Dockers 101 – Series 5 of N – Using docker-setting up a MySQL/MariaDB container

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- **Requirement**:
  - Lets imagine that as a DevOps, you have been asked to create a container to run MySQL/MariaDB, and try different docker commands to run MySQL/MariaDB in foreground, background, with specific port binding, with dynamic port binding, persisting data and logs from container to a volume on host
- **Strategy**:
  - search the name of image on docker hub
  - run the MySQL/MariaDB container in background as its a database and will take time to setup
  - run MySQL/MariaDB in background
  - run MySQL/MariaDB with specific port
  - run MySQL/MariaDB with dynamic port
  - run MySQL/MariaDB with volume persistance
- **Solution:**
  - Login to your Host machine(in my case a CentOS 7 machine)
  - Make a directory "**mymariadb**" and go to the directory – **mkdir mymariadb && cd mymariadb**
  - How to:
    - search for an image using filters and limits- **docker search –filter "is-official=true" –limit 5 mariadb**
    - run an image
      - in interactive mode – **docker run –name mymariadb-fg -e MYSQL_ROOT_PASSWORD=mypasswordfg -it mariadb:latest**
      - in background mode – **docker run –name mymariadb-bg -e MYSQL_ROOT_PASSWORD=mypasswordbg -d mariadb:latest**

```
[root@mnaeemsiddiqui4 user]# # first search for mariadb image
[root@mnaeemsiddiqui4 user]# docker search --filter "is-official=true" --limit 5 mariadb
NAME                DESCRIPTION                                     STARS               OFFICIAL            AUTOMATED
mariadb             MariaDB is a community-developed fork of MyS…   1869                [OK]
[root@mnaeemsiddiqui4 user]#
[root@mnaeemsiddiqui4 user]# # now run the image
[root@mnaeemsiddiqui4 user]# docker run --name mymariadb-bg -e MYSQL_ROOT_PASSWORD=mypasswordbg -d mariadb:latest
Unable to find image 'mariadb:latest' locally
latest: Pulling from library/mariadb
f2b6b4884fc8: Pull complete
26d8bdca4f3e: Pull complete
74f09e820cce: Pull complete
5390f1fe4554: Pull complete
3d3f1706a741: Pull complete
2942f66426ea: Pull complete
97ee11d39c75: Pull complete
590c46ef722b: Pull complete
32eb4b9666e5: Pull complete
fc883f98a064: Pull complete
bb8bee61bc1e: Pull complete
Digest: sha256:6135f5b851e7fe263dcf0edf3480cdab1ab28c4287e867c5d83fbe967412ea14
Status: Downloaded newer image for mariadb:latest
506290cb3cba529d060a3e3a9318e3eacc3075c35971accbd9ae4d4015704233
[root@mnaeemsiddiqui4 user]# docker container ls
CONTAINER ID        IMAGE               COMMAND                  CREATED             STATUS              PORTS               NAMES
506290cb3cba        mariadb:latest      "docker-entrypoint.s…"   9 seconds ago       Up 9 seconds        3306/tcp            mymariadb-bg
[root@mnaeemsiddiqui4 user]# docker ps -a
CONTAINER ID        IMAGE               COMMAND                  CREATED             STATUS              PORTS               NAMES
506290cb3cba        mariadb:latest      "docker-entrypoint.s…"   20 seconds ago      Up 20 seconds       3306/tcp            mymariadb-bg
[root@mnaeemsiddiqui4 user]#
```

    - Check **logs** –
      - **docker logs -f 506290cb3cba** # show continuous logs as it generates

```
ySQL init process done. Ready for start up.

018-04-04  2:35:35 140679206127488 [Note] mysqld (mysqld 10.2.14-MariaDB-10.2.14+maria~jessie) starting as process 1 ...
018-04-04  2:35:35 140679206127488 [Note] InnoDB: Mutexes and rw_locks use GCC atomic builtins
018-04-04  2:35:35 140679206127488 [Note] InnoDB: Uses event mutexes
018-04-04  2:35:35 140679206127488 [Note] InnoDB: Compressed tables use zlib 1.2.8
018-04-04  2:35:35 140679206127488 [Note] InnoDB: Using Linux native AIO
018-04-04  2:35:35 140679206127488 [Note] InnoDB: Number of pools: 1
018-04-04  2:35:35 140679206127488 [Note] InnoDB: Using SSE2 crc32 instructions
018-04-04  2:35:35 140679206127488 [Note] InnoDB: Initializing buffer pool, total size = 256M, instances = 1, chunk size = 128M
018-04-04  2:35:35 140679206127488 [Note] InnoDB: Completed initialization of buffer pool
018-04-04  2:35:35 140678484551424 [Note] InnoDB: If the mysqld execution user is authorized, page cleaner thread priority can be changed.
e man page of setpriority().
018-04-04  2:35:35 140679206127488 [Note] InnoDB: Highest supported file format is Barracuda.
018-04-04  2:35:35 140679206127488 [Note] InnoDB: 128 out of 128 rollback segments are active.
018-04-04  2:35:35 140679206127488 [Note] InnoDB: Creating shared tablespace for temporary tables
018-04-04  2:35:35 140679206127488 [Note] InnoDB: Setting file './ibtmp1' size to 12 MB. Physically writing the file full; Please wait ...
018-04-04  2:35:35 140679206127488 [Note] InnoDB: File './ibtmp1' size is now 12 MB.
018-04-04  2:35:35 140679206127488 [Note] InnoDB: Waiting for purge to start
018-04-04  2:35:35 140679206127488 [Note] InnoDB: 5.7.21 started; log sequence number 1620015
018-04-04  2:35:35 140678476158720 [Note] InnoDB: Loading buffer pool(s) from /var/lib/mysql/ib_buffer_pool
018-04-04  2:35:35 140679206127488 [Note] Plugin 'FEEDBACK' is disabled.
018-04-04  2:35:35 140679206127488 [Note] Server socket created on IP: '::'.
018-04-04  2:35:35 140679206127488 [Warning] 'proxies_priv' entry '@% root@506290cb3cba' ignored in --skip-name-resolve mode.
018-04-04  2:35:35 140679206127488 [Note] Reading of all Master_info entries succeded
018-04-04  2:35:35 140679206127488 [Note] Added new Master_info '' to hash table
018-04-04  2:35:35 140679206127488 [Note] mysqld: ready for connections.
ersion: '10.2.14-MariaDB-10.2.14+maria~jessie'  socket: '/var/run/mysqld/mysqld.sock'  port: 3306  mariadb.org binary distribution
018-04-04  2:35:35 140678476158720 [Note] InnoDB: Buffer pool(s) load completed at 180404  2:35:35
```

