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ชื่อโครงการ: NPN SHOP

การติดตั้งฐานข้อมูล MySQL Server 8.0.26 บน Ubuntu 20.02 ด้วย Docker-compose

**** การติดตั้งนี้ตั้งอยู่บนสมมติฐานที่ว่า เครื่อง VM Ubuntu 20.02 ติดตั้ง Docker แล้ว ****

1. ติดตั้ง docker-compose บน Ubuntu 20.02

- ใช้คำสั่ง `sudo apt update` และ `sudo apt upgrade`

```
int222@int222-project:~$ sudo apt update
Hit:1 https://download.docker.com/linux/ubuntu focal InRelease
Hit:2 http://azure.archive.ubuntu.com/ubuntu focal InRelease
Get:3 http://azure.archive.ubuntu.com/ubuntu focal-updates InRelease [114 kB]
Get:4 http://azure.archive.ubuntu.com/ubuntu focal-backports InRelease [101 kB]
Get:5 http://azure.archive.ubuntu.com/ubuntu focal-updates/main amd64 Packages [1256 kB]
Get:6 http://azure.archive.ubuntu.com/ubuntu focal-updates/universe amd64 Packages [864 kB]
Get:7 http://security.ubuntu.com/ubuntu focal-security InRelease [114 kB]
Fetched 2448 kB in 1s (1785 kB/s)
Reading package lists... Done
Building dependency tree
Reading state information... Done
17 packages can be upgraded. Run 'apt list --upgradable' to see them.
```

```
int222@int222-project:~$ sudo apt upgrade
Reading package lists... Done
Building dependency tree
Reading state information... Done
Calculating upgrade... Done
The following packages were automatically installed and are no longer required:
Setting up libdrm-common (2.4.105-3~20.04.2) ...
Setting up libprocps8:amd64 (2:3.3.16-1ubuntu2.3) ...
Setting up linux-headers-5.8.0-1042-azure (5.8.0-1042.45~20.04.1) ...
Setting up linux-tools-5.8.0-1042-azure (5.8.0-1042.45~20.04.1) ...
Setting up linux-headers-azure (5.8.0.1042.45~20.04.14) ...
Setting up linux-image-azure (5.8.0.1042.45~20.04.14) ...
Setting up linux-tools-azure (5.8.0.1042.45~20.04.14) ...
Setting up update-manager-core (1:20.04.10.9) ...
```

ใช้คำสั่ง

`sudo curl -L`

`"https://github.com/docker/compose/releases/download/1.29.2/docker-compose-$(uname -s)-$(uname -m)" -o /usr/local/bin/docker-compose`

เพื่อติดตั้ง docker-compose

```
int222@int222-project:~$ sudo curl -L "https://github.com/docker/compose/releases/download/1.29.2/docker-compose-$(uname -s)-$(uname -m)" -o /usr/local/bin/docker-compose
% Total    % Received % Xferd Average Speed   Time    Time     Time  Current
           Dload  Upload Total   Spent    Left   Speed
100    633    100    633    0     0  31650      0 --:--:-- --:--:-- --:--:-- 31650
```

ใช้คำสั่ง `docker-compose version` เพื่อตรวจสอบว่าสามารถใช้คำสั่งได้

```
int222@int222-project:~$ docker-compose version
docker-compose version 1.29.2, build 5becea4c
docker-py version: 5.0.0
CPython version: 3.7.10
OpenSSL version: OpenSSL 1.1.0l 10 Sep 2019
```

2. สร้าง Directory สำหรับเก็บ docker-compose.sql

```
int222@int222-project:~$ mkdir database
int222@int222-project:~$ ls
database  project
int222@int222-project:~$ cd database
int222@int222-project:~/database$
```

3. สร้าง Directory ชื่อ sql สำหรับเก็บไฟล์ sql

```
int222@int222-project:~/database$ mkdir sql
int222@int222-project:~/database$ ls
sql
```

4. Import ไฟล์ sql ทั้งสองไฟล์ลงใน Directory

```
int222@int222-project:~/database$ cd sql
int222@int222-project:~/database/sql$ ls -l
total 24
-rw-rw-r-- 1 int222 int222 7867 Oct  1 14:28 Create_Table.sql
-rw-rw-r-- 1 int222 int222 14619 Oct  1 15:40 Data_Insert.sql
int222@int222-project:~/database/sql$
```

5. ใน Directory database สร้าง docker-compose.yml และใส่ข้อมูลดังกล่าว

version: '3'

services:

mysqldatabase

image: mysql/mysql-server:8.0.26

container_name: mysqldatabase

restart: on-failure

environment:

MYSQL_PORT: 3306

MYSQL_ROOT_PASSWORD: \${MYSQL_ROOT_PSW}

ports:

- '3306:3306'

volumes:

- ./sql/Create_Table.sql:/docker-entrypoint-initdb.d/1.sql

```
- ./sql/Data_Insert.sql:/docker-entrypoint-initdb.d/2.sql
```

networks:

project:

ipv4_address: 172.23.30.3

networks:

project:

external:

name: int222_project

```
int222@int222-project:~/database$ touch docker-compose.yml
int222@int222-project:~/database$ nano docker-compose.yml
int222@int222-project:~/database$ cat docker-compose.yml
version: '3'
services:
  mysqlatabase:
    image: mysql/mysql-server:8.0.26
    container_name: mysqlatabase
    restart: on-failure
    environment:
      MYSQL_PORT: 3306
      MYSQL_ROOT_PASSWORD: ${MYSQL_ROOT_PSW}
    ports:
      - '3306:3306'
    volumes:
      - ./sql/Create_Table.sql:/docker-entrypoint-initdb.d/1.sql
      - ./sql/Data_Insert.sql:/docker-entrypoint-initdb.d/2.sql
    networks:
      project:
        ipv4_address: 172.23.30.3
networks:
  project:
    external:
      name: int222_project
```

5.1 อธิบาย docker-compose.yml

version: '3' # เป็นการระบุ Version ของ Docker compose

services: # เป็นการระบุจุดเริ่มของ service ที่เตรียม deploy

mysqlatabase: # ชื่อ service ที่จะใช้เรียก

image: mysql/mysql-server:8.0.26 # ดึง Image MySQL

container_name: mysqlatabase # ชื่อ container

restart: on-failure # ให้ restart service เมื่อเกิดข้อผิดพลาด

environment: # ตั้งค่า environment variable

ports: # ตั้งค่า Port ของ Container

volumes: # จากด้านบนจะเป็นการ bind ไฟล์ Create_Table.sql และ Data_Insert.sql เข้าไปใน Docker Container ตาม Path ที่ตั้งไว้และ Rename เป็น 1.sql กับ 2.sql เพื่อที่จะให้ Docker run init ตามลำดับ

networks: # ใช้เพื่อระบุ external networks ที่ตั้งไว้และกำหนด IPv4 ในตัวอย่างคือ 172.23.30.3

5.2 สร้างไฟล์ .env

จะเห็นได้ว่าใน docker-compose.yml มีการเรียนรู้ตัวแปร \${MYSQL_ROOT_PSW} ซึ่งเป็นค่าที่เป็น ความลับ ไม่ควรเก็บให้เห็นอยู่ดังนั้นจึงควรที่จะสร้างไฟล์ Environment ขึ้นมาใหม่เพื่อเก็บค่าที่เป็น Secret

```
int222@int222-project:~/database$ touch .env
int222@int222-project:~/database$ nano .env
```

```
GNU nano 4.8
MYSQL_ROOT_PSW=INT222_Project
```

```
int222@int222-project:~/database$ cat .env
MYSQL_ROOT_PSW=INT222_Project
```

