

DAY-3

To create a one Directory

```
vboxuser@ubuntu: ~$ cd /
vboxuser@ubuntu: /$ mkdir econ
vboxuser@ubuntu: /$ cd econ
vboxuser@ubuntu: /econ$ mkdir frontend
vboxuser@ubuntu: /econ$ mkdir backend
vboxuser@ubuntu: /econ$ cd backend
vboxuser@ubuntu: /econ/backend$ nano product.csv
vboxuser@ubuntu: /econ/backend$ cat product.csv
id,name,price,quantity
1,milk,5000,20
2,butter,4000,10
3,jam,2000,5
4,cake,1000,3
vboxuser@ubuntu: /econ/backend$ nano main.py
vboxuser@ubuntu: /econ/backend$ nano main.py
vboxuser@ubuntu: /econ/backend$ cd ..
vboxuser@ubuntu: /econ$ cd frontend
vboxuser@ubuntu: /econ/frontend$ nano index.html
vboxuser@ubuntu: /econ/frontend$ sudo apt install nodejs npm -y
[sudo] password for vboxuser:
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done

The following additional packages will be installed:
  binutils binutils-common binutils-x86-64-linux-gnu build-essential bzip2
  dpkg-dev exult fakeroot g++ g++-13 g++-13-x86-64-linux-gnu g++
  g++-x86-64-linux-gnu gcc gcc-13 gcc-13-x86-64-linux-gnu gcc-x86-64-linux-gnu
  gyp handlebars javascript-common libalgorithm-diff-perl
  libalgorithm-diff-xs-perl libalgorithm-merge-perl libasan8 libbinutils
  libbcl1-0 libctf-nobfd0 libctf0 libdpkg-perl libfakeroot
  libfile-fcntllock-perl libgcc-13-dev libgprofng0 libhwcasan0 libitm1
  libjs-async libjs-events libjs-inherits libjs-is-typedarray libjs-prettify
  libjs-regenerate libjs-source-map libjs-sprintf-js
  libjs-toposort libjs-underscore libjs-xml libnode-dev libnode109
```

To install python:

The screenshot shows a terminal window titled "ubuntu [Running] - Oracle VM VirtualBox" with the date and time "Mar 20 08:25". The terminal is running the command "vboxuser@ubuntu: ~/ecom/frontend" and is editing the file "index.html" using the nano text editor. The code in the terminal is as follows:

```
GNU nano 7.2
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>E-Commerce Store</title>
  <script>
    async function fetchProducts() {
      const response = await fetch('http://localhost:5050/product');
      const products = await response.json();
      let output = "<h2>Product List</h2><ul>";
      products.forEach(product => {
        output += "<li>${product.name} - ${product.price}</li>";
      });
      output += "</ul>";
      document.getElementById('product-list').innerHTML = output;
    }
  </script>
</head>
<body onload="fetchProducts()">
  <h1>Welcome to Our Store</h1>
  <div id="product-list">Loading...</div>
</body>
</html>
```

