

National Textile University, Faisalabad

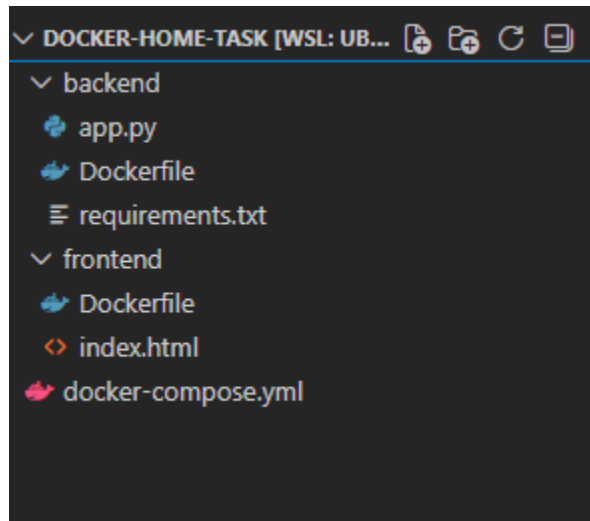


Department of Computer Science

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Course	Operating system
Submitted To	Sir Nasir Mehmood
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Assignment	Lab 14 (Docker Home Task)

Docker Home Task

File Structure:



Docker-Compose.yml File Code:

```
version: "3.9"
```

```
networks:
```

```
  frontend_net:
```

```
  backend_net:
```

```
volumes:
```

```
  db_data:
```

```
services:
```

```
  frontend:
```

```
    build: ./frontend
```

ports:

- "8080:80"

depends_on:

- backend

networks:

- frontend_net

backend:

build: ./backend

ports:

- "5000:5000"

depends_on:

- db

networks:

- frontend_net

- backend_net

db:

image: postgres:16

environment:

POSTGRES_USER: demo

POSTGRES_PASSWORD: demo

POSTGRES_DB: demo_db

volumes:

- db_data:/var/lib/postgresql/data

networks:

- backend_net

Dockerfile Frontend:

```
FROM nginx:alpine
COPY . /usr/share/nginx/html
```

DockerFile Backend:

```
FROM python:3.11-slim
WORKDIR /app
COPY . .
RUN pip install -r requirements.txt
EXPOSE 5000
CMD ["python", "app.py"]
```

- docker build -t frontend ./frontend :

```
Dockerfile X
frontend > Dockerfile > ...
1 FROM nginx:alpine

PROBLEMS OUTPUT TERMINAL PORTS
bash - Docker-Home-Task + v []

dawood@DESKTOP-V4SDVD9:~/Docker-Home-Task$ docker build -t frontend ./frontend
=> [internal] load metadata for docker.io/library/nginx:alpine
=> [auth] library/nginx:pull token for registry-1.docker.io
=> [internal] load .dockerignore
=> => transferring context: 2B
=> [internal] load build context
=> => transferring context: 317B
=> [1/2] FROM docker.io/library/nginx:alpine@sha256:8491795299c8e739b7fcc6285d531d9812ce2666e07bd3dd8db00020ad132295
=> => resolve docker.io/library/nginx:alpine@sha256:8491795299c8e739b7fcc6285d531d9812ce2666e07bd3dd8db00020ad132295
=> => sha256:de54cb821236c86af111bf7a17c40e42b3a5ad0e08c1a5ec76fb654d35f58df8 17.26MB / 17.26MB
=> => sha256:0abf9e5672665202e79f26f23ef5dbd12558e2ea51ac32807922ab76fdb24ab0 1.40kB / 1.40kB
=> => sha256:085c5e5aaa8eb4b957ecf253c74f16a6a5551231de3fb7c3ac74814a6bf17e06 1.21kB / 1.21kB
=> => sha256:25f453064fd3e8a9754b6e51b86c637e13203cbfc748fcf73f3c8b2d10816ae3 1.86MB / 1.86MB
=> => sha256:da7c973d8b92a1555060972c8849a332c93bfe2608c11faeee2098c4cfbe8c3d 953B / 953B
=> => sha256:33f95a0f3229b49e777082e801b882b13fcc5b4e389410ce8eb066f4d58c71b9 403B / 403B
=> => sha256:567f84da6fbd4287d40a5837485469435c40a81f9a94e98395b6385d3600643a 626B / 626B
=> => extracting sha256:25f453064fd3e8a9754b6e51b86c637e13203cbfc748fcf73f3c8b2d10816ae3
=> => extracting sha256:567f84da6fbd4287d40a5837485469435c40a81f9a94e98395b6385d3600643a
=> => extracting sha256:da7c973d8b92a1555060972c8849a332c93bfe2608c11faeee2098c4cfbe8c3d
=> => extracting sha256:33f95a0f3229b49e777082e801b882b13fcc5b4e389410ce8eb066f4d58c71b9
=> => extracting sha256:085c5e5aaa8eb4b957ecf253c74f16a6a5551231de3fb7c3ac74814a6bf17e06
=> => extracting sha256:0abf9e5672665202e79f26f23ef5dbd12558e2ea51ac32807922ab76fdb24ab0
=> => extracting sha256:de54cb821236c86af111bf7a17c40e42b3a5ad0e08c1a5ec76fb654d35f58df8
=> [2/2] COPY . /usr/share/nginx/html
=> exporting to image
=> => exporting layers
=> => exporting manifest sha256:b3f5baf42a63226f37e622d702f42ff88b8e1672646312618198006d8f092177
=> => exporting config sha256:e87a78504198c98c00a9b6b5764fc4633fe9e0e001a614c270ccbb565846c109
=> => exporting attestation manifest sha256:7580c6d46c95e4eab10060e2059a1b5dc682ca6f29d23fa5bba288e8da6c0e95
=> => exporting manifest list sha256:5029d113e649159d0b8bb8d2504b0ee8cb64aafb9caa85b1bf8bacc1d997ece9
=> => naming to docker.io/library/frontend:latest
=> => unpacking to docker.io/library/frontend:latest
dawood@DESKTOP-V4SDVD9:~/Docker-Home-Task$
```

