Docker Assignment

# 1. Project Folder Structure

docker\_project/  
│  
├── backend/ # Flask App  
│ ├── app.py  
│ ├── requirements.txt  
│ └── Dockerfile  
│  
├── frontend/ # Node.js + Express App  
│ ├── server.js  
│ ├── package.json  
│ └── Dockerfile  
│  
├── docker-compose.yaml  
├── .gitignore

# 2. Backend (Flask)

app.py:  
from flask import Flask, request, jsonify  
from flask\_cors import CORS  
  
app = Flask(\_\_name\_\_)  
CORS(app)  
  
@app.route('/submit', methods=['POST'])  
def submit():  
 data = request.json  
 name = data.get("name")  
 score = data.get("score")  
 return jsonify({"message": f"Received data: {name} - {score}"})  
  
if \_\_name\_\_ == "\_\_main\_\_":  
 app.run(host='0.0.0.0', port=5000)  
  
requirements.txt:  
Flask  
flask-cors  
  
Dockerfile:  
FROM python:3.10  
WORKDIR /app  
COPY . .  
RUN pip install -r requirements.txt  
CMD ["python", "app.py"]

# 3. Frontend (Node.js + Express)

server.js:  
const express = require('express');  
const bodyParser = require('body-parser');  
const axios = require('axios');  
const app = express();  
const PORT = 3000;  
  
app.use(bodyParser.urlencoded({ extended: true }));  
app.use(bodyParser.json());  
  
app.get('/', (req, res) => {  
 res.send(`  
 <form method="POST" action="/submit">  
 Name: <input name="name" /><br/>  
 Score: <input name="score" /><br/>  
 <button type="submit">Submit</button>  
 </form>  
 `);  
});  
  
app.post('/submit', async (req, res) => {  
 const { name, score } = req.body;  
 try {  
 const response = await axios.post('http://backend:5000/submit', { name, score });  
 res.send(response.data.message);  
 } catch (err) {  
 res.send("Error: " + err.message);  
 }  
});  
  
app.listen(PORT, () => console.log(`Frontend running at http://localhost:${PORT}`));  
  
package.json:  
{  
 "name": "frontend",  
 "version": "1.0.0",  
 "main": "server.js",  
 "scripts": {  
 "start": "node server.js"  
 },  
 "dependencies": {  
 "axios": "^1.0.0",  
 "body-parser": "^1.20.0",  
 "express": "^4.18.0"  
 }  
}  
  
Dockerfile:  
FROM node:18  
WORKDIR /app  
COPY . .  
RUN npm install  
CMD ["npm", "start"]

# 4. Docker Compose

docker-compose.yaml:  
version: "3"  
services:  
 backend:  
 build: ./backend  
 ports:  
 - "5000:5000"  
  
 frontend:  
 build: ./frontend  
 ports:  
 - "3000:3000"  
 depends\_on:  
 - backend

# 5. .gitignore

.gitignore:  
node\_modules/  
.vscode/  
\_\_pycache\_\_/  
\*.pyc

# 6. Docker and GitHub Push Instructions

Push to Docker Hub:  
docker build -t your\_dockerhub\_user/backend ./backend  
docker build -t your\_dockerhub\_user/frontend ./frontend  
  
docker push your\_dockerhub\_user/backend  
docker push your\_dockerhub\_user/frontend  
  
Push to GitHub:  
- Upload all files except those in .gitignore.  
- Add your GitHub repo link here: [Your GitHub Link]