



National Textile University

Department of Computer Science

Subject:
Operating System

Submitted to:
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Submitted by:
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Reg number:
23-NTU-CS-1141

Lab Number:
Docker Home Task

Semester:
5th -SE(A)

Whole Project Structure:

The screenshot shows the Visual Studio Code interface with the Explorer sidebar on the left displaying the project structure for 'GUEST-BOOK [WSL: UBUNTU-24.04]'. The files listed are 'backend', 'Dockerfile', 'package.json', 'server.js', 'frontend', 'Dockerfile', 'index.html', and 'docker-compose.yml'. The main editor area shows the 'package.json' file for the 'backend' directory. The terminal at the bottom displays a series of commands and their outputs, including creating and navigating through the project directories.

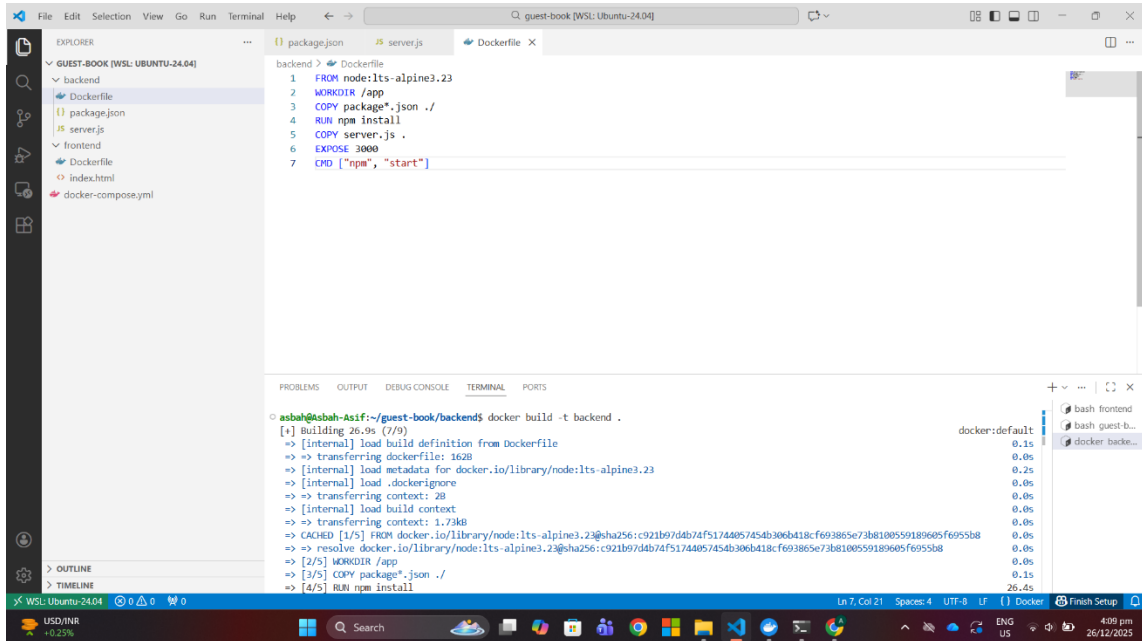
```
package.json
1 {
2   "name": "guest-book-backend",
3   "version": "1.0.0",
4   "type": "module",
5   "scripts": {
6     "start": "node server.js"
7   },
8   "dependencies": {
9     "express": "^4.18.2",
10    "mongoose": "^8.0.0",
11    "cors": "^2.8.5"
12  }
13 }
14
```

```
asbah@asbah-Asif:~/guest-book$ touch docker-compose.yml
asbah@asbah-Asif:~/guest-book$ mkdir backend
asbah@asbah-Asif:~/guest-book$ mkdir frontend
asbah@asbah-Asif:~/guest-book$ cd backend
asbah@asbah-Asif:~/guest-book/backend$ touch package.json server.js dockerfile
asbah@asbah-Asif:~/guest-book/backend$ cd ..
asbah@asbah-Asif:~/guest-book$ cd frontend
asbah@asbah-Asif:~/guest-book/frontend$ touch Dockerfile index.html
asbah@asbah-Asif:~/guest-book/frontend$
```

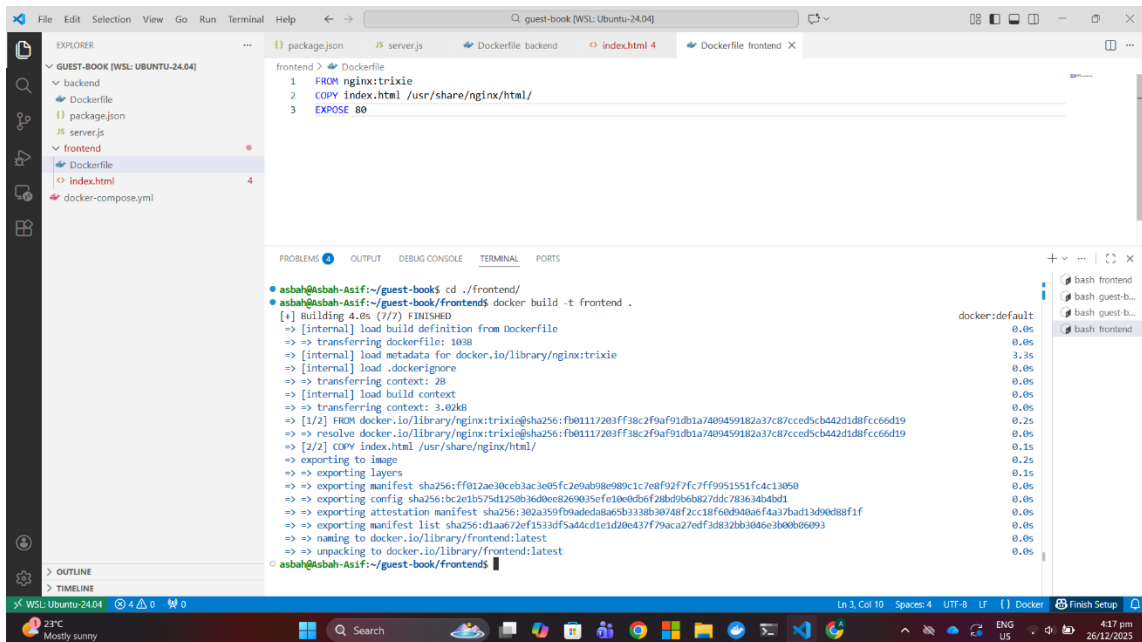
The screenshot shows the Visual Studio Code interface with the Explorer sidebar on the left displaying the project structure for 'GUEST-BOOK [WSL: UBUNTU-24.04]'. The files listed are 'backend', 'Dockerfile', 'package.json', 'server.js', 'frontend', 'Dockerfile', 'index.html', and 'docker-compose.yml'. The main editor area shows the 'docker-compose.yml' file. The terminal at the bottom displays a series of commands and their outputs, including creating and navigating through the project directories.

```
docker-compose.yml
3 services:
15   backend:
20     environment:
22       depends_on:
23         - mongodb
24       networks:
25         - frontend-backend-net
26         - backend-db-net
27
28 # Frontend
29 frontend:
30   build: ./frontend
31   container_name: guestbook-frontend
32   ports:
33     - "8080:80"
34   depends_on:
35     - backend
36   networks:
37     - frontend-backend-net
38
39 # Network Definitions
40 networks:
```

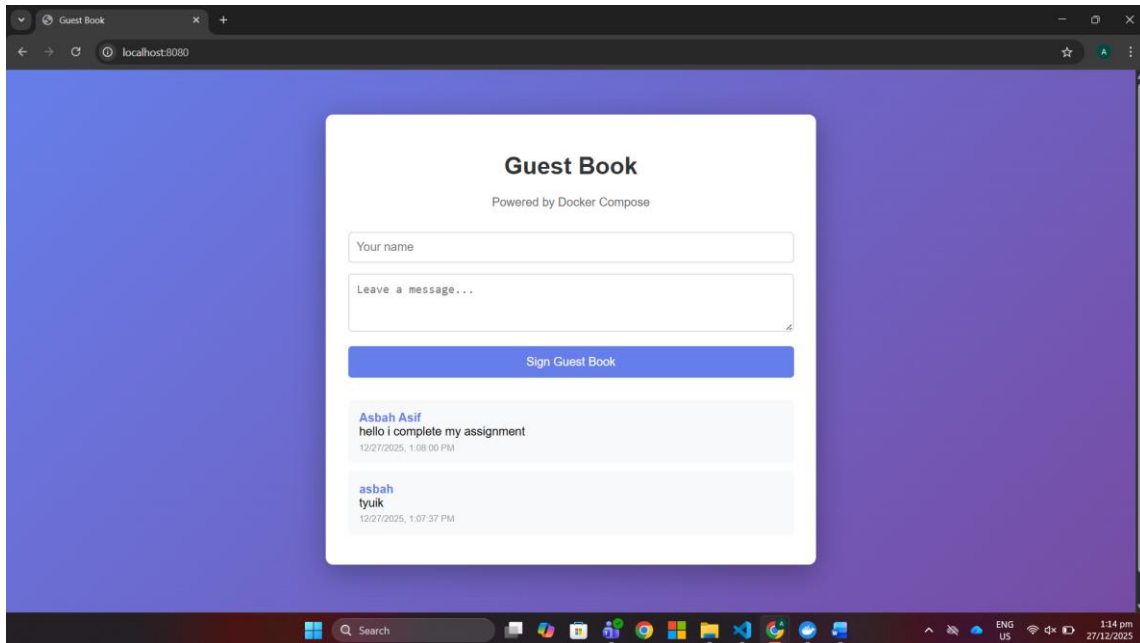
- **Image Building Commands: Docker build -t backend**



Docker build -t frontend



Web page at local host:



Docker-compose.yml file:

version: "3.9"

services:

MongoDB Database

mongodb:

image: mongo:7-jammy

container_name: guestbook-db

volumes:

- mongo_data:/data/db

networks:

- backend-db-net

Backend API

backend:

build: ./backend

container_name: guestbook-backend

ports:

- "3000:3000"

environment:

- MONGO_URL=mongodb://mongodb:27017/guestbook

depends_on:

- mongodb

networks:

- frontend-backend-net

- backend-db-net

Frontend

frontend:

build: ./frontend

container_name: guestbook-frontend

ports:

- "8080:80"

depends_on:

- backend

networks:
- frontend-backend-net

Network Definitions
networks:
frontend-backend-net:
driver: bridge
backend-db-net:
driver: bridge

Volume Definition
volumes:
mongo_data:

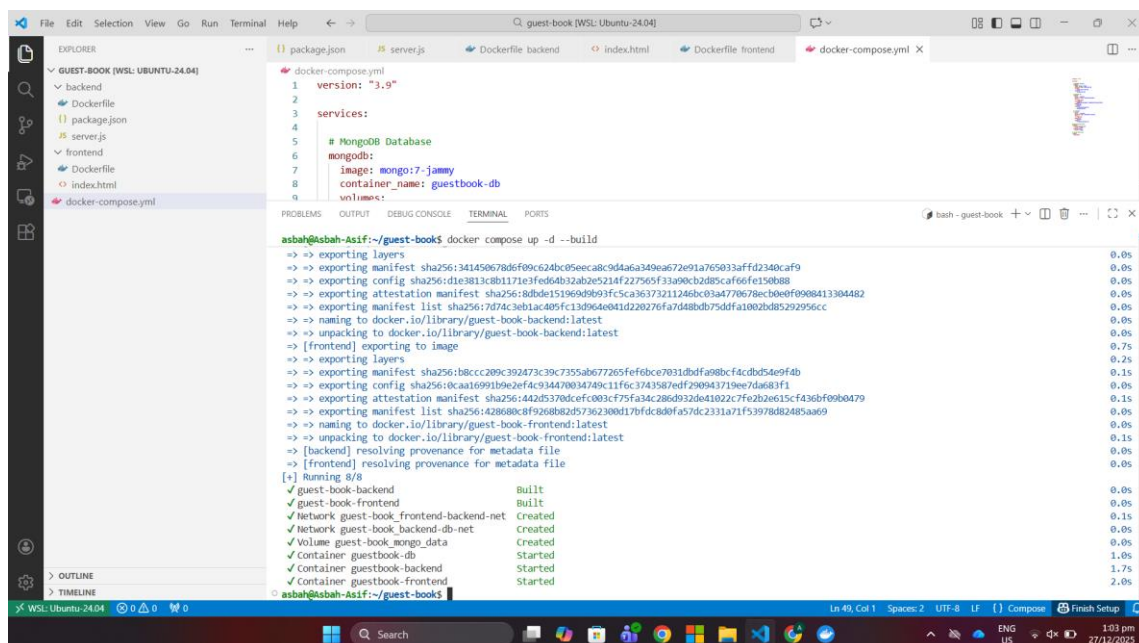
Docker file (Backend):

FROM node:lts-alpine3.23
WORKDIR /app
COPY package*.json ./
RUN npm install
COPY server.js .
EXPOSE 3000
CMD ["npm", "start"]

Docker file (Frontend):

FROM nginx:trixie
COPY index.html /usr/share/nginx/html/
EXPOSE 80

Remaining Screenshots:



```
asbah@Asbah-Asif:~/guest-book$ docker compose up -d --build
=> => transferring context: 63B
=> CACHED [backend 2/5] WORKDIR /app
=> CACHED [backend 3/5] COPY package*.json ./
=> CACHED [backend 4/5] RUN npm install
=> CACHED [backend 5/5] COPY server.js .
=> [frontend 2/2] COPY index.html /usr/share/nginx/html/
=> [backend] exporting to image
=> => exporting layers
=> => exporting manifest sha256:341450678d6f09c624bc05eeca8c9d4a6a349ea672e91a765033affd2340caf9
=> => exporting config sha256:d1e3813c8b1171e3fed64b32ab2e5214f227565f33a90cb2d85caf66fe150b88
=> => exporting attestation manifest sha256:8dbde151969d9b93fc5ca36373211246bc03a4770678ecb0e0f0908413304482
=> => exporting manifest list sha256:7d74c3eb1ac405fc13d964e041d220276fa7d48bdb75ddfa1002bd85292956cc
=> => naming to docker.io/library/guest-book-backend:latest
=> => unpacking to docker.io/library/guest-book-backend:latest
=> [frontend] exporting to image
=> => exporting layers
=> => exporting manifest sha256:b8ccc209c392473c39c7355ab677265fef6bce7031dbdfa98bcf4cddb54e9f4b
=> => exporting config sha256:0caa16991b9e2ef4c934470034749c11f6c3743587edf290943719ee7da683f1
=> => exporting attestation manifest sha256:442d5370dcefc003cf75fa34c286d932de41022c7fe2b2e615cf436bf09b0479
=> => exporting manifest list sha256:428680c8f9268b82d57362300d17bfdc8d0fa57dc2331a71f53978d82485aa69
=> => naming to docker.io/library/guest-book-frontend:latest
=> => unpacking to docker.io/library/guest-book-frontend:latest
=> [backend] resolving provenance for metadata file
=> [frontend] resolving provenance for metadata file
[+] Running 8/8
✓ guest-book-backend Built
✓ guest-book-frontend Built
✓ Network guest-book_frontend-backend-net Created
✓ Network guest-book_backend-db-net Created
✓ Volume guest-book_mongo_data Created
✓ Container guestbook-db Started
✓ Container guestbook-backend Started
✓ Container guestbook-frontend Started
○ asbah@Asbah-Asif:~/guest-book$ []
```