name': 'Whale', 'price': 25.99, 'quantity': 326}}
placing order for Whale , 8
Order result for Whale: {'data': {'order_number': 1577}}
Query result for Fox: {'data': {'name': 'Fox', 'price': 12.99, 'quantity': 445}}
placing order for Fox , 38
Order result for Fox: {'data': {'order_number': 1578}}
Query result for Python: {'data': {'name': 'Python', 'price': 20.99, 'quantity': 619}}
Query result for Python: {'data': {'name': 'Python', 'price': 20.99, 'quantity': 619}}
placing order for Python , 2
Order result for Python: {'data': {'order_number': 1579}}
Query result for Fox: {'data': {'name': 'Fox', 'price': 12.99, 'quantity': 407}}
Query result for Tux: {'data': {'name': 'Tux', 'price': 15.99, 'quantity': 916}}
placing order for Tux , 38
Order result for Tux: {'data': {'order_number': 1580}}
Query result for Python: {'data': {'name': 'Python', 'price': 20.99, 'quantity': 617}}
placing order for Python , 16
Order result for Python: {'data': {'order_number': 1581}}
Query result for Tux: {'data': {'name': 'Tux', 'price': 15.99, 'quantity': 886}}
placing order for Tux , 19
Order result for Tux: {'data': {'order_number': 1582}}
Query result for Python: {'data': {'name': 'Python', 'price': 20.99, 'quantity': 601}}
Query result for Fox: {'data': {'name': 'Fox', 'price': 12.99, 'quantity': 407}}
Query result for Whale: {'data': {'name': 'Whale', 'price': 25.99, 'quantity': 318}}
placing order for Whale , 26
Order result for Whale: {'data': {'order_number': 1583}}
Query result for Tux: {'data': {'name': 'Tux', 'price': 15.99, 'quantity': 867}}
placing order for Tux , 23
Order result for Tux: {'data': {'order_number': 1584}}
Query result for Python: {'data': {'name': 'Python', 'price': 20.99, 'quantity': 601}}
placing order for Python , 14
Order result for Python: {'data': {'order_number': 1585}}
Query result for Fox: {'data': {'name': 'Fox', 'price': 12.99, 'quantity': 407}}
placing order for Fox , 44
Order result for Fox: {'data': {'order_number': 1586}}
Query result for Python: {'data': {'name': 'Python', 'price': 20.99, 'quantity': 587}}
Query result for Python: {'data': {'name': 'Python', 'price': 20.99, 'quantity': 587}}
placing order for Python , 9
Order result for Python: {'data': {'order_number': 1587}}
***Response Time: 9.634014368057251 seconds***
shreya@DESKTOP-4P0P6TP:/mnt/c/Users/HP/Desktop/ms/677/lab2/spring24-lab2-shreya-simran/src$
```

## unitTestResults

we have the following test cases:

for frontend service:

test\_query\_existing\_product

test\_query\_non\_existing\_product

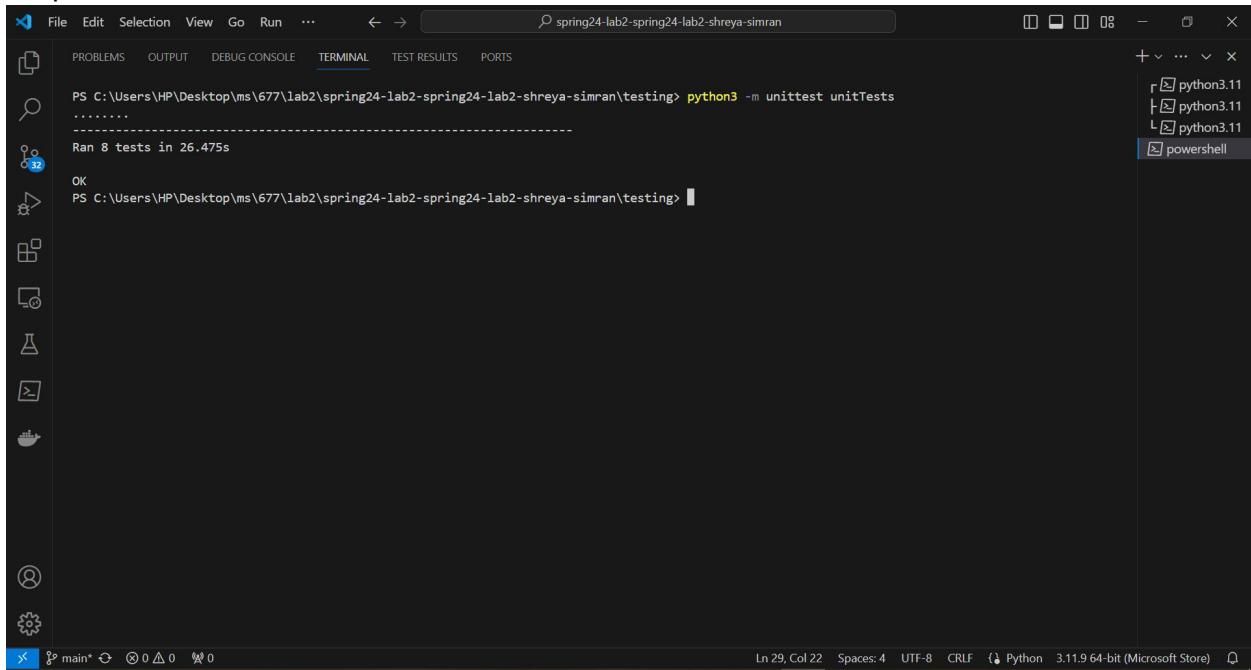
for catalog service:

```
test_retrieve_product_info_directly
test_buy_product_successfully
test_buy_non_existent_product
```

for order service:

```
test_place_order_successfully
test_quantity_more_than_available
test_place_order_for_non_existing_product
```

output for unit tests:



A screenshot of a terminal window in Visual Studio Code. The title bar says "spring24-lab2-spring24-lab2-shreya-simran". The terminal tab is selected. The output shows:

```
PS C:\Users\HP\Desktop\ms\677\lab2\spring24-lab2-spring24-lab2-shreya-simran\testing> python3 -m unittest unitTests
.....
Ran 8 tests in 26.475s
OK
PS C:\Users\HP\Desktop\ms\677\lab2\spring24-lab2-spring24-lab2-shreya-simran\testing>
```

The status bar at the bottom shows "Ln 29, Col 22" and "Python 3.11.9 64-bit (Microsoft Store)".

Therefore all testcases have passed, all are successful.