Deploying Lab 3 on EC2 (t2.medium, us-east-1 region)

Steps followed:

`mv Downloads/labsuser.pem ~`
`vi ~/.aws/credentials` (and save here)

Configure aws setting as per lablet 5

To run an instance:

```
aws ec2 run-instances --image-id ami-0d73480446600f555 --instance-type t2.medium
--key-name vockey > instance.json
```

instance.json is created in the same working directory.
Do `cat instance.json` and copy InstanceID

"InstanceId": "i-06fdcdbb8ad7645db",

To get public DNS and enable SSH access:

`aws ec2 describe-instances --instance-id i-06fdcdbb8ad7645db`
Here we get the public dns where we can access it

"PublicDnsName": "ec2-54-196-147-151.compute-1.amazonaws.com",

To access my EC2 instance via SSH:

`chmod 400 labsuser.pem`
(to allow ssh access from anywhere)

```
aws ec2 authorize-security-group-ingress --group-name default --protocol tcp
--port 22 --cidr 0.0.0.0/0
```

```
ssh -i labsuser.pem ubuntu@ec2-54-196-147-151.compute-1.amazonaws.com
```

```
(base) lavanika@Lavanikas-MacBook-Pro ~ % ssh -i labsuser.pem
ubuntu@ec2-54-196-147-151.compute-1.amazonaws.com
The authenticity of host 'ec2-54-196-147-151.compute-1.amazonaws.com (54.196.147.151)' can't be established.
ED25519 key fingerprint is SHA256:4ZfW5dxsnosREOMNT5Nbk921BIhjqExydj9q1DdK/ww.
This key is not known by any other names.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added 'ec2-54-196-147-151.compute-1.amazonaws.com' (ED25519) to the list of known hosts.
Welcome to Ubuntu 18.04.6 LTS (GNU/Linux 5.4.0-1068-aws x86_64)
 * Documentation:  https://help.ubuntu.com
 * Management:     https://landscape.canonical.com
 * Support:        https://ubuntu.com/advantage
  System information as of Tue May  6 21:33:32 UTC 2025
  System load:  0.0               Processes:           101
  Usage of /:   15.6% of 7.69GB   Users logged in:     0
  Memory usage: 5%                IP address for eth0: 172.31.18.218
  Swap usage:   0%
0 updates can be applied immediately.
The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.
Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.
ubuntu@ip-172-31-18-218:~$
```

Installing Java, Maven, docker:

```
sudo apt update
sudo apt install -y openjdk-17-jdk maven unzip docker.io
sudo usermod -aG docker ubuntu
exit
ssh -i labsuser.pem ubuntu@ec2-54-196-147-151.compute-1.amazonaws.com
```

docker ps

```
ubuntu@ip-172-31-18-218:~$ docker ps
CONTAINER ID   IMAGE     COMMAND   CREATED   STATUS    PORTS     NAMES
```

Exit and ssh again for the changes to be applied.

Now in a separate terminal, run

```
scp -i /Users/lavanika/labsuser.pem \
     /Users/lavanika/Desktop/Spring\
2025/677/Lab3/spring25-lab3-lava-nika.zip \
     ubuntu@ec2-54-196-147-151.compute-1.amazonaws.com:~
```

```
(base) lavanika@Lavanikas-MacBook-Pro Lab3 % scp -i /Users/lavanika/labsuser.pem \
     /Users/lavanika/Desktop/Spring\ 2025/677/Lab3/spring25-lab3-lava-nika.zip \
     ubuntu@ec2-54-196-147-151.compute-1.amazonaws.com:~

spring25-lab3-lava-nika.zip                                   100% 4043KB   2.2MB/s   00:01
(base) lavanika@Lavanikas-MacBook-Pro Lab3 %
(base) lavanika@Lavanikas-MacBook-Pro Lab3 %
```

Back to instance ssh terminal (unzipping):