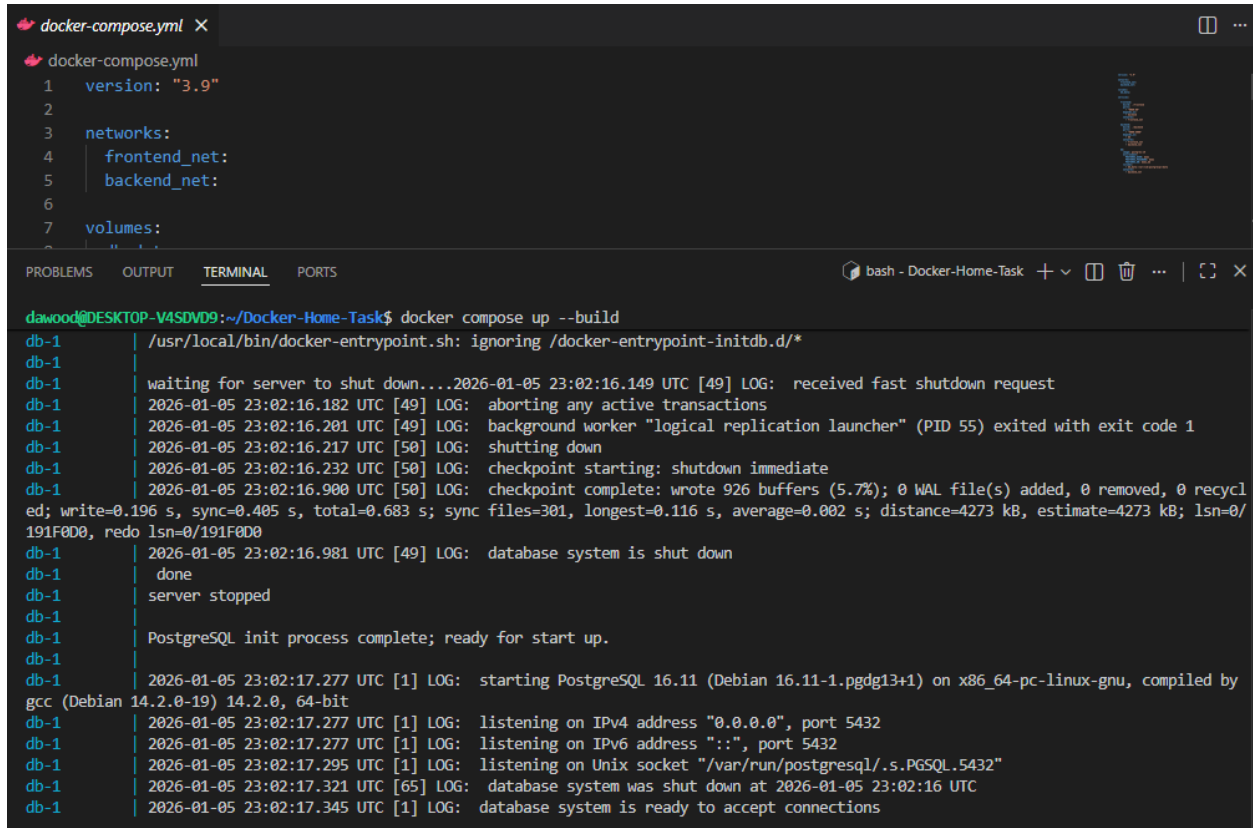
- `docker build -t backend ./backend :`

```
app.py 1 x
backend > app.py > ...
1  from flask import Flask
2  app = Flask(__name__)
3
4  @app.route("/")
5  def home():
6      return "Backend is running & connected to database ✓"
7
8  if __name__ == '__main__':
9      app.run(debug=True)
```