6. docker-compose up [-d] (หากต้องการให้ service run ใน background ให้ใส่ -d)

```
int222@int222-project:~/database$ docker-compose up
Creating mysqldatabase ... done
Attaching to mysqldatabase
mysqldatabase | [Entrypoint] MySQL Docker Image 8.0.26-1.2.4-server
mysqldatabase | [Entrypoint] Initializing database
mysqldatabase | 2021-10-01T16:20:31.280324Z 0 [System] [MY-013169] [Server] /usr/sbin/mysqld (mysqld 8.0.26) initializing of server in progress as process 17
mysqldatabase | 2021-10-01T16:20:31.311134Z 1 [System] [MY-013576] [InnoDB] InnoDB initialization has started.
mysqldatabase | 2021-10-01T16:20:34.701189Z 1 [System] [MY-013577] [InnoDB] InnoDB initialization has ended.
mysqldatabase | 2021-10-01T16:20:38.795889Z 0 [Warning] [MY-013746] [Server] A deprecated TLS version TLSv1 is enabled for channel mysql_main
mysqldatabase | 2021-10-01T16:20:38.796272Z 0 [Warning] [MY-013746] [Server] A deprecated TLS version TLSv1.1 is enabled for channel mysql_main
mysqldatabase | 2021-10-01T16:20:39.066129Z 6 [Warning] [MY-010453] [Server] root@localhost is created with an empty password ! Please consider switching off the --initia
mysqldatabase | lize-insecure option.
mysqldatabase | [Entrypoint] Database initialized
mysqldatabase | 2021-10-01T16:20:47.156882Z 0 [System] [MY-010116] [Server] /usr/sbin/mysqld (mysqld 8.0.26) starting as process 62
mysqldatabase | 2021-10-01T16:20:47.209070Z 1 [System] [MY-013576] [InnoDB] InnoDB initialization has started.
mysqldatabase | 2021-10-01T16:20:47.993231Z 1 [System] [MY-013577] [InnoDB] InnoDB initialization has ended.
mysqldatabase | 2021-10-01T16:20:48.460686Z 0 [Warning] [MY-013746] [Server] A deprecated TLS version TLSv1 is enabled for channel mysql_main
mysqldatabase | 2021-10-01T16:20:48.460952Z 0 [Warning] [MY-013746] [Server] A deprecated TLS version TLSv1.1 is enabled for channel mysql_main
mysqldatabase | 2021-10-01T16:20:48.462980Z 0 [Warning] [MY-010068] [Server] CA certificate ca.pem is self signed.
mysqldatabase | 2021-10-01T16:20:48.463307Z 0 [System] [MY-013602] [Server] Channel mysql_main configured to support TLS. Encrypted connections are now supported for thi
mysqldatabase | s channel.
mysqldatabase | 2021-10-01T16:20:48.513360Z 0 [System] [MY-011323] [Server] X Plugin ready for connections. Socket: /var/run/mysqld/mysqld.sock
mysqldatabase | 2021-10-01T16:20:48.513704Z 0 [System] [MY-010931] [Server] /usr/sbin/mysqld: ready for connections. Version: '8.0.26' socket: '/var/lib/mysql/mysql.sock'
mysqldatabase | port: 0 MySQL Community Server - GPL.
mysqldatabase | Warning: Unable to load '/usr/share/zoneinfo/iso3166.tab' as time zone. Skipping it.
mysqldatabase | Warning: Unable to load '/usr/share/zoneinfo/leapseconds.tab' as time zone. Skipping it.
mysqldatabase | Warning: Unable to load '/usr/share/zoneinfo/tzdata.zi' as time zone. Skipping it.
mysqldatabase | Warning: Unable to load '/usr/share/zoneinfo/zone.tab' as time zone. Skipping it.
mysqldatabase | Warning: Unable to load '/usr/share/zoneinfo/zone1970.tab' as time zone. Skipping it.
mysqldatabase | [Entrypoint] running /docker-entrypoint-initdb.d/1.sql
mysqldatabase | [Entrypoint] running /docker-entrypoint-initdb.d/2.sql
mysqldatabase | 2021-10-01T16:20:54.105470Z 13 [System] [MY-013172] [Server] Received SHUTDOWN from user root. Shutting down mysqld (Version: 8.0.26).
mysqldatabase | 2021-10-01T16:20:57.095412Z 0 [System] [MY-010910] [Server] /usr/sbin/mysqld: Shutdown complete (mysqld 8.0.26) MySQL Community Server - GPL.
mysqldatabase | [Entrypoint] Server shut down
mysqldatabase | [Entrypoint] MySQL init process done. Ready for start up.
mysqldatabase | [Entrypoint] Starting MySQL 8.0.26-1.2.4-server
```

```

mysql: [Warning] CA certificate ca.pem is self signed.
2021-10-01T16:20:58.675316Z 0 [Warning] [MY-013746] [Server] A deprecated TLS version TLSv1.1 is enabled for channel mysql_main
2021-10-01T16:20:58.675316Z 0 [Warning] [MY-013746] [Server] A deprecated TLS version TLSv1 is enabled for channel mysql_main
2021-10-01T16:20:58.675316Z 0 [System] [MY-013602] [Server] Channel mysql_main configured to support TLS. Encrypted connections are now supported for this channel.
2021-10-01T16:20:58.724754Z 0 [System] [MY-011323] [Server] X Plugin ready for connections. Bind-address: '::' port: 33060, socket: /var/run/mysqld/mysql_x.sock
2021-10-01T16:20:58.724954Z 0 [System] [MY-010931] [Server] /usr/sbin/mysqld: ready for connections. Version: '8.0.26' socket: '/var/lib/mysql/mysql.sock' port: 3306 MySQL Community Server - GPL.

```

6.1 ตรวจสอบว่า container run อยู่โดยคำสั่ง docker ps

CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS
1a67d637a1ce	mysql/mysql-server:8.0.26	"/entrypoint.sh mysq..."	5 minutes ago	Up 5 minutes (healthy)
0.0.0.0:3306->3306/tcp, :::3306->3306/tcp, 33060-33061/tcp			mysql:database	

7. ทดลