

DEVOPS ASSIGNMENT 2

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BRANCH: M.TECH DATA ANALYTICS

Q1. A) Create a Container with PostgresDB or mySQL database installed

Step 1: We need to pull the docker image using the below command.

```
C:\Users\HP>docker pull postgres
Using default tag: latest
latest: Pulling from library/postgres
07db60713289: Pull complete
c1b7de8085d1: Pull complete
97cdd47d9131: Pull complete
97f28320a07a: Pull complete
f15c43cffa70: Pull complete
6948dc7760c1: Pull complete
3a6f8814136c: Pull complete
2a08aad74366: Pull complete
e4847368ad17: Pull complete
8c63b71925de: Pull complete
6cea4d95608f: Pull complete
0c942aac37b1: Pull complete
2817206b0512: Pull complete
8a628cdd7ccc: Pull complete
Digest: sha256:fe3f571d128e8efadcd8b2fde0e2b73ebab6dbec33f6bfe69d98c682c7d8f7bd
Status: Downloaded newer image for postgres:latest
docker.io/library/postgres:latest
```

Step 2: Run the docker image using the Postgres credentials

```
C:\Users\HP>docker run --name vreqst-postgres -e POSTGRES_USER=admin -e POSTGRES_PASSWORD=admin -e POSTGRES_DB=vreqstdb
-p 5432:5432 -d postgres
2c5a650b02a5c03a87b1a6ef338cbab785447e5cde8c66817d82a3bbe430d7c
```

Step 3: Check whether the docker image is running or not

```
C:\Users\HP>docker ps
```

CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS	PORTS	NAM
ES						
2c5a650b02a5	postgres	"docker-entrypoint.s..."	About a minute ago	Up About a minute	0.0.0.0:5432->5432/tcp	vreqst-postgres

Step 4: Connect to the database and test by creating a TABLE

```
C:\Users\HP>docker exec -it vreqst-postgres psql -U admin -d vreqstdb
psql (17.4 (Debian 17.4-1.pgdg120+2))
Type "help" for help.

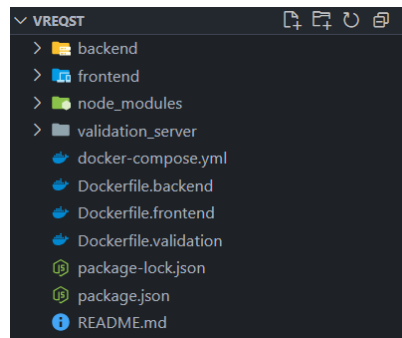
vreqstdb=# CREATE TABLE test_table (id SERIAL PRIMARY KEY, name TEXT);
INSERT INTO test_table (name) VALUES ('VReqST user');
SELECT * FROM test_table;
CREATE TABLE
INSERT 0 1
 id |      name
----+-----
  1 | VReqST user
(1 row)
```

Q1 B) Deploy VReqST – A requirement specification tool in a container.

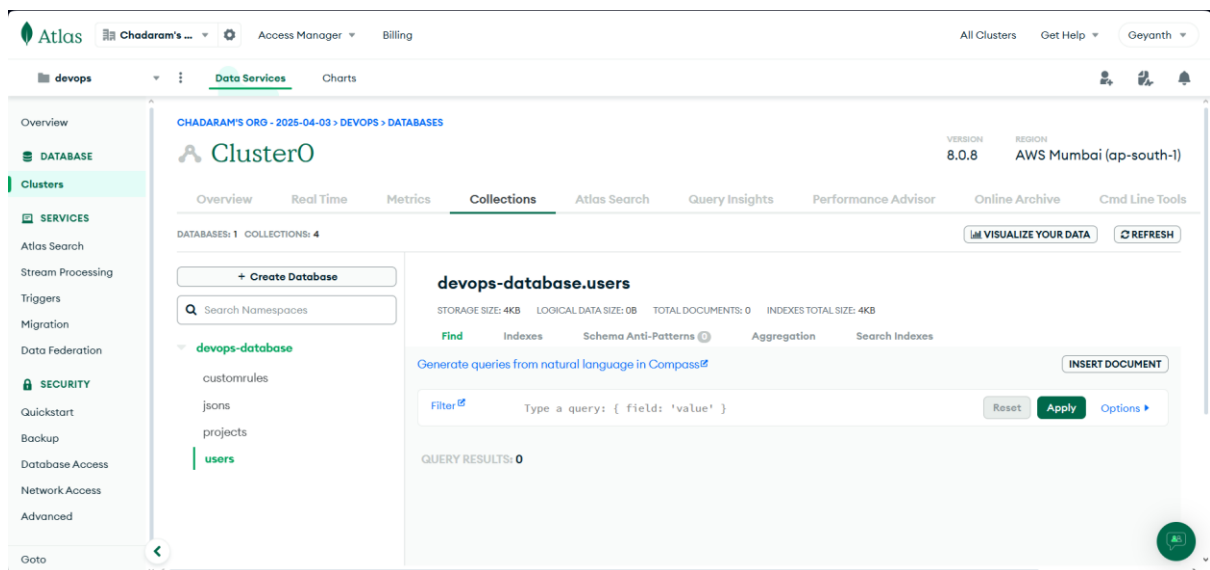
Step 1 : Clone the Repository using the commands

```
1 git clone https://github.com/<your-repository>/VReqST-2
2 cd VReqST-2/VReqST-main/VReqST
```

Step 2: Verify the folder structure



Step 4: Create Collections in MongoDB Atlas and use MONGO_URI to link to the application (the link is given in docker-composer file)



