Step 1 : **Steps in the Terminal Session:**

1. Created `backend` and `frontend` directories for the e-commerce project.
2. Added a `products.csv` file in the `backend` folder.
3. Displayed the contents of `products.csv` using the `cat` command.

```
This message is shown once a day. To disable it please create the
/home/sowmiya/.hushlogin file.
sowmiya@LAPTOP-E2BCEK44:~$ mkdir ecommerce
sowmiya@LAPTOP-E2BCEK44:~$ cd ecommerce
sowmiya@LAPTOP-E2BCEK44:~/ecommerce$ mkdir backend
sowmiya@LAPTOP-E2BCEK44:~/ecommerce$ mkdir frontend
sowmiya@LAPTOP-E2BCEK44:~/ecommerce$ ls
backend  frontend
sowmiya@LAPTOP-E2BCEK44:~/ecommerce$ cd backend
sowmiya@LAPTOP-E2BCEK44:~/ecommerce/backend$ nano package.csv
sowmiya@LAPTOP-E2BCEK44:~/ecommerce/backend$ rm package.csv
rm: cannot remove 'package.csv': No such file or directory
sowmiya@LAPTOP-E2BCEK44:~/ecommerce/backend$ ls
sowmiya@LAPTOP-E2BCEK44:~/ecommerce/backend$ nano products.csv
sowmiya@LAPTOP-E2BCEK44:~/ecommerce/backend$ cat products.csv
id,name,price,quantity
1,sowmiya,1000,25
2,shak,2000,30
3,pooj,3000,40
4,vais,5000,50
5,rat,2000,70
sowmiya@LAPTOP-E2BCEK44:~/ecommerce/backend$
```

Step 2 :

The image shows a Python script (`main.py`) opened in the Nano editor, which reads a CSV file named `products.csv`. It imports the `csv` module, reads the file, prints the header, and then iterates through each row to display its contents.

```
sowmiya@LAPTOP-E2BCEK44
  GNU nano 7.2                                                  main.py
import csv

# Open and read the CSV file
with open("products.csv", "r") as file:
    reader = csv.reader(file)
    header = next(reader)  # Read the header
    print("Header:", header)

    # Read and print each row
    for row in reader:
        print(row)
```

Step 3 :
A Python script (`main.py`) was executed in the terminal to read and display the contents of `products.csv`. The output shows the header followed by product details, each represented as a list.

```
sowmiya@LAPTOP-E2BCEK44:~/ecommerce/backend$ nano main.py
sowmiya@LAPTOP-E2BCEK44:~/ecommerce/backend$ python3 main.py
Header: ['id', 'name', 'price', 'quantity']
['1', 'sowmiya', '1000', '25']
['2', 'shak', '2000', '30']
['3', 'pooj', '3000', '40']
['4', 'vais', '5000', '50']
['5', 'rat', '2000', '70']
sowmiya@LAPTOP-E2BCEK44:~/ecommerce/backend$
```

Step 4 :

The image shows a terminal output where a Python script (`main.py`) reads a CSV file (`products.csv`) and converts its contents into JSON format, displaying a structured list of product details such as `id`, `name`, `price`, and `quantity`.

```
sowmiya@LAPTOP-E2BCEK44:~/ecommerce/backend$ python3 main.py
[
    {
        "id": "1",
        "name": "sowmiya",
        "price": "1000",
        "quantity": "25"
    },
    {
        "id": "2",
        "name": "shak",
        "price": "2000",
        "quantity": "30"
    },
    {
        "id": "3",
        "name": "pooj",
        "price": "3000",
        "quantity": "40"
    },
    {
        "id": "4",
        "name": "vais",
        "price": "5000",
        "quantity": "50"
    },
    {
        "id": "5",
        "name": "rat",
        "price": "2000",
        "quantity": "70"
    }
]
```

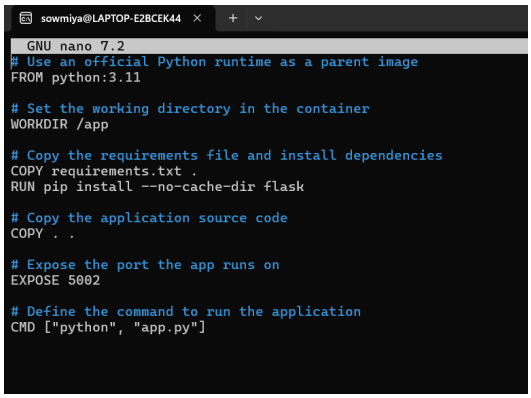
Step 5 :

The image shows the output of the `sudo netstat -lp` command, listing active listening ports and UNIX domain sockets. It displays processes, their PIDs, and associated services like `nginx`, `java`, and `systemd-resolve`. This helps in network troubleshooting and identifying running services