On the EC2 instance run

```
unzip spring25-lab3-lava-nika.zip
```

```
ubuntu@ip-172-31-18-218:~$ unzip spring25-lab3-lava-nika.zip
Archive:  spring25-lab3-lava-nika.zip
   creating: spring25-lab3-lava-nika/
  inflating: spring25-lab3-lava-nika/.DS_Store
  inflating: __MACOSX/spring25-lab3-lava-nika/._.DS_Store
   creating: spring25-lab3-lava-nika/test/
  inflating: spring25-lab3-lava-nika/pom.xml
  inflating: __MACOSX/spring25-lab3-lava-nika/._pom.xml
   creating: spring25-lab3-lava-nika/docs/
  inflating: spring25-lab3-lava-nika/README.md
  inflating: spring25-lab3-lava-nika/.gitignore
  inflating: __MACOSX/spring25-lab3-lava-nika/._.gitignore
   creating: spring25-lab3-lava-nika/.git/
   creating: spring25-lab3-lava-nika/.idea/
  inflating: __MACOSX/spring25-lab3-lava-nika/._.idea
   creating: spring25-lab3-lava-nika/src/
  inflating: spring25-lab3-lava-nika/test/.DS_Store
  inflating: __MACOSX/spring25-lab3-lava-nika/test/._.DS_Store
  inflating: spring25-lab3-lava-nika/test/test_part3_restarted_follower_recovery.sh
  inflating: spring25-lab3-lava-nika/test/test_part3_leader_failure.sh
  inflating: spring25-lab3-lava-nika/test/README.md
  inflating: spring25-lab3-lava-nika/test/test_part2_replication.sh
  inflating: spring25-lab3-lava-nika/test/test_catalog.sh
  inflating: spring25-lab3-lava-nika/test/test_part1_caching.sh
  inflating: spring25-lab3-lava-nika/test/test_frontend.sh
  inflating: spring25-lab3-lava-nika/test/test outputs.pdf
  inflating: __MACOSX/spring25-lab3-lava-nika/test/._test outputs.pdf
  inflating: spring25-lab3-lava-nika/docs/.DS_Store
  inflating: __MACOSX/spring25-lab3-lava-nika/docs/._.DS_Store
 extracting: spring25-lab3-lava-nika/docs/README.md
  inflating: spring25-lab3-lava-nika/docs/Output file.pdf
  inflating: __MACOSX/spring25-lab3-lava-nika/docs/._Output file.pdf
  inflating: spring25-lab3-lava-nika/.git/ORIG_HEAD
  inflating: spring25-lab3-lava-nika/.git/config
   creating: spring25-lab3-lava-nika/.git/objects/
  inflating: spring25-lab3-lava-nika/.git/HEAD
   creating: spring25-lab3-lava-nika/.git/info/
   creating: spring25-lab3-lava-nika/.git/logs/
```

Then

```
ubuntu@ip-172-31-18-218:~$ cd spring25-lab3-lava-nika
ubuntu@ip-172-31-18-218:~/spring25-lab3-lava-nika$ pwd
/home/ubuntu/spring25-lab3-lava-nika
ubuntu@ip-172-31-18-218:~/spring25-lab3-lava-nika$
```

```
ubuntu@ip-172-31-18-218:~/spring25-lab3-lava-nika$ ls
README.md  docs  pom.xml  src  test
ubuntu@ip-172-31-18-218:~/spring25-lab3-lava-nika$ cd src
ubuntu@ip-172-31-18-218:~/spring25-lab3-lava-nika/src$ ls
README.md  catalog-service  frontend-service  order-service
ubuntu@ip-172-31-18-218:~/spring25-lab3-lava-nika/src$
```

To build and run all services:

```
cd ~/spring25-lab3-lava-nika/src/catalog-service
mvn clean package

cd ../frontend-service
mvn clean package

cd ../order-service
mvn clean package
```

Now all `.jar` files are present in `target/` folder.

Running each microservice (using nohup):

```
cd ~/spring25-lab3-lava-nika/src/catalog-service/target
nohup java -jar catalog-service-1.0.0.jar --server.port=8081 >
~/catalog.log 2>&1 &
```

Order service replicas (ports 9091, 9092, 9093)

```
cd ~/spring25-lab3-lava-nika/src/order-service/target
```

Replica 1

```
nohup java -jar order-service-1.0.0.jar \
  --server.port=9091 \
  --replica.id=1 \
  --replica.all=http://localhost:9091,http://localhost:9092,http://localhost:9093 \
  > ~/order1.log 2>&1 &
```

Replica 2

```
nohup java -jar order-service-1.0.0.jar \
  --server.port=9092 \
  --replica.id=2 \
  --replica.all=http://localhost:9091,http://localhost:9092,http://localhost:9093 \
  > ~/order2.log 2>&1 &
```

Replica 3

```
nohup java -jar order-service-1.0.0.jar \
  --server.port=9093 \
  --replica.id=3 \
  --replica.all=http://localhost:9091,http://localhost:9092,http://localhost:9093 \
  > ~/order3.log 2>&1 &
```

Frontend service (port 7070)

```
cd ~/spring25-lab3-lava-nika/src/frontend-service/target
nohup java -jar frontend-service-1.0.0.jar --server.port=7070 > ~/frontend.log
2>&1 &
```

To verify all services are running

```
ps -ef | grep java
```