Step 3: Setup Docker

- a. **Install Docker & Docker Compose** - Ensure both Docker and Docker Compose are installed and working.
- b. **Create docker file `docker-compose.yml`** - Used to run the docker containers
- c. **Create subfolders for different services** - Configure `Dockerfile.frontend`, `Dockerfile.backend`, `Dockerfile.validation`

```
1 version: '3.8'
2
3 services:
4   backend:
5     build:
6       context: .
7       dockerfile: Dockerfile.backend
8     ports:
9       - "5002:5002"
10    environment:
11      - <MONGODB_URI>
12
13   validation:
14     build:
15       context: .
16       dockerfile: Dockerfile.validation
17     ports:
18       - "5001:5001"
19     environment:
20       - <MONGODB_URI>
21
22   frontend:
23     build:
24       context: .
25       dockerfile: Dockerfile.frontend
26     ports:
27       - "3000:3000"
28     depends_on:
29       - backend
30       - validation
```

d. Build and Start Container

```
1 docker-compose build
2 docker-compose up -d
```

Outputs:

```
D:\M.Tech\2nd Sem\Devops\Assignments\devops_tool\VReqST-2\VReqST-main\VReqST>docker-compose up -d
time="2025-04-19T21:23:15+05:30" level=warning msg="D:\\M.Tech\\2nd Sem\\Devops\\Assignments\\devops_tool\\VReqST-2\\VReqST-main\\VReqST\\docker-compose.yml: the attribute `version` is obsolete, it will be ignored, please remove it to avoid potential confusion"
[+] Running 4/4
  ✓ Network vreqst_default          Created                                0
  ✓ Container vreqst-backend-1      Started                             3
  ✓ Container vreqst-validation-1   Started                             3
  ✓ Container vreqst-frontend-1     Started                             2
```

- Running the Application

```
D:\M.Tech\2nd Sem\Devops\Assignments\devops_tool\VReqST-2\VReqST-main\VReqST>docker-compose up --build -d
time="2025-04-19T21:30:42+05:30" level=warning msg="D:\\M.Tech\\2nd Sem\\Devops\\Assignments\\devops_tool\\VReqST-2\\VReqST-main\\VReqST\\docker-compose.yml: the attribute `version` is obsolete, it will be ignored, please remove it to avoid potential confusion"
Compose can now delegate builds to bake for better performance.
To do so, set COMPOSE_BAKE=true.
[+] Building 226.9s (26/26) FINISHED                                docker:desktop-linux
=> [validation internal] load build definition from Dockerfile.validation 0.0s
=> => transferring dockerfile: 154B 0.0s
=> [backend internal] load build definition from Dockerfile.backend 0.1s
=> => transferring dockerfile: 280B 0.0s
=> [frontend internal] load metadata for docker.io/library/node:14 2.2s
=> [backend internal] load .dockerignore 0.0s
=> => transferring context: 2B 0.0s
=> [validation internal] load .dockerignore 0.1s
=> => transferring context: 2B 0.0s
=> [backend internal] load build context 17.3s
=> => transferring context: 32.59MB 17.1s
=> [frontend 1/5] FROM docker.io/library/node:14@sha256:a158d3b9b4e3fa813fa6c8c590b8f0a860e015ad4e59bbce5744d 0.2s
=> => resolve docker.io/library/node:14@sha256:a158d3b9b4e3fa813fa6c8c590b8f0a860e015ad4e59bbce5744d2f6fd8461 0.0s
=> [validation internal] load build context 1.1s
=> => transferring context: 67.22kB 0.9s
=> CACHED [frontend 2/5] WORKDIR /app 0.0s
=> CACHED [validation 3/4] COPY validation_server/ . 0.0s
=> CACHED [validation 4/4] RUN npm install 0.0s
=> [validation] exporting to image 0.6s
=> => exporting layers 0.0s
=> => exporting manifest sha256:054f0155f3a3378988bbb8a442d1b686e32e8f2052deebecce896cec402ce587 0.0s
```

```
=> [backend] resolving provenance for metadata file 0.1s
=> [frontend internal] load build definition from Dockerfile.frontend 0.0s
=> => transferring dockerfile: 177B 0.0s
=> [frontend internal] load .dockerignore 0.1s
=> => transferring context: 2B 0.0s
=> [frontend internal] load build context 201.8s
=> => transferring context: 664.95MB 200.6s
=> CACHED [frontend 3/5] COPY frontend/ . 0.0s
=> CACHED [frontend 4/5] RUN npm install 0.0s
=> CACHED [frontend 5/5] RUN ls -la /app/client # Add this line 0.0s
=> [frontend] exporting to image 0.4s
=> => exporting layers 0.0s
=> => exporting manifest sha256:25d3061c140fb874e71d76009238eeec972e7437de7cce4db936ad66f562193 0.0s
=> => exporting config sha256:00413a90cc6393cfac6ab26a6665f5d79e1368a46754e1a20d739e9019c950a3 0.0s
=> => exporting attestation manifest sha256:ba87c8f2edb3299ed013c51304019001bc46aa6302e5e2d3f20e1acc866eefc5 0.1s
=> => exporting manifest list sha256:3100cf308e74f287d2b670743cfa1993cd21145778fe7368091658cda829af30 0.1s
=> => naming to docker.io/library/vreqst-frontend:latest 0.0s
=> => unpacking to docker.io/library/vreqst-frontend:latest 0.0s
=> [frontend] resolving provenance for metadata file 0.0s
[+] Running 7/7
  ✓ backend          Built                                0.0s
  ✓ frontend         Built                                0.0s
  ✓ validation       Built                                0.0s
  ✓ Network vreqst_default Created                        0.1s
  ✓ Container vreqst-backend-1 Started                    4.2s
  ✓ Container vreqst-validation-1 Started                  4.2s
  ✓ Container vreqst-frontend-1 Started                    2.9s
```

Step 4: Access the Application

Open your browser and go to: **`http://localhost:3000`**