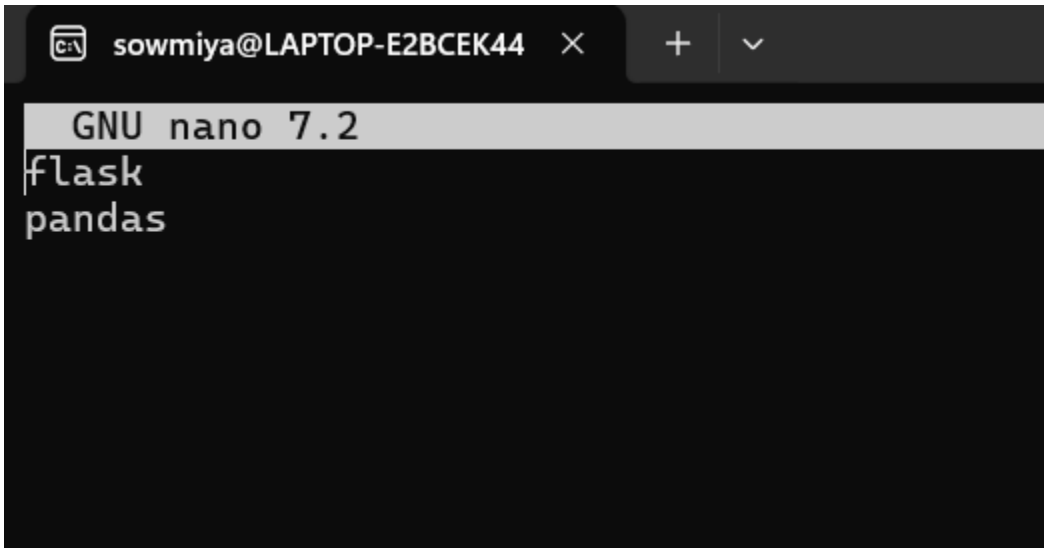
```
sowmiya@LAPTOP-E2BCEK44:~/ecommerce/backend$ sudo netstat -lp
[sudo] password for sowmiya:
Active Internet connections (only servers)
Proto Recv-Q Send-Q Local Address           Foreign Address         State       PID/Program name
tcp        0      0 127.0.0.54:domain       0.0.0.0:*               LISTEN      104/systemd-resolve
tcp        0      0 10.255.255.254:domain   0.0.0.0:*               LISTEN      -
tcp        0      0 127.0.0.53:domain       0.0.0.0:*               LISTEN      104/systemd-resolve
tcp        0      0 localhost:32857         0.0.0.0:*               LISTEN      240/containerd
tcp        0      0 0.0.0.0:http            0.0.0.0:*               LISTEN      196/nginx: master p
tcp6       0      0 [::]:http-alt           [::]:*                  LISTEN      152/java
tcp6       0      0 [::]:http               [::]:*                  LISTEN      196/nginx: master p
udp        0      0 127.0.0.54:domain       0.0.0.0:*                           104/systemd-resolve
udp        0      0 127.0.0.53:domain       0.0.0.0:*                           104/systemd-resolve
udp        0      0 10.255.255.254:domain   0.0.0.0:*                           -
udp        0      0 localhost:323           0.0.0.0:*                           -
udp6       0      0 ip6-localhost:323       [::]:*                              -
Active UNIX domain sockets (only servers)
Proto RefCnt Flags       Type       State         I-Node   PID/Program name     Path
unix  2      [ ACC ]     STREAM     LISTENING     18459    2/init               /run/WSL/2_interop
unix  2      [ ACC ]     STREAM     LISTENING     21519    -                    /run/WSL/1_interop
unix  2      [ ACC ]     SEQPACKET  LISTENING     21526    -                    /mnt/wslg/weston-notify.sock
unix  2      [ ACC ]     STREAM     LISTENING     18466    -                    /var/run/dbus/system_bus_socket
unix  2      [ ACC ]     STREAM     LISTENING     18445    -                    /mnt/wslg/runtime-dir/wayland-0
unix  2      [ ACC ]     STREAM     LISTENING     21528    -                    /tmp/.X11-unix/X0
unix  2      [ ACC ]     STREAM     LISTENING     22659    104/systemd-resolve  /run/systemd/resolve/io.systemd.Resolve
unix  2      [ ACC ]     STREAM     LISTENING     23602    -                    /mnt/wslg/runtime-dir/pulse/native
unix  2      [ ACC ]     STREAM     LISTENING     22660    104/systemd-resolve  /run/systemd/resolve/io.systemd.Resolve.
unix  2      [ ACC ]     STREAM     LISTENING     25762    1/init               /run/apport.socket
unix  2      [ ACC ]     STREAM     LISTENING     20061    1337/systemd         /run/user/1000/systemd/private
unix  2      [ ACC ]     STREAM     LISTENING     25764    1/init               /run/dbus/system_bus_socket
unix  2      [ ACC ]     STREAM     LISTENING     20068    1337/systemd         /run/user/1000/bus
unix  2      [ ACC ]     STREAM     LISTENING     18298    1244/init            /run/WSL/1244_interop
unix  2      [ ACC ]     STREAM     LISTENING     25765    1/init               /run/docker.sock
unix  2      [ ACC ]     STREAM     LISTENING     25767    1/init               /run/snapd.socket
unix  2      [ ACC ]     STREAM     LISTENING     25769    1/init               /run/snapd-snap.socket
unix  2      [ ACC ]     STREAM     LISTENING     20070    1337/systemd         /run/user/1000/gnupg/S.dirmngr
unix  2      [ ACC ]     STREAM     LISTENING     20072    1337/systemd         /run/user/1000/gnupg/S.gpg-agent.browser
unix  2      [ ACC ]     STREAM     LISTENING     25771    1/init               /run/uuidd/request
unix  2      [ ACC ]     STREAM     LISTENING     20074    1337/systemd         /run/user/1000/gnupg/S.gpg-agent.extra
unix  2      [ ACC ]     STREAM     LISTENING     20076    1337/systemd         /run/user/1000/gnupg/S.gpg-agent
unix  2      [ ACC ]     STREAM     LISTENING     20078    1337/systemd         /run/user/1000/gnupg/S.keyboxd
unix  2      [ ACC ]     STREAM     LISTENING     20080    1337/systemd         /run/user/1000/pk-debconf-socket
unix  2      [ ACC ]     STREAM     LISTENING     20082    1337/systemd         /run/user/1000/snapd-session-agent.socke
```

Step 6 :
Create a Dockerfile

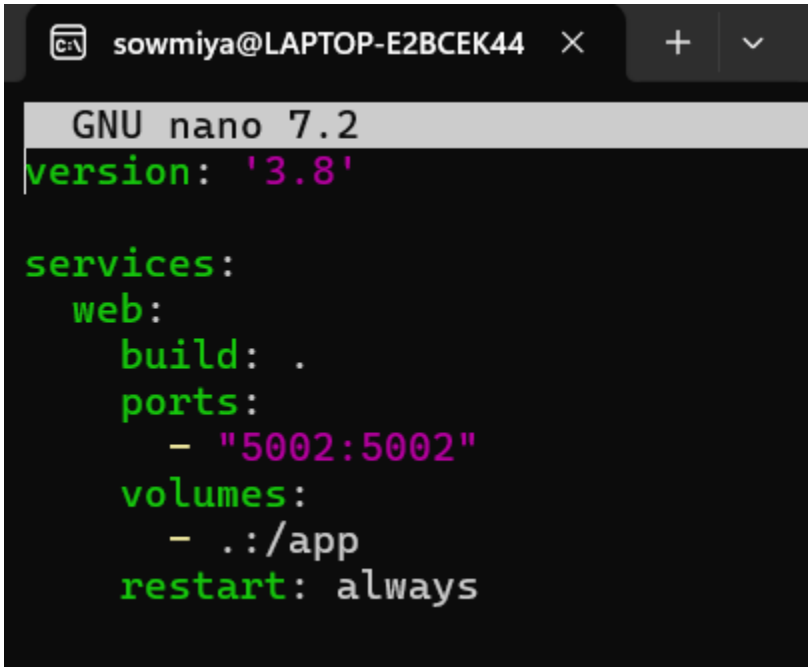
```
sowmiya@LAPTOP-E2BCEK44:~/ecommerce/backend$ nano Dockerfile
```



Step 7 :
Create a file called requirements.txt



Step 8 :
Create a docker-compose.yml file



Step 9 :

You successfully built a Docker image named `backend:latest` using a `Dockerfile`. The build process used cached layers and installed Flask in a Python 3.11 environment.

```
sowmiya@LAPTOP-E2BCEK44:~/ecommerce/backend$ sudo usermod -aG docker sowmiya
sowmiya@LAPTOP-E2BCEK44:~/ecommerce/backend$ 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   7.68kB
Step 1/7 : FROM python:3.11
 ---> 18c0f2265fd9
Step 2/7 : WORKDIR /app
 ---> Using cache
 ---> a524a62d17d2
Step 3/7 : COPY requirements.txt .
 ---> Using cache
 ---> c7da4c829d33
Step 4/7 : RUN pip install --no-cache-dir flask
 ---> Using cache
 ---> 2d44b8584ecf
Step 5/7 : COPY . .
 ---> Using cache
 ---> 9a5a8205fc51
Step 6/7 : EXPOSE 5002
 ---> Using cache
 ---> ac803c1fab45
Step 7/7 : CMD ["python", "app.py"]
 ---> Using cache
 ---> 77c7ae2cb53a
Successfully built 77c7ae2cb53a
Successfully tagged backend:latest
```

Step 10 :

Your Flask server is now responding successfully to the `GET /products` request with a **200 OK** status.

```
sowmiya@LAPTOP-E2BCEK44:~/ecommerce/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://127.0.0.1:8000
 * Running on http://172.29.140.199:8000
Press CTRL+C to quit
127.0.0.1 - - [20/Mar/2025 07:49:30] "GET /products HTTP/1.1" 200 -
```

Step 11 :

Your Flask API is successfully returning product data in JSON format. However, the structure appears to be in a dictionary-of-dictionaries format. You might want to convert it into a list of objects for better readability.

```
sowmiya@LAPTOP-E2BCEK44: $ curl http://127.0.0.1:8000/products
{"id":{"0":1,"1":2,"2":3,"3":4,"4":5},"name":{"0":"sowmiya","1":"shak","2":"pooj","3":"vais","4":"rat"},"price":{"0":1000,"1":2000,"2":3000,"3":5000,"4":200
sowmiya@LAPTOP-E2BCEK44:~$
```

Step 12 :

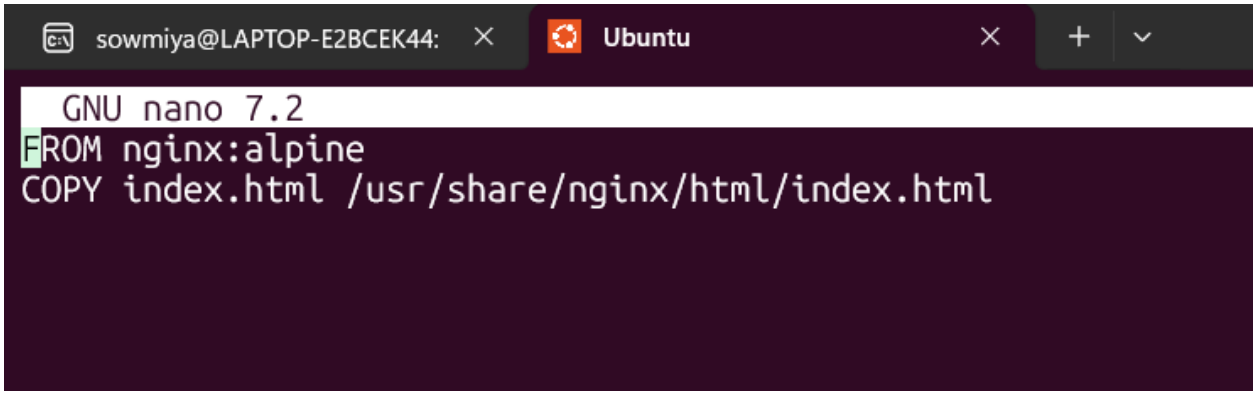
Create a new file called index.html and write a code to list the product details in the front-end

```
sowmiya@LAPTOP-E2BCEK44:~/ecommerce/backend$ nano index.html
```

```
  GNU nano 7.2                                                                ind
<!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:8000/products");
            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>
```

Step 13 :
Create a new file as Dockerfile and insert the nginx imports

```
sowmiya@LAPTOP-E2BCEK44:~/ecommerce/frontend$ nano Dockerfile
```



Step 14 :

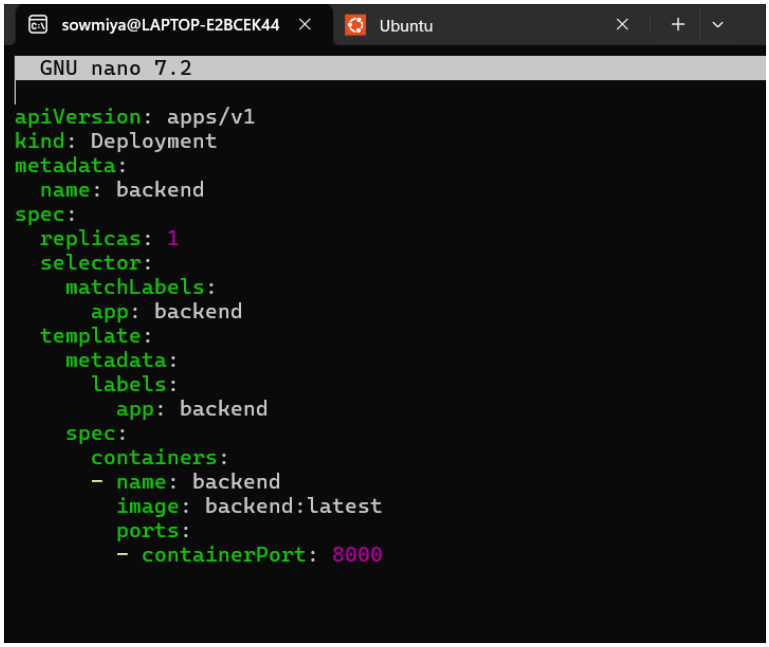
The image shows the successful execution of a Docker build command. The user builds a Docker image named `frontend:latest` using an `nginx:alpine` base image. The build process includes:

1. Pulling the `nginx:alpine` image from Docker Hub.
2. Copying an `index.html` file into `/usr/share/nginx/html/`.
3. Successfully tagging the built image as `frontend:latest` .A deprecation warning suggests using BuildKit for future builds.

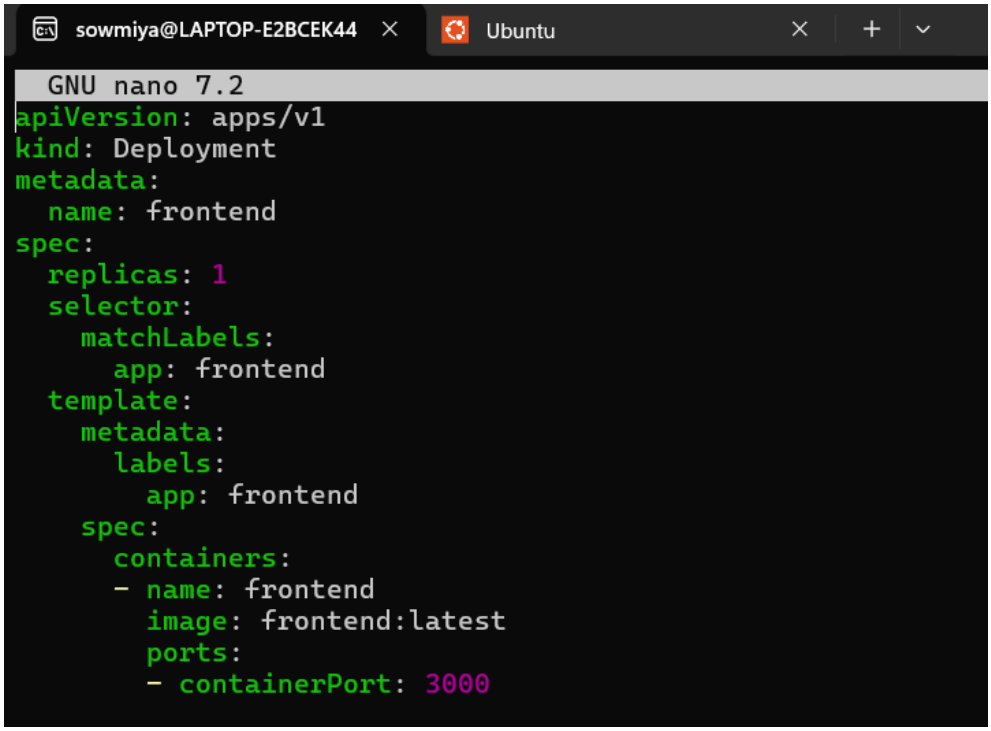
```
sowmiya@LAPTOP-E2BCEK44:~/ecommerce/frontend$ sudo docker build -t frontend:latest .
[sudo] password for sowmiya:
DEPRECATED: The legacy builder is deprecated and will be removed in a future release.
            Install the buildx component to build images with BuildKit:
            https://docs.docker.com/go/buildx/

Sending build context to Docker daemon  3.584kB
Step 1/2 : FROM nginx:alpine
alpine: Pulling from library/nginx
f18232174bc9: Pull complete
ccc35e35d420: Pull complete
43f2ec460bdf: Pull complete
984583bcf083: Pull complete
8d27c072a58f: Pull complete
ab3286a73463: Pull complete
6d79cc6084d4: Pull complete
0c7e4c092ab7: Pull complete
Digest: sha256:4ff102c5d78d254a6f0da062b3cf39eaf07f01eec0927fd21e219d0af8bc0591
Status: Downloaded newer image for nginx:alpine
 ---> 1ff4bb4faebc
Step 2/2 : COPY index.html /usr/share/nginx/html/index.html
 ---> c98e47b36a72
Successfully built c98e47b36a72
Successfully tagged frontend:latest
```

Step 15 :
Create a yaml file for backend deplyment

```
sowmiya@LAPTOP-E2BCEK44:~/ecommerce/k8s$ nano backend-deployment.yaml
```

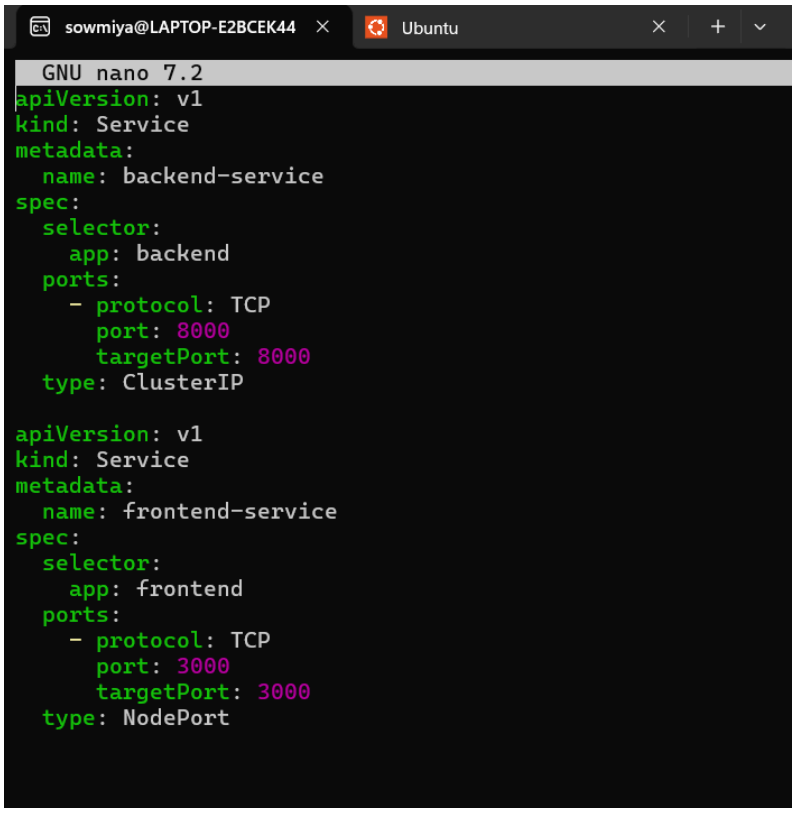


Step 16 :
Create a yaml file for front-end deployment



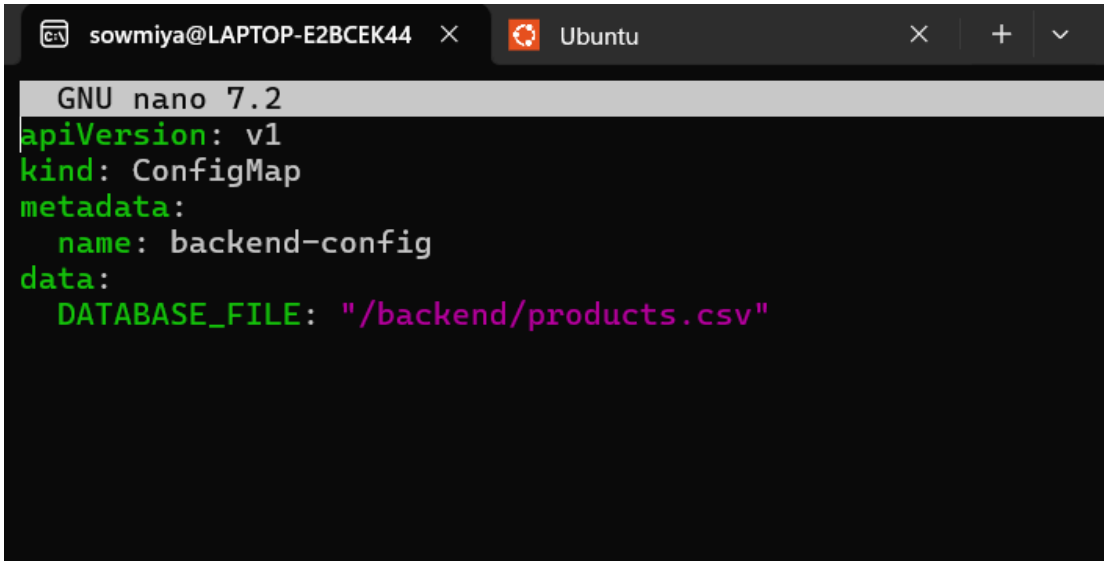
Step 17 :
Create a file for service

```
sowmiya@LAPTOP-E2BCEK44:~/ecommerce/k8s$ nano service.yaml
```



Step 18 :
Likewise for configmap.yaml

```
sowmiya@LAPTOP-E2BCEK44:~/ecommerce/k8s$ nano configmap.yaml
```



Step 19 :
Give the update command for update

```
sowmiya@LAPTOP-E2BCEK44:~/ecommerce/k8s$ sudo apt update
Ign:1 https://pkg.jenkins.io/debian-stable binary/ InRelease
Hit:2 https://pkg.jenkins.io/debian-stable binary/ Release
Hit:4 http://security.ubuntu.com/ubuntu noble-security InRelease
Hit:5 http://mirror.math.princeton.edu/pub/ubuntu noble InRelease
Hit:6 http://archive.ubuntu.com/ubuntu noble InRelease
Hit:7 http://mirror.math.princeton.edu/pub/ubuntu noble-updates InRelease
Hit:8 http://archive.ubuntu.com/ubuntu noble-updates InRelease
Hit:9 http://archive.ubuntu.com/ubuntu noble-backports InRelease
Hit:10 http://mirror.math.princeton.edu/pub/ubuntu noble-backports InRelease
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
```

Step 20 :
Then check whether the docker has a newest version

```
sowmiya@LAPTOP-E2BCEK44:~/ecommerce/k8s$ sudo apt install docker.io -y
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
docker.io is already the newest version (26.1.3-0ubuntu1~24.04.1).
0 upgraded, 0 newly installed, 0 to remove and 1 not upgraded.
```

Step 21 :

The image shows a terminal where Minikube for Linux is being downloaded using `curl` from Google Cloud Storage.

```
sowmiya@LAPTOP-E2BCEK44:~/ecommerce/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  2751k      0  0:00:44  0:00:44 --:--:-- 1288k
```

Step 22 :

The image shows a terminal where Minikube is being installed and `kubectl` is being downloaded using `curl`.

```
sowmiya@LAPTOP-E2BCEK44:~/ecommerce/k8s$ sudo install minikube-linux-amd64 /usr/local/bin/minikube
sowmiya@LAPTOP-E2BCEK44:~/ecommerce/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
100   138  100   138    0     0    439      0 --:--:-- --:--:-- --:--:--   440
100 54.6M  100 54.6M    0     0   700k      0  0:01:19  0:01:19 --:--:--  843k
```

Step 23 :

```
sowmiya@LAPTOP-E2BCEK44:~$ sudo snap install kubectl --classic
2025-03-21T04:01:21Z INFO Waiting for automatic snapd restart...
kubectl 1.32.3 from Canonical✓ installed
sowmiya@LAPTOP-E2BCEK44:~$ kubectl delete all --all --force --grace-period=0
E0321 04:03:02.835718    5678 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%3D32s'/><script id='r
edirect' data-redirect-url='/login?from=%2Fapi%3Ftimeout%3D32s' src='/static/b2bb50f9/scripts/redirect.js'></script></head><body style='background-color:whi
te; color:white;'>
        Authentication required
        <!--
        -->

        </body></html>
 >
E0321 04:03:02.844042    5678 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%3D32s'/><script id='r
edirect' data-redirect-url='/login?from=%2Fapi%3Ftimeout%3D32s' src='/static/b2bb50f9/scripts/redirect.js'></script></head><body style='background-color:whi
te; color:white;'>
        Authentication required
        <!--
        -->

        </body></html>
 >
E0321 04:03:02.849154    5678 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%3D32s'/><script id='r
edirect' data-redirect-url='/login?from=%2Fapi%3Ftimeout%3D32s' src='/static/b2bb50f9/scripts/redirect.js'></script></head><body style='background-color:whi
te; color:white;'>
        Authentication required
        <!--
        -->

        </body></html>
 >
E0321 04:03:02.853566    5678 memcache.go:265] "Unhandled Error" err=<
```

Step 24 :

```
sowmiya@LAPTOP-E2BCEK44:~$ kubectl delete all --all --force --grace-period=0
E0321 04:06:31.110739    6375 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%3D32s'/><script id='r
edirect' data-redirect-url='/login?from=%2Fapi%3Ftimeout%3D32s' src='/static/b2bb50f9/scripts/redirect.js'></script></head><body style='background-color:whi
te; color:white;'>
        Authentication required
        <!--
        -->

        </body></html>
 >
E0321 04:06:31.118727    6375 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%3D32s'/><script id='r
edirect' data-redirect-url='/login?from=%2Fapi%3Ftimeout%3D32s' src='/static/b2bb50f9/scripts/redirect.js'></script></head><body style='background-color:whi
te; color:white;'>
        Authentication required
        <!--
        -->

        </body></html>
 >
E0321 04:06:31.122205    6375 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%3D32s'/><script id='r
edirect' data-redirect-url='/login?from=%2Fapi%3Ftimeout%3D32s' src='/static/b2bb50f9/scripts/redirect.js'></script></head><body style='background-color:whi
te; color:white;'>
        Authentication required
        <!--
        -->

        </body></html>
 >
E0321 04:06:31.125773    6375 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%3D32s'/><script id='r
edirect' data-redirect-url='/login?from=%2Fapi%3Ftimeout%3D32s' src='/static/b2bb50f9/scripts/redirect.js'></script></head><body style='background-color:whi
te; color:white;'>
        Authentication required
        <!--
        -->

        </body></html>
```

Step 25 :

```
sowmiya@LAPTOP-E2BCEK44:~$ minikube stop
🤷  Profile "minikube" not found. Run "minikube profile list" to view all profiles.
👉  To start a cluster, run: "minikube start"
sowmiya@LAPTOP-E2BCEK44:~$ minikube delete --all --purge
🔥  Successfully deleted all profiles
💀  Successfully purged minikube directory located at - [/home/sowmiya/.minikube]
```

Step 26 :

```
sowmiya@LAPTOP-E2BCEK44:~$ docker kill $(docker ps -q)
a7296a4d6336
sowmiya@LAPTOP-E2BCEK44:~$ docker rm -f $(docker ps -aq)
113fb90edeef
124e8166e6a5
4ef9fb202351
a7296a4d6336
```

Step 27 :

```
sowmiya@LAPTOP-E2BCEK44:~$ systemctl stop docker
Failed to stop docker.service: Interactive authentication required.
See system logs and 'systemctl status docker.service' for details.
sowmiya@LAPTOP-E2BCEK44:~$ systemctl start docker
Failed to start docker.service: Interactive authentication required.
See system logs and 'systemctl status docker.service' for details.
sowmiya@LAPTOP-E2BCEK44:~$ pkill -f docker
pkill: killing pid 399 failed: Operation not permitted
sowmiya@LAPTOP-E2BCEK44:~$ docker --version
Docker version 26.1.3, build 26.1.3-0ubuntu1~24.04.1
sowmiya@LAPTOP-E2BCEK44:~$ pkill -f minikube
sowmiya@LAPTOP-E2BCEK44:~$ pkill -f kubectl
pkill: killing pid 5668 failed: Operation not permitted
sowmiya@LAPTOP-E2BCEK44:~$ pkill -f containerd
pkill: killing pid 281 failed: Operation not permitted
pkill: killing pid 399 failed: Operation not permitted
sowmiya@LAPTOP-E2BCEK44:~$ docker system prune -a --volumes -f
Deleted Networks:
docker-python-app_default
dev-ops-training_default
```

Step 28 :

```
sowmiya@LAPTOP-E2BCEK44:~$ sudo netstat -tulnp | grep ":8080"
[sudo] password for sowmiya:
tcp6       0      0 ::::8080                :::*                    LISTEN      166/java
sowmiya@LAPTOP-E2BCEK44:~$ sudo kill -9 <PID>
-bash: syntax error near unexpected token `newline'
```

