Containerization and Big Data: Exercise 2-2

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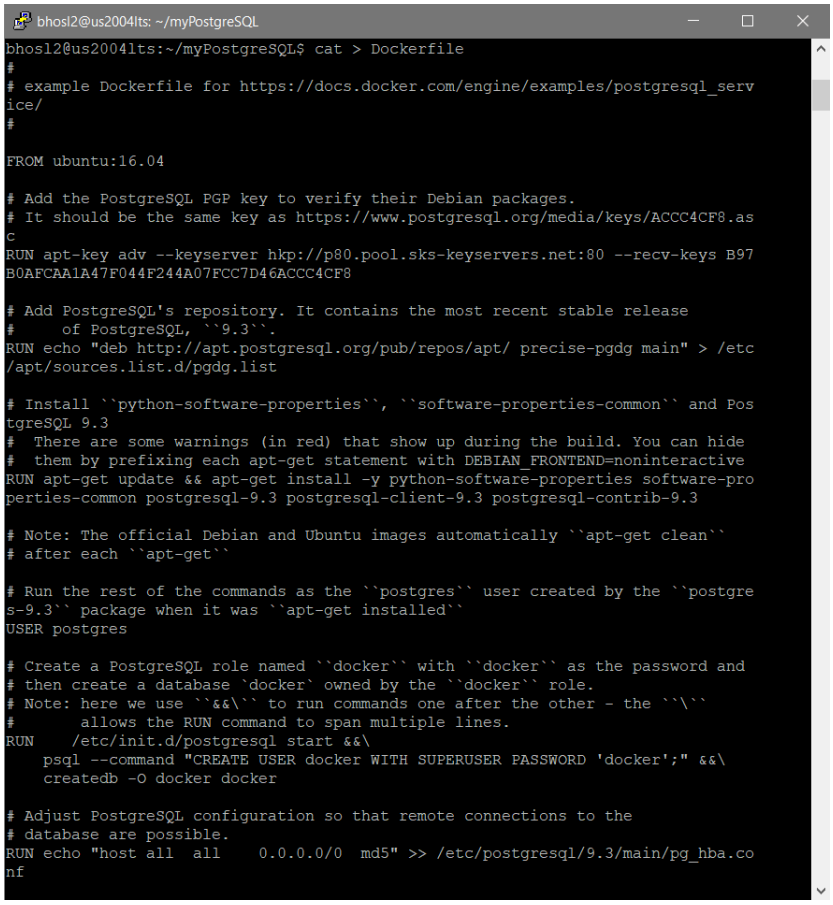
2 Dockerizing PostgreSQL Database

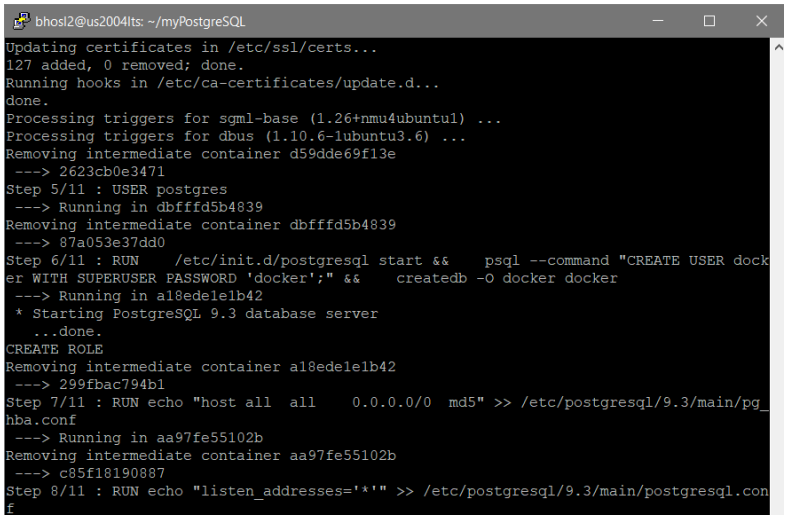
2.5 Custom Dockerfile for PostgreSQL



Dockerfile example taken from

`https://docs.docker.com/engine/examples/postgresql_service/`

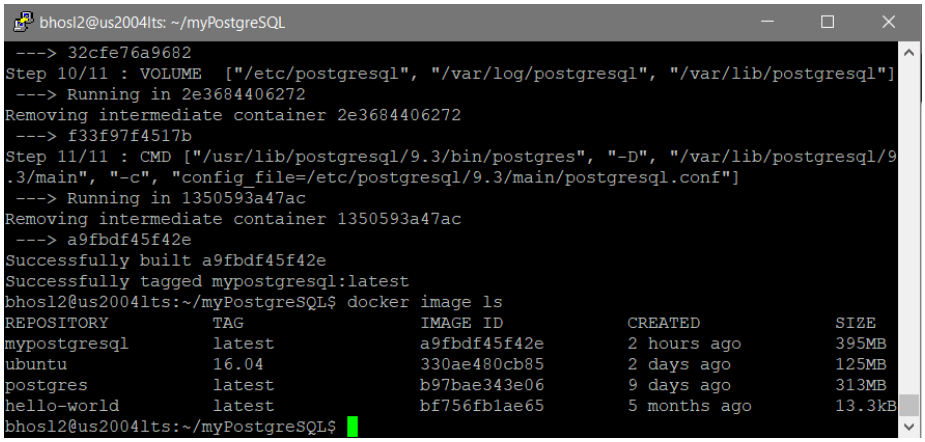
2.6 Building Custom PostgreSQL Docker Image

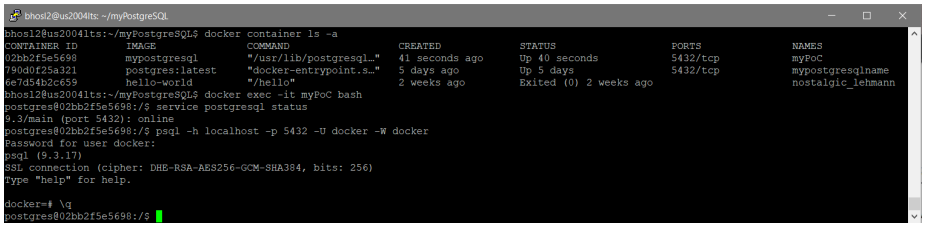


The Dockerfile instructs Docker to build the container:

1. Use Ubuntu as a base
2. Set PostgreSQL PGP public key to ensure connection to the correct source
3. Add address to the PostgreSQL repository
4. Apply updates to:
    4.1. OS
    4.2. Python software
    4.3. PPA updates
    4.4. PostgreSQL
    4.5. PostgreSQL Client
    4.6. PostgreSQL Additional Features
5. Change to a specific user
6. 6.1. Start PostgreSQL
    6.2. Create a Docker user with a password
    6.3. Create a Database with Docker as the owner
7. Set the authentication method to allow all connections
8. Set a listening address for the Docker
9. Expose port 5432 (Default for PostgreSQL)
10. Add volumes to persist data beyond single container
11. CMD runs to complete building the image

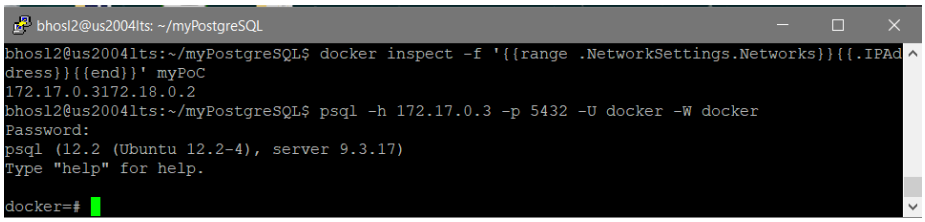
2.7 Container Creation and Verification





2.8 Connection from ...

2.8.1 Host System



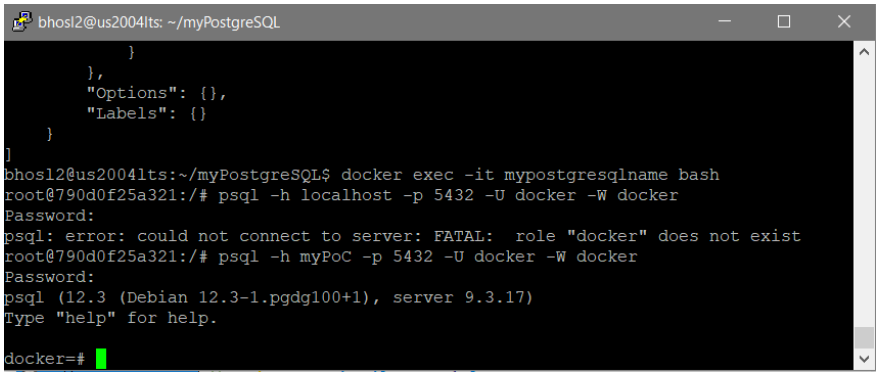

```
bhosl2@us2004lts:~/myPostgreSQL$ sudo sh -c 'echo "deb
↪  http://apt.postgresql.org/pub/repos/apt $(lsb_release
↪  -cs)-pgdg main" > /etc/apt/sources.list.d/pgdg.list'

bhosl2@us2004lts:~/myPostgreSQL$ sudo apt install -y
↪  postgresql-client

bhosl2@us2004lts:~/myPostgreSQL$ docker inspect -f
↪  '{{range.NetworkSettings.Networks}}{{.IPAddress}}{{end}}'
↪  myPoC 172.17.0.3172.18.0.2
bhosl2@us2004lts:~/myPostgreSQL$ psql -h 172.17.0.3 -p 5432 -U
↪  docker -W docker
Password:
psql (12.2 (Ubuntu 12.2-4), server 9.3.17)
Type "help" for help.

docker=#
```

2.8.2 Another Container




```
bhosl2@us2004lts:~/myPostgreSQL$ docker container ls -a
CONTAINER ID        IMAGE               COMMAND
↪  CREATED
02bb2f5e5698        mypostgresql        "/usr/lib/postgresql..."
↪  12 minutes ago
790d0f25a321        postgres:latest     "docker-entrypoint.s..."
↪  5 days ago
6e7d54b2c659        hello-world         "/hello"
↪  2 weeks ago

bhosl2@us2004lts:~/myPostgreSQL$ docker network create
↪  myPostgresqlNet
3a7aabb38c3c5dbe203eefae75ee7654e9657124796eee71451d4688e8227b81

bhosl2@us2004lts:~/myPostgreSQL$ docker network connect
↪  myPostgresqlNet myPoC
bhosl2@us2004lts:~/myPostgreSQL$ docker network connect
↪  myPostgresqlNet mypostgresq
bhosl2@us2004lts:~/myPostgreSQL$ docker network inspect
↪  myPostgresqlNet

root@790d0f25a321:/# psql -h myPoC -p 5432 -U docker -W docker
Password:
psql (12.3 (Debian 12.3-1.pgdg100+1), server 9.3.17)
Type "help" for help.

docker=#
```