- **Using docker-compose**:

```
  GNU nano 2.3.1                                File: docker-compose.yml

version: '3.1'

services:
  db:
    image: mariadb
    restart: always
    environment:
      MYSQL_ROOT_PASSWORD: mypassword

  adminer:
    image: adminer
    restart: always
    ports:
      - 8080:8080
```

```
version: '3.1'

services:

  db:
    image: mariadb
    restart: always
    environment:
      MYSQL_ROOT_PASSWORD: testpass

  adminer:
    image: adminer
    restart: always
    ports:
      - 8080:8080
```

- Create a file 'docker-compose.yml' and copy the above content and save.

```
[root@mnaeemsiddiqui4 user]# cd mymariadb
[root@mnaeemsiddiqui4 mymariadb]# nano docker-compose.yml
[root@mnaeemsiddiqui4 mymariadb]# ls
docker-compose.yml
[root@mnaeemsiddiqui4 mymariadb]# docker-compose version
docker-compose version 1.20.1, build 5d8c71b
docker-py version: 3.1.4
CPython version: 3.6.4
OpenSSL version: OpenSSL 1.0.1t  3 May 2016
[root@mnaeemsiddiqui4 mymariadb]# docker-compose up
Creating network "mymariadb_default" with the default driver
Pulling adminer (adminer:latest)...
latest: Pulling from library/adminer
605ce1bd3f31: Pull complete
2f5aa494661d: Pull complete
7963c90c835a: Pull complete
a3f2a1640434: Pull complete
df6e3b1fa4c7: Pull complete
70f0c1f6fed9: Pull complete
48d1a0bf6b63: Pull complete
96b160f5ff2b: Pull complete
b85911ab8d07: Pull complete
40e0cfadb213: Pull complete
292dbb160cf5: Pull complete
a78747f6af10: Pull complete
44af7d387956: Pull complete
745228577747: Pull complete
458b7bb3a50a: Pull complete
Digest: sha256:5fbd1d76c2aeb0f8a895705b18f039b18f327c13c588eaadd76f96dbebdaf2bd
Status: Downloaded newer image for adminer:latest
Creating mymariadb_adminer_1 ... done
Creating mymariadb_db_1      ... done
```

- run '**docker-compose up**' to execute the container

- run **'docker exec -it <container-id>' e.g. docker exec -it 71b9352ecef5 bash** and follow the series of questions you are prompted with.

```
REPOSITORY          TAG                 IMAGE ID            CREATED             SIZE
mariadb             latest              ca06ca3d8fad        4 days ago          396MB
adminer             latest              ca46081c443b        12 days ago         66.9MB
[root@mnaeemsiddiqui4 mymariadb]#
[root@mnaeemsiddiqui4 mymariadb]# docker container ls -a
CONTAINER ID        IMAGE               COMMAND                  CREATED             STATUS                      PORTS               NAMES
eb0d5a7dd04c        adminer             "entrypoint.sh docke…"   11 minutes ago      Exited (0) 8 minutes ago                        mymariadb_adm
iner_1
71b9352ecef5        mariadb             "docker-entrypoint.s…"   11 minutes ago      Up 4 minutes                3306/tcp            mymariadb_db_
1
506290cb3cba        mariadb:latest      "docker-entrypoint.s…"   39 minutes ago      Up 39 minutes               3306/tcp            mymariadb-bg
[root@mnaeemsiddiqui4 mymariadb]#
[root@mnaeemsiddiqui4 mymariadb]# docker exec -it 71b9352ecef5 bash
root@71b9352ecef5:/# ./usr/bin/mysql_secure_installation

NOTE: RUNNING ALL PARTS OF THIS SCRIPT IS RECOMMENDED FOR ALL MariaDB
      SERVERS IN PRODUCTION USE!  PLEASE READ EACH STEP CAREFULLY!

In order to log into MariaDB to secure it, we'll need the current
password for the root user.  If you've just installed MariaDB, and
you haven't set the root password yet, the password will be blank,
so you should just press enter here.

Enter current password for root (enter for none):
OK, successfully used password, moving on...

Setting the root password ensures that nobody can log into the MariaDB
root user without the proper authorisation.

You already have a root password set, so you can safely answer 'n'.

Change the root password? [Y/n]
```

CATEGORIES DOCKERS