After Creating Python, Create an **Backend** and store the files,

App.py

```
vboxuser@ubuntu:~/econ/backend$ cat main.py
import pandas as pd

#app = Flask(__name__)
@app.route("/product")
def read_data():
    df=pd.read_csv("product.csv")
    print(df.head())
    json_data=df.to_json()
    print(json_data)
    return "hello world"
if __name__ == '__main__':
    #app.run(host='0.0.0.0', port=5000, debug=True)
    read_data()

vboxuser@ubuntu:~/econ/backend$ sudo apt update
Ign:1 https://pkg.jenkins.io/debian-stable binary/ InRelease
Hit:2 https://pkg.jenkins.io/debian-stable binary/ Release
Hit:3 http://security.ubuntu.com/ubuntu noble-security InRelease
Hit:5 http://in.archive.ubuntu.com/ubuntu noble InRelease
Hit:6 https://in.archive.ubuntu.com/ubuntu noble-updates InRelease
Hit:7 http://in.archive.ubuntu.com/ubuntu noble-backports InRelease
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
69 packages can be upgraded. Run 'apt list --upgradable' to see them.
vboxuser@ubuntu:~/econ/backend$ sudo apt install python3.12-venv
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  python3-pip-whl python3-setuptools-whl
The following NEW packages will be installed:
  python3-pip-whl python3-setuptools-whl python3.12-venv
0 upgraded, 3 newly installed, 0 to remove and 69 not upgraded.
Need to get 2,424 kB of archives.
After this operation, 2,771 kB of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 http://in.archive.ubuntu.com/ubuntu noble-updates/universe amd64 python3-pip-whl all 24.0+dfsg-1ubuntu1.1 [1,703 kB]
Get:2 http://in.archive.ubuntu.com/ubuntu noble-updates/universe amd64 python3-setuptools-whl all 65.5.0-1ubuntu1.1 [376 kB]
Get:3 http://in.archive.ubuntu.com/ubuntu noble-updates/universe amd64 python3.12-venv amd64 3.12.3-1ubuntu1 [1,344 B]
Successfully installed Jinja2-3.1.6 MarkupSafe-3.0.2 Werkzeug-3.1.3 blinker-1.9.0 click-8.1.8 flask-3.1.0 itsdangerous-2.2.0 numpy-2.2.4 pandas-2.2.3 python-dateutil-2.9.0.post0 pytz-2025.1 six-1.17.0 tzdata-2025.1
(venv) vboxuser@ubuntu:~/econ/backend$ python3 main.py
id name price quantity
0 1 milk 5000 20
1 2 butter 4000 10
2 3 jam 2000 5
3 4 cake 1000 3
{'id': ('0':1,'1':2,'2':3,'3':4), 'name': ('0': 'milk', '1': 'butter', '2': 'jam', '3': 'cake'), 'price': ('0':5000, '1':4000, '2':2000, '3':1000), 'quantity ': ('0':20, '1':10, '2':5, '3':3)}
```

Docker

```
self.gen.throw(typ, value, traceback)
File ~/usr/local/lib/python3.11/site-packages/pip/_vendor/urllib3/response.py, line 443, in _error_catcher
    raise ReadTimeoutError(self._pool, None, "Read timed out.")
pip._vendor.urllib3.exceptions.ReadTimeoutError: HTTPConnectionPool(host='files.pythonhosted.org', port=443): Read timed out.
The command '/bin/sh -c pip install --no-cache-dir -r requirements.txt' returned a non-zero code: 2
(venv) vboxuser@ubuntu:~/econ/backend$ sudo docker build -t backend:latest .
DEPRECATED: The legacy builder is deprecated and will be removed in a future release.
Install the buildx component to build images with BuildKit:
https://docs.docker.com/go/buildx/

Sending build context to Docker daemon 164.1MB
Step 1/7 : FROM python:3.11
--> 18c0f2265fd9
Step 2/7 : WORKDIR /main
--> Using cache
--> 67363ab65a54
Step 3/7 : COPY requirements.txt .
--> Using cache
--> 41393d370bdf
Step 4/7 : RUN pip install --no-cache-dir -r requirements.txt
--> Running in 61a43d2e9d0a
Collecting flask (from -r requirements.txt (line 1))
  Downloading flask-3.1.0-py3-none-any.whl.metadata (2.7 kB)
Collecting pandas (from -r requirements.txt (line 2))
--> Using cache
--> 6163552ef11
Step 5/7 : COPY . .
--> 9735d1ff5ed8
Step 6/7 : EXPOSE 8000
--> Running in f1fec6828e99
--> Removed intermediate container f1fec6828e99
--> bbca8eb7ce98
Step 7/7 : CMD ["python", "main.py"]
--> Running in 3578a89b06d7
--> Removed intermediate container 3578a89b06d7
--> 9cab6c4ab665
Successfully built 9cab6c4ab665
Successfully tagged backend:latest
(venv) vboxuser@ubuntu:~/econ/backend$ docker run --rm -p 8000:8000 backend:latest
```