PROBLEMS 1 OUTPUT TERMINAL PORTS bash - Docker-Home-Task

```
dawood@DESKTOP-V4SDVD9:~/Docker-Home-Task/backend$ docker build -t backend ./backend
• dawood@DESKTOP-V4SDVD9:~/Docker-Home-Task/backend$ cd ..
• dawood@DESKTOP-V4SDVD9:~/Docker-Home-Task$ docker build -t backend ./backend
[+] Building 23.0s (9/9) FINISHED
=> [internal] load build definition from Dockerfile
=> => transferring dockerfile: 154B
=> [internal] load metadata for docker.io/library/python:3.11-slim
=> [internal] load .dockerignore
=> => transferring context: 2B
=> [1/4] FROM docker.io/library/python:3.11-slim@sha256:1dd3dca85e22886e44fcad1bb7ccab6691dfa83db52214cf9e20696e095f3e36
=> => resolve docker.io/library/python:3.11-slim@sha256:1dd3dca85e22886e44fcad1bb7ccab6691dfa83db52214cf9e20696e095f3e36
=> [internal] load build context
=> => transferring context: 124B
=> CACHED [2/4] WORKDIR /app
=> [3/4] COPY . .
=> [4/4] RUN pip install -r requirements.txt
=> exporting to image
=> => exporting layers
=> => exporting manifest sha256:59e9d98cce8c5ae8dcf971a3b7715308bdcc682b2d14e57c0a1938b31840307f
=> => exporting config sha256:4031bdf674e59732a81327627170166292d914e049b4f2d1335c2a8f4ccbcb0
=> => exporting attestation manifest sha256:f8dd6639d3e9919dfe0312f5bc6bea40578b5b3384e82ed7a3eb4847786778f8
=> => exporting manifest list sha256:9ee1f8db7a6bcb89ad4c811f3237313ad0f0f1532de3d02a0021876eaea7ef79
=> => naming to docker.io/library/backend:latest
=> => unpacking to docker.io/library/backend:latest
o dawood@DESKTOP-V4SDVD9:~/Docker-Home-Task$
```

- docker compose up --build;



```
docker-compose.yml X
docker-compose.yml
1 version: "3.9"
2
3 networks:
4   frontend_net:
5   backend_net:
6
7 volumes:
8   "..."

PROBLEMS OUTPUT TERMINAL PORTS
bash - Docker-Home-Task + - [ ] [ ] ... [ ] X

dawood@DESKTOP-V4SDVD9:~/Docker-Home-Task$ docker compose up --build
db-1 | /usr/local/bin/docker-entrypoint.sh: ignoring /docker-entrypoint-initdb.d/*
db-1 |
db-1 | waiting for server to shut down...2026-01-05 23:02:16.149 UTC [49] LOG:  received fast shutdown request
db-1 | 2026-01-05 23:02:16.182 UTC [49] LOG:  aborting any active transactions
db-1 | 2026-01-05 23:02:16.201 UTC [49] LOG:  background worker "logical replication launcher" (PID 55) exited with exit code 1
db-1 | 2026-01-05 23:02:16.217 UTC [50] LOG:  shutting down
db-1 | 2026-01-05 23:02:16.232 UTC [50] LOG:  checkpoint starting: shutdown immediate
db-1 | 2026-01-05 23:02:16.900 UTC [50] LOG:  checkpoint complete: wrote 926 buffers (5.7%); 0 WAL file(s) added, 0 removed, 0 recycled; write=0.196 s, sync=0.405 s, total=0.683 s; sync files=301, longest=0.116 s, average=0.002 s; distance=4273 kB, estimate=4273 kB; lsn=0/191F0D0, redo lsn=0/191F0D0
db-1 | 2026-01-05 23:02:16.981 UTC [49] LOG:  database system is shut down
db-1 | done
db-1 | server stopped
db-1 |
db-1 | PostgreSQL init process complete; ready for start up.
db-1 |
db-1 | 2026-01-05 23:02:17.277 UTC [1] LOG:  starting PostgreSQL 16.11 (Debian 16.11-1.pgdg13+1) on x86_64-pc-linux-gnu, compiled by gcc (Debian 14.2.0-19) 14.2.0, 64-bit
db-1 | 2026-01-05 23:02:17.277 UTC [1] LOG:  listening on IPv4 address "0.0.0.0", port 5432
db-1 | 2026-01-05 23:02:17.277 UTC [1] LOG:  listening on IPv6 address "::", port 5432
db-1 | 2026-01-05 23:02:17.295 UTC [1] LOG:  listening on Unix socket "/var/run/postgresql/.s.PGSQL.5432"
db-1 | 2026-01-05 23:02:17.321 UTC [65] LOG:  database system was shut down at 2026-01-05 23:02:16 UTC
db-1 | 2026-01-05 23:02:17.345 UTC [1] LOG:  database system is ready to accept connections
```

Local Host 8080 Screenshot:

