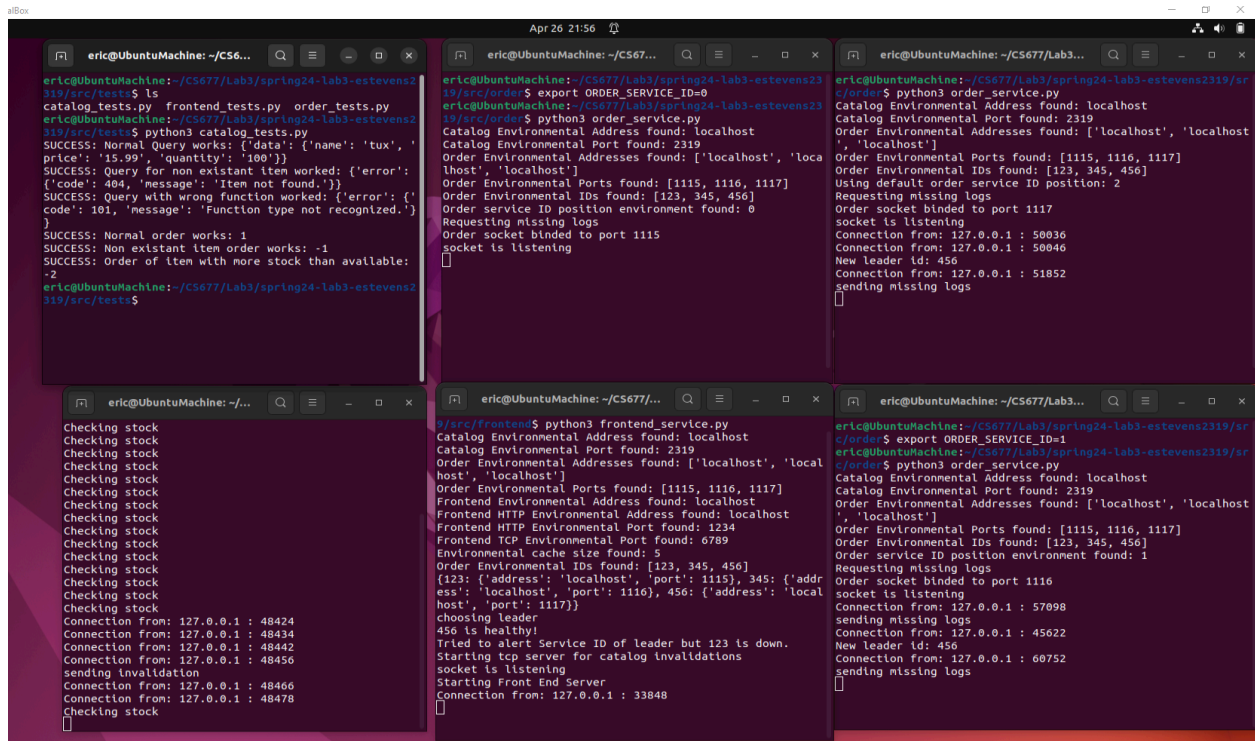


Outputs of running the tests seen in the top left terminal:

Catalog service tests:



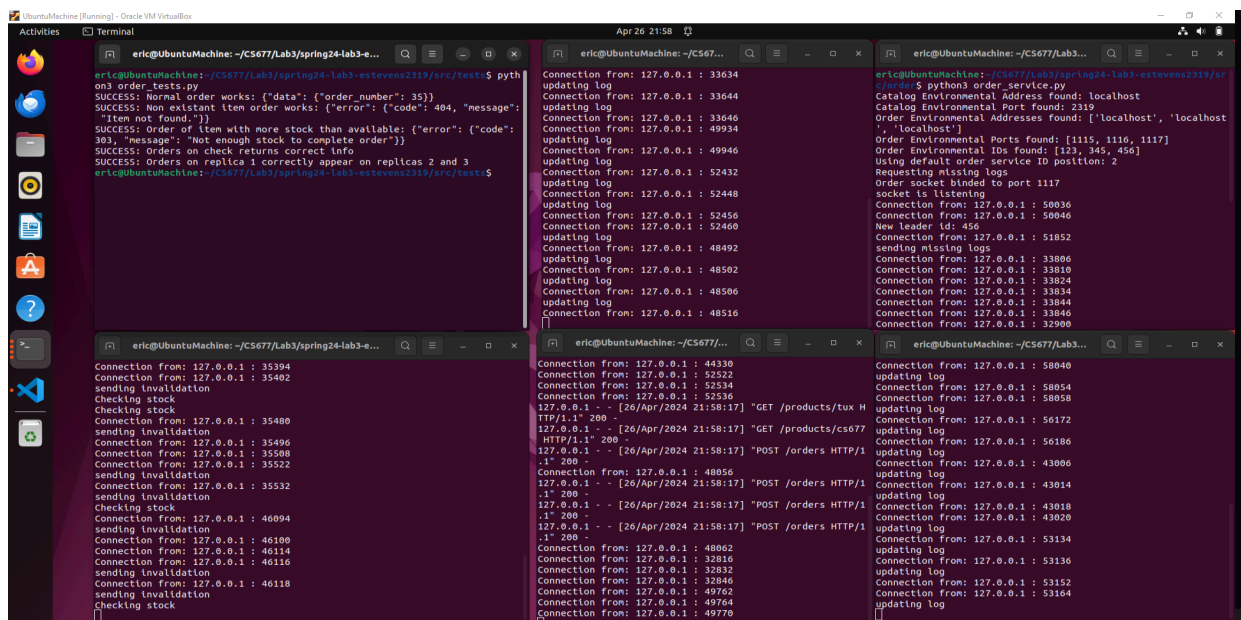
```
eric@UbuntuMachine: ~/CS6...
eric@UbuntuMachine: ~/CS677/Lab3/spring24-lab3-estevens2319/src$ ls
catalog_tests.py frontend_tests.py order_tests.py
eric@UbuntuMachine: ~/CS677/Lab3/spring24-lab3-estevens2319/src$ python3 catalog_tests.py
SUCCESS: Normal Query works: {'data': {'name': 'tux', 'price': '15.99', 'quantity': '100'}}
SUCCESS: Query for non-existent item worked: {'error': {'code': 404, 'message': 'Item not found.'}}
SUCCESS: Query with wrong function worked: {'error': {'code': 101, 'message': 'Function type not recognized.'}}
SUCCESS: Normal order works: 1
SUCCESS: Non-existent item order works: -1
SUCCESS: Order of item with more stock than available: -2
eric@UbuntuMachine: ~/CS677/Lab3/spring24-lab3-estevens2319/src$ tests$

eric@UbuntuMachine: ~/...
Checking stock
Checking stock
Checking stock
Checking stock
Checking stock
Checking stock
Checking stock
Checking stock
Checking stock
Checking stock
Checking stock
Checking stock
Checking stock
Checking stock
Connection from: 127.0.0.1 : 48424
Connection from: 127.0.0.1 : 48434
Connection from: 127.0.0.1 : 48442
Connection from: 127.0.0.1 : 48450
sending invalidation
Connection from: 127.0.0.1 : 48466
Connection from: 127.0.0.1 : 48478
checking stock

eric@UbuntuMachine: ~/CS677/Lab3/spring24-lab3-estevens2319/src$ python3 frontend_service.py
Catalog Environmental Address found: localhost
Catalog Environmental Port found: 2319
Order Environmental Addresses found: ['localhost', 'localhost', 'localhost']
Order Environmental Ports found: [1115, 1116, 1117]
Frontend HTTP Environmental Address found: localhost
Frontend HTTP Environmental Port found: 1234
Frontend TCP Environmental Port found: 6789
Environmental cache size found: 5
Order Environmental IDs found: [123, 345, 456]
(123: {'address': 'localhost', 'port': 1115}, 345: {'address': 'localhost', 'port': 1116}, 456: {'address': 'localhost', 'port': 1117})
choosing leader
456 is healthy!
Tried to alert Service ID of leader but 123 is down.
Starting tcp server for catalog invalidations
socket is listening
Starting Front End Server
Connection from: 127.0.0.1 : 33848

eric@UbuntuMachine: ~/CS677/Lab3...
eric@UbuntuMachine: ~/CS677/Lab3/spring24-lab3-estevens2319/src$ python3 order_service.py
Catalog Environmental Address found: localhost
Catalog Environmental Port found: 2319
Order Environmental Addresses found: ['localhost', 'localhost', 'localhost']
Order Environmental Ports found: [1115, 1116, 1117]
Order Environmental IDs found: [123, 345, 456]
Using default order service ID position: 2
Requesting missing logs
Order socket binded to port 1117
socket is listening
Connection from: 127.0.0.1 : 58036
Connection from: 127.0.0.1 : 58046
New Leader id: 456
Connection from: 127.0.0.1 : 51852
sending missing logs
```

Order service tests:



```
eric@UbuntuMachine: ~/CS677/Lab3/spring24-lab3-estevens2319/src$ python3 order_tests.py
SUCCESS: Normal order works: {'data': {'order_number': 35}}
SUCCESS: Non-existent item order works: {'error': {'code': 404, 'message': 'Item not found.'}}
SUCCESS: Order of item with more stock than available: {'error': {'code': 303, 'message': 'Not enough stock to complete order'}}
SUCCESS: Orders on check return correct info
SUCCESS: Orders on replica 1 correctly appear on replicas 2 and 3
eric@UbuntuMachine: ~/CS677/Lab3/spring24-lab3-estevens2319/src$ tests$

eric@UbuntuMachine: ~/CS677/Lab3/spring24-lab3-estevens2319/src$ python3 frontend_service.py
Connection from: 127.0.0.1 : 33634
updating log
Connection from: 127.0.0.1 : 33644
updating log
Connection from: 127.0.0.1 : 33646
Connection from: 127.0.0.1 : 49934
updating log
Connection from: 127.0.0.1 : 49946
updating log
Connection from: 127.0.0.1 : 52432
updating log
Connection from: 127.0.0.1 : 52448
updating log
Connection from: 127.0.0.1 : 52456
updating log
Connection from: 127.0.0.1 : 52460
updating log
Connection from: 127.0.0.1 : 48492
updating log
Connection from: 127.0.0.1 : 48502
updating log
Connection from: 127.0.0.1 : 48506
updating log
Connection from: 127.0.0.1 : 48516

eric@UbuntuMachine: ~/CS677/Lab3...
eric@UbuntuMachine: ~/CS677/Lab3/spring24-lab3-estevens2319/src$ python3 order_service.py
Catalog Environmental Address found: localhost
Catalog Environmental Port found: 2319
Order Environmental Addresses found: ['localhost', 'localhost', 'localhost']
Order Environmental Ports found: [1115, 1116, 1117]
Order Environmental IDs found: [123, 345, 456]
Using default order service ID position: 2
Requesting missing logs
Order socket binded to port 1117
socket is listening
Connection from: 127.0.0.1 : 58036
Connection from: 127.0.0.1 : 58046
New Leader id: 456
Connection from: 127.0.0.1 : 51852
sending missing logs
Connection from: 127.0.0.1 : 33806
Connection from: 127.0.0.1 : 33810
Connection from: 127.0.0.1 : 33824
Connection from: 127.0.0.1 : 33834
Connection from: 127.0.0.1 : 33844
Connection from: 127.0.0.1 : 33846
Connection from: 127.0.0.1 : 32900
updating log
Connection from: 127.0.0.1 : 58040
updating log
Connection from: 127.0.0.1 : 58054
Connection from: 127.0.0.1 : 58058
updating log
Connection from: 127.0.0.1 : 56172
updating log
Connection from: 127.0.0.1 : 56186
updating log
Connection from: 127.0.0.1 : 43014
updating log
Connection from: 127.0.0.1 : 43018
Connection from: 127.0.0.1 : 43020
updating log
Connection from: 127.0.0.1 : 53134
updating log
Connection from: 127.0.0.1 : 53136
updating log
Connection from: 127.0.0.1 : 53152
Connection from: 127.0.0.1 : 53164
updating log
```

The screenshot displays three terminal windows on a Kali Linux desktop. The left window shows a successful Nmap scan of 127.0.0.1, identifying open ports like 80, 443, and 5555. The middle window shows a series of HTTP requests and responses, including a 200 OK and a 404 Not Found. The right window shows a successful Nmap scan of 127.0.0.1, identifying open ports like 80, 443, and 5555.

[illegible]