then build Docker and Run the Docker

```
(venv) vboxuser@ubuntu:~/econ/backend$ nano main.py
(venv) vboxuser@ubuntu:~/econ/backend$ sudo docker build -t backend:latest .
DEPRECATED: The legacy builder is deprecated and will be removed in a future release.
Install the buildx component to build images with BuildKit:
https://docs.docker.com/go/buildx/

Sending build context to Docker daemon 164.1MB
Step 1/7 : FROM python:3.11
--> 18c0f2265fd9
Step 2/7 : WORKDIR /main
--> Using cache
--> 67363ab65a54
Step 3/7 : COPY requirements.txt .
--> Using cache
--> 41393d370bdf
Step 4/7 : RUN pip install --no-cache-dir -r requirements.txt
--> Using cache
--> 6163552ef11
Step 5/7 : COPY . .
--> 9735d1ff5ed8
Step 6/7 : EXPOSE 8000
--> Running in f1fec6828e99
--> Removed intermediate container f1fec6828e99
--> bbca8eb7ce98
Step 7/7 : CMD ["python", "main.py"]
--> Running in 3578a89b06d7
--> Removed intermediate container 3578a89b06d7
--> 9cab6c4ab665
Successfully built 9cab6c4ab665
Successfully tagged backend:latest
(venv) vboxuser@ubuntu:~/econ/backend$ docker run --rm -p 8000:8000 backend:latest
```

```
(venv) vboxuser@ubuntu: ~/econ/backend$ nano main.py
(venv) vboxuser@ubuntu: ~/econ/backend$ nano Dockerfile
(venv) vboxuser@ubuntu: ~/econ/backend$ python3 main.py
File ~/home/vboxuser/econ/backend/main.py, line 1
import flask import Flask
          ^^^^^^
SyntaxError: invalid syntax
(venv) vboxuser@ubuntu: ~/econ/backend$ nano main.py
(venv) vboxuser@ubuntu: ~/econ/backend$ python3 main.py
* Serving Flask app 'main'
* Debug mode: off
WARNING: This is a development server. Do not use it in a production deployment. Use a production WSGI server instead.
* Running on all addresses (0.0.0.0)
* Running on http://127.0.0.1:5050
* Running on http://10.0.2.15:5050
Press CTRL+C to quit
127.0.0.1 - - [20/Mar/2025 06:07:53] "GET / HTTP/1.1" 404 -
127.0.0.1 - - [20/Mar/2025 06:07:53] "GET /favicon.ico HTTP/1.1" 404 -
^C(venv) vboxuser@ubuntu: ~/econ/backend$ nano main.py
(venv) vboxuser@ubuntu: ~/econ/backend$ nano Dockerfile
(venv) vboxuser@ubuntu: ~/econ/backend$ nano requirements.txt
(venv) vboxuser@ubuntu: ~/econ/backend$ nano docker-compose.yml
(venv) vboxuser@ubuntu: ~/econ/backend$ nano main.py
(venv) vboxuser@ubuntu: ~/econ/backend$ python3 main.py
* Serving Flask app 'main'
* Debug mode: off
WARNING: This is a development server. Do not use it in a production deployment. Use a production WSGI server instead.
* Running on all addresses (0.0.0.0)
* Running on http://127.0.0.1:5050
* Running on http://10.0.2.15:5050
Press CTRL+C to quit
```

To see the Output, goto the website and put the URL:

then it will display the Json format in website

```
vboxuser@ubuntu: ~$ cd ..
vboxuser@ubuntu: ~/econ$ cd ..
vboxuser@ubuntu: ~/econ$ curl http://127.0.0.1:5050/product
{"id":("0":1,"1":2,"2":3,"3":4),"name":("0":"milk","1":"butter","2":"jam","3":"cake"),"price":("0":5000,"1":4000,"2":2000,"3":1000),"quantity":("0":20,"1":10,"2":5,"3":3)}vboxuser@ubuntu: ~/econ$
```

In frontend, Create the files like

index.html

```
(venv) vboxuser@ubuntu: ~/econ/backend$ cd ..
(venv) vboxuser@ubuntu: ~/econ$ cd frontend
(venv) vboxuser@ubuntu: ~/econ/frontend$ nano index.html
(venv) vboxuser@ubuntu: ~/econ/frontend$ nano Dockerfile
(venv) vboxuser@ubuntu: ~/econ/frontend$ sudo docker build -t frontend:latest .
[sudo] password for vboxuser:
Sorry, try again.
[sudo] password for vboxuser:
DEPRECATED: The legacy builder is deprecated and will be removed in a future release.
            Install the buildx component to build images with BuildKit:
            https://docs.docker.com/go/buildx/

Sending build context to Docker daemon  3.584kB
Step 1/2 : FROM nginx:alpine
alpine: Pulling from library/nginx
f18232174bc9: Pull complete
ccc35e35420: Pull complete
43f2ec46bdf: Pull complete
984583bcf083: Pull complete
8d27c072a58f: Pull complete
ab328ea73463: Pull complete
6d79cc6084d4: Pull complete
0c7e4c092ab7: Pull complete
Digest: sha256:4fff1b2c5d78d254a6f0d06c2b3cf39eaf07f01eec0927fd21e219d0af8bc0591
Status: Downloaded newer image for nginx:alpine
--> 1ff4bb4faebc
Step 2/2 : COPY index.html /usr/share/nginx/html/index.html
--> cfd3a820fbab
Successfully built cfd3a820fbab
Successfully tagged frontend:latest
```

Build the Docker image in Frontend

```
---> cfd3a820fbab
Successfully built cfd3a820fbab
Successfully tagged frontend:latest
(venv) vboxuser@ubuntu: ~/econ/frontend$ cd ..
(venv) vboxuser@ubuntu: ~/econ$ mkdir k8s
(venv) vboxuser@ubuntu: ~/econ$ cd k8s
(venv) vboxuser@ubuntu: ~/econ/k8s$ nano backend-deployment.yml
```

Activate Windows
Go to Settings to activate Windows.

```
(venv) vboxuser@ubuntu:~/econ/k8s$ sudo apt update
[sudo] password for vboxuser:
Sorry, try again.
[sudo] password for vboxuser:
Ign:1 https://pkg.jenkins.io/debian-stable binary/ InRelease
Hit:2 https://pkg.jenkins.io/debian-stable binary/ Release
Get:3 http://security.ubuntu.com/ubuntu noble-security InRelease [126 kB]
Hit:5 http://in.archive.ubuntu.com/ubuntu noble InRelease
Get:6 http://in.archive.ubuntu.com/ubuntu noble-updates InRelease [126 kB]
Get:7 http://security.ubuntu.com/ubuntu noble-security/main amd64 Components [8,956 B]
Get:8 http://in.archive.ubuntu.com/ubuntu noble-backports InRelease [126 kB]
Get:9 http://security.ubuntu.com/ubuntu noble-security/restricted amd64 Components [212 B]
Get:10 http://security.ubuntu.com/ubuntu noble-security/universe amd64 Components [51.9 kB]
Get:11 http://security.ubuntu.com/ubuntu noble-security/multiverse amd64 Components [208 B]
Get:12 http://in.archive.ubuntu.com/ubuntu noble-updates/main amd64 Components [151 kB]
Get:13 http://in.archive.ubuntu.com/ubuntu noble-updates/restricted amd64 Components [212 B]
Get:14 http://in.archive.ubuntu.com/ubuntu noble-updates/universe amd64 Components [364 kB]
Get:15 http://in.archive.ubuntu.com/ubuntu noble-updates/multiverse amd64 Components [940 B]
Get:16 http://in.archive.ubuntu.com/ubuntu noble-backports/main amd64 Components [208 B]
Get:17 http://in.archive.ubuntu.com/ubuntu noble-backports/restricted amd64 Components [216 B]
Get:18 http://in.archive.ubuntu.com/ubuntu noble-backports/universe amd64 Components [19.9 kB]
Get:19 http://in.archive.ubuntu.com/ubuntu noble-backports/multiverse amd64 Components [212 B]
Fetched 976 kB in 6s (163 kB/s)
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
68 packages can be upgraded. Run 'apt list --upgradable' to see them.
(venv) vboxuser@ubuntu:~/econ/k8s$ sudo apt install docker.io -y
Reading package lists... Done
```

To create an k8s folder in fullstack using mkdir command:

For deployment use Kubernetes

```
0 upgraded, 0 newly installed, 0 to remove and 68 not upgraded.
(venv) vboxuser@ubuntu:~/econ/k8s$ curl -LO https://storage.googleapis.com/minikube/releases/latest/minikube-linux-amd64
% Total % Received % Xferd Average Speed Time Time Time Current
          Dload Upload Total Spent Left Speed
  93 119M  93 111M  0 0 298k  0 0:06:49 0:06:23 0:00:26 0
curl: (56) Recv failure: Connection reset by peer
(venv) vboxuser@ubuntu:~/econ/k8s$ curl -LO https://storage.googleapis.com/minikube/releases/latest/minikube-linux-amd64
% Total % Received % Xferd Average Speed Time Time Time Current
          Dload Upload Total Spent Left Speed
 100 119M 100 119M  0 0 1102k  0 0:01:50 0:01:50 ----- 8776k
(venv) vboxuser@ubuntu:~/econ/k8s$ sudo install minikube-linux-amd64 /usr/local/bin/minikube
(venv) vboxuser@ubuntu:~/econ/k8s$ minikube version
minikube version: v1.35.0
commit: dd5d320e41b5451cdf3c01891bc4e13d189586ed-dirty
(venv) vboxuser@ubuntu:~/econ/k8s$ curl -LO "https://dl.k8s.io/release/${curl -L -s https://dl.k8s.io/release/stable.txt}/bin/linux/amd64/kubectl"
% Total % Received % Xferd Average Speed Time Time Time Current
          Dload Upload Total Spent Left Speed
```

```
vboxuser@ubuntu:~$ cd econ
vboxuser@ubuntu:~/econ/k8s$ git clone https://github.com/PadnavathyNarayanan/kubernetes.git
Cloning into 'kubernetes'...
remote: Enumerating objects: 22, done.
remote: Counting objects: 100% (22/22), done.
remote: Compressing objects: 100% (18/18), done.
remote: Total 22 (delta 2), reused 15 (delta 1), pack-reused 0 (from 0)
Receiving objects: 100% (22/22), 4.41 KiB | 1.47 MiB/s, done.
Resolving deltas: 100% (2/2), done.
vboxuser@ubuntu:~/econ/k8s$ cd ..
vboxuser@ubuntu:~/econ$ cd ..
vboxuser@ubuntu:~$ kubectl delete all --all --force --grace-period=0
E0321 04:00:10.619953 6289 memcache.go:265] "Unhandled Error" err=<
couldn't get current server API group list: <html><head><meta http-equiv='refresh' content='1;url=/login?from=%2Fapi%3Ftimeout%3D3032s'><script id='redirect' data-redirect-url=
/login?from=%2Fapi%3Ftimeout%3D3032s' src='/static/6180f593/scripts/redirect.js'></script></head><body style='background-color:white; color:white;'>
Authentication required
<!--
-->
</body></html>
>
E0321 04:00:10.667409 6289 memcache.go:265] "Unhandled Error" err=<
couldn't get current server API group list: <html><head><meta http-equiv='refresh' content='1;url=/login?from=%2Fapi%3Ftimeout%3D3032s'><script id='redirect' data-redirect-url=
/login?from=%2Fapi%3Ftimeout%3D3032s' src='/static/6180f593/scripts/redirect.js'></script></head><body style='background-color:white; color:white;'>
Authentication required
<!--
-->
</body></html>
>
```

```
</body></html>
vboxuser@ubuntu:~$ kubectl delete namespace kube-system --force --grace-period=0
E0321 04:01:02.568025 6312 memcache.go:265] "Unhandled Error" err=<
couldn't get current server API group list: <html><head><meta http-equiv='refresh' content='1;url=/login?from=%2Fapi%3Ftimeout%3D3032s'><script id='red