Step 29 :

```
sowmiya@LAPTOP-E2BCEK44:~$ sudo apt update
Ign:1 https://pkg.jenkins.io/debian-stable binary/ InRelease
Hit:2 https://pkg.jenkins.io/debian-stable binary/ Release
Hit:4 http://archive.ubuntu.com/ubuntu noble InRelease
Get:5 http://security.ubuntu.com/ubuntu noble-security InRelease [126 kB]
Hit:6 http://mirror.math.princeton.edu/pub/ubuntu noble InRelease
Get:7 http://archive.ubuntu.com/ubuntu noble-updates InRelease [126 kB]
Get:8 http://mirror.math.princeton.edu/pub/ubuntu noble-updates InRelease [126 kB]
Get:9 http://archive.ubuntu.com/ubuntu noble-backports InRelease [126 kB]
Get:10 http://security.ubuntu.com/ubuntu noble-security/main amd64 Packages [671 kB]
Get:11 http://archive.ubuntu.com/ubuntu noble-updates/main amd64 Packages [922 kB]
Get:12 http://security.ubuntu.com/ubuntu noble-security/main amd64 Components [8960 B]
Get:13 http://security.ubuntu.com/ubuntu noble-security/main amd64 c-n-f Metadata [6936 B]
Get:14 http://security.ubuntu.com/ubuntu noble-security/restricted amd64 Components [208 B]
Get:15 http://security.ubuntu.com/ubuntu noble-security/universe amd64 Packages [820 kB]
Get:16 http://mirror.math.princeton.edu/pub/ubuntu noble-backports InRelease [126 kB]
Get:17 http://security.ubuntu.com/ubuntu noble-security/universe Translation-en [177 kB]
Get:18 http://security.ubuntu.com/ubuntu noble-security/universe amd64 Components [51.9 kB]
Get:19 http://security.ubuntu.com/ubuntu noble-security/universe amd64 c-n-f Metadata [17.0 kB]
Get:20 http://security.ubuntu.com/ubuntu noble-security/multiverse amd64 Components [208 B]
Get:21 http://archive.ubuntu.com/ubuntu noble-updates/main amd64 Components [151 kB]
Get:22 http://archive.ubuntu.com/ubuntu noble-updates/main amd64 c-n-f Metadata [13.5 kB]
Get:23 http://archive.ubuntu.com/ubuntu noble-updates/universe amd64 Packages [1041 kB]
Get:24 http://mirror.math.princeton.edu/pub/ubuntu noble-updates/main amd64 Packages [922 kB]
Get:25 http://archive.ubuntu.com/ubuntu noble-updates/universe Translation-en [262 kB]
Get:26 http://archive.ubuntu.com/ubuntu noble-updates/universe amd64 Components [364 kB]
Get:27 http://archive.ubuntu.com/ubuntu noble-updates/universe amd64 c-n-f Metadata [25.9 kB]
Get:28 http://archive.ubuntu.com/ubuntu noble-updates/restricted amd64 Components [212 B]
Get:29 http://archive.ubuntu.com/ubuntu noble-updates/multiverse amd64 Components [940 B]
Get:30 http://archive.ubuntu.com/ubuntu noble-backports/main amd64 Components [208 B]
Get:31 http://archive.ubuntu.com/ubuntu noble-backports/universe amd64 Packages [14.6 kB]
Get:32 http://archive.ubuntu.com/ubuntu noble-backports/universe Translation-en [12.3 kB]
Get:33 http://archive.ubuntu.com/ubuntu noble-backports/universe amd64 Components [20.0 kB]
Get:34 http://archive.ubuntu.com/ubuntu noble-backports/restricted amd64 Components [212 B]
Get:35 http://archive.ubuntu.com/ubuntu noble-backports/multiverse amd64 Components [212 B]
Get:36 http://mirror.math.princeton.edu/pub/ubuntu noble-updates/main amd64 Components [151 kB]
Get:37 http://mirror.math.princeton.edu/pub/ubuntu noble-updates/main amd64 c-n-f Metadata [13.5 kB]
Get:38 http://mirror.math.princeton.edu/pub/ubuntu noble-updates/restricted amd64 Components [212 B]
```

Step 30 :

```
sowmiya@LAPTOP-E2BCEK44:~$ sudo apt install docker.io -y
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
docker.io is already the newest version (26.1.3-0ubuntu1~24.04.1)
0 upgraded, 0 newly installed, 0 to remove and 2 not upgraded.
```

Step 31 :

```
sowmiya@LAPTOP-E2BCEK44:~$ sudo systemctl start docker
Warning: The unit file, source configuration file or drop-ins of docker.service changed on disk. Run 'systemctl daemon-reload' to reload units.
sowmiya@LAPTOP-E2BCEK44:~$ sudo systemctl enable docker
sowmiya@LAPTOP-E2BCEK44:~$ docker --version
Docker version 26.1.3, build 26.1.3-0ubuntu1~24.04.1
sowmiya@LAPTOP-E2BCEK44:~$ 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
  2  119M    2 3505k    0     0   180k      0  0:11:16  0:00:19  0:10:57 58372
```

Step 32 :

```
sowmiya@LAPTOP-E2BCEK44:~$ sudo install minikube-linux-amd64 /usr/local/bin/minikube
sowmiya@LAPTOP-E2BCEK44:~$ minikube version
minikube version: v1.35.0
commit: dd5d320e41b5451cdf3c01891bc4e13d189586ed-dirty
sowmiya@LAPTOP-E2BCEK44:~$ 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
100   138  100   138    0     0    225      0 --:--:-- --:--:-- --:--:--   225
 18 54.6M   18 10.1M    0     0  62731      0  0:15:13  0:02:50  0:12:23 65835
```

Step 33 :

```
sowmiya@LAPTOP-E2BCEK44:~$ minikube start
😄  minikube v1.35.0 on Ubuntu 24.04 (amd64)
✨  Automatically selected the docker driver. Other choices: none, ssh
📌  Using Docker driver with root privileges
👍  Starting "minikube" primary control-plane node in "minikube" cluster
🚜  Pulling base image v0.0.46 ...
💾  Downloading Kubernetes v1.32.0 preload ...
    > preloaded-images-k8s-v18-v1...:  136.17 MiB / 333.57 MiB  40.82% 391.62 K
    > gcr.io/k8s-minikube/kicbase...:  38.81 MiB / 500.31 MiB  7.76% 86.13 KiB
    > gcr.io/k8s-minikube/kicbase...:  38.85 MiB / 500.31 MiB  7.76% 86.13 KiB
    > gcr.io/k8s-minikube/kicbase...:  38.89 MiB / 500.31 MiB  7.77% 86.13 KiB
    > preloaded-images-k8s-v18-v1...:  333.57 MiB / 333.57 MiB  100.00% 355.47
    > gcr.io/k8s-minikube/kicbase...:  500.31 MiB / 500.31 MiB  100.00% 208.25
🔥  Creating docker container (CPUs=2, Memory=2200MB) ...
🐳  Preparing Kubernetes v1.32.0 on Docker 27.4.1 ...
    ▪ Generating certificates and keys ...
    ▪ Booting up control plane ...
    ▪ Configuring RBAC rules ...
🔗  Configuring bridge CNI (Container Networking Interface) ...
🔎  Verifying Kubernetes components...
    ▪ Using image gcr.io/k8s-minikube/storage-provisioner:v5
🌟  Enabled addons: storage-provisioner, default-storageclass
🏄  Done! kubectl is now configured to use "minikube" cluster and "default" namespace by default
```

Step 34 :

```
sowmiya@LAPTOP-E2BCEK44:~$ kubectl get nodes
NAME       STATUS   ROLES           AGE    VERSION
minikube   Ready    control-plane   2m8s   v1.32.0
```

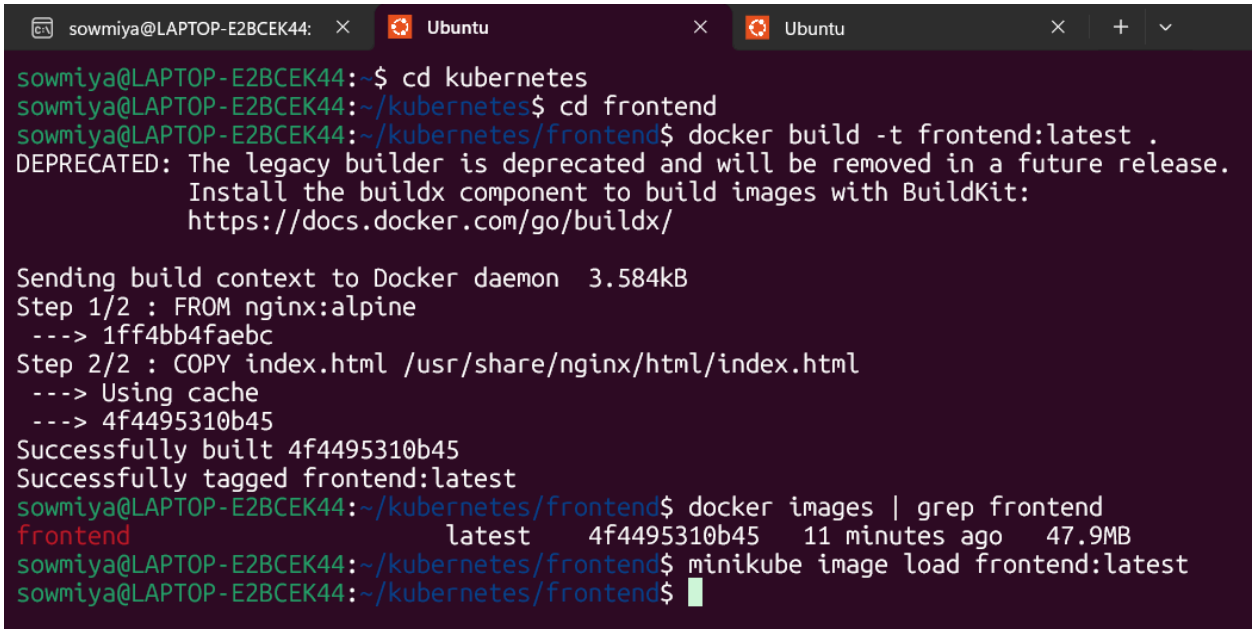
Step 35 :

```
sowmiya@LAPTOP-E2BCEK44:~/ecommerce/backend$ 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  15.36kB
Step 1/7 : FROM python:3.11
3.11: Pulling from library/python
7cd785773db4: Pull complete
091eb8249475: Pull complete
255774e0027b: Pull complete
353e14e5cc47: Pull complete
963091970bc2: Pull complete
e7235c43f7e3: Pull complete
7f221c50e407: Pull complete
Digest: sha256:ebfa8696e47a68cffebb31e370a93ce57c01bc753f246ceaaef72801d1661351
Status: Downloaded newer image for python:3.11
 ---> 18c0f2265fd9
Step 2/7 : WORKDIR /main
 ---> Running in 88f073ddcb2a
 ---> Removed intermediate container 88f073ddcb2a
 ---> c1236da28653
Step 3/7 : COPY requirements.txt .
 ---> ea6d091c4927
Step 4/7 : RUN pip install --no-cache-dir flask
 ---> Running in 58bfe26f9548
Collecting flask
  Downloading flask-3.1.0-py3-none-any.whl.metadata (2.7 kB)
Collecting Werkzeug>=3.1 (from flask)
  Downloading werkzeug-3.1.3-py3-none-any.whl.metadata (3.7 kB)
Collecting Jinja2>=3.1.2 (from flask)
  Downloading jinja2-3.1.6-py3-none-any.whl.metadata (2.9 kB)
Collecting itsdangerous>=2.2 (from flask)
  Downloading itsdangerous-2.2.0-py3-none-any.whl.metadata (1.9 kB)
Collecting click>=8.1.3 (from flask)
  Downloading click-8.1.8-py3-none-any.whl.metadata (2.3 kB)
Collecting blinker>=1.9 (from flask)
  Downloading blinker-1.9.0-py3-none-any.whl.metadata (1.6 kB)
Collecting MarkupSafe>=2.0 (from Jinja2>=3.1.2->flask)
  Downloading MarkupSafe-3.0.2-cp311-cp311-manylinux_2_17_x86_64.manylinux2014_x86_64.whl.metadata (4.0 kB)
Downloading flask-3.1.0-py3-none-any.whl (102 kB)
   ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 103.0/103.0 kB 4.6 MB/s eta 0:00:00
```

Step 36 :

```
sowmiya@LAPTOP-E2BCEK44 ×   Ubuntu ×   Ubuntu ×   +

sowmiya@LAPTOP-E2BCEK44:~$ eval $(minikube docker-env)
sowmiya@LAPTOP-E2BCEK44:~$ cd backend
-bash: cd: backend: No such file or directory
sowmiya@LAPTOP-E2BCEK44:~$ cd kubernetes
sowmiya@LAPTOP-E2BCEK44:~/kubernetes$ cd backend
sowmiya@LAPTOP-E2BCEK44:~/kubernetes/backend$ 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   5.12kB
Step 1/6 : FROM python:3.9
 ---> 859d4a0f1fd8
Step 2/6 : WORKDIR /app
 ---> Using cache
 ---> f9ef899927bb
Step 3/6 : COPY requirements.txt .
 ---> Using cache
 ---> 646b39baa4dd
Step 4/6 : RUN pip install -r requirements.txt
 ---> Using cache
 ---> 26e7bf4e96f0
Step 5/6 : COPY . .
 ---> Using cache
 ---> f35c05a5a5e4
Step 6/6 : CMD ["python", "app.py"]
 ---> Using cache
 ---> 09c6f6087d1b
Successfully built 09c6f6087d1b
Successfully tagged backend:latest
sowmiya@LAPTOP-E2BCEK44:~/kubernetes/backend$ docker images | grep backend
backend                      latest    09c6f6087d1b   8 minutes ago    1.19GB
sowmiya@LAPTOP-E2BCEK44:~/kubernetes/backend$
```

Step 37 :



Step 38 :