/login?from=%2Fapi%3Ftimeout%3D3032s' src='/static/6180f593/scripts/redirect.js'></script></head><body style='background-color:white; color:white;'>
Authentication required
<!--
-->
</body></html>
>
E0321 04:01:02.581513 6312 memcache.go:265] "Unhandled Error" err=<
couldn't get current server API group list: <html><head><meta http-equiv='refresh' content='1;url=/login?from=%2Fapi%3Ftimeout%3D3032s'><script id='red
/login?from=%2Fapi%3Ftimeout%3D3032s' src='/static/6180f593/scripts/redirect.js'></script></head><body style='background-color:white; color:white;'>
Authentication required
<!--
-->
</body></html>
>
```

```
vboxuser@ubuntu:~$ minikube stop
Profile "minikube" not found. Run "minikube profile list" to view all profiles.
To start a cluster, run: "minikube start"
vboxuser@ubuntu:~$ minikube delete --all --purge
Successfully deleted all profiles
Successfully purged minikube directory located at - [/home/vboxuser/.minikube]
vboxuser@ubuntu:~$ docker kill $(docker ps -q)
permission denied while trying to connect to the Docker daemon socket at unix:///var/run/docker.sock: Get "http://%2Fvar%2Frun%2Fdocker.sock/v1.45/containers/%22": dial unix /var/run/docker.sock: connect: permission denied
"docker kill" requires at least 1 argument.
See 'docker kill --help'.

Usage:  docker kill [OPTIONS] CONTAINER [CONTAINER...]

Kill one or more running containers
vboxuser@ubuntu:~$ docker rm -f $(docker ps -aq)
permission denied while trying to connect to the Docker daemon socket at unix:///var/run/docker.sock: Get "http://%2Fvar%2Frun%2Fdocker.sock/v1.45/containers/%22": dial unix /var/run/docker.sock: connect: permission denied
"docker rm" requires at least 1 argument.
See 'docker rm --help'.

Usage:  docker rm [OPTIONS] CONTAINER [CONTAINER...]

Remove one or more containers
vboxuser@ubuntu:~$ systemctl stop docker
Stopping 'docker.service', but its triggering units are still active:
docker.socket
vboxuser@ubuntu:~$ systemctl start docker
vboxuser@ubuntu:~$ pkill -f docker
pkill -f minikube
```

```
vboxuser@ubuntu:~$ systemctl start docker
vboxuser@ubuntu:~$ pkill -f docker
pkill -f minikube
pkill -f kubectl
pkill -f containerd
pkill: killing pid 6713 failed: Operation not permitted
pkill: killing pid 1057 failed: Operation not permitted
pkill: killing pid 6713 failed: Operation not permitted
vboxuser@ubuntu:~$ docker system prune -a --volumes -f
permission denied while trying to connect to the Docker daemon socket at unix:///var/run/docker.sock: Head "http://%2Fvar%2Frun%2Fdocker.sock/_ping": dial unix /var/run/docker.sock: connect: permission denied
vboxuser@ubuntu:~$ sudo netstat -tulnp | grep ":8080"
[sudo] password for vboxuser:
tcp6      0      0 :::8080          :::*              LISTEN      1027/java
vboxuser@ubuntu:~$ ^[[200~sudo netstat -tulnp | grep ":5000"~
sudo: command not found
vboxuser@ubuntu:~$ ^[[200~sudo netstat -tulnp | grep ":5001"~
sudo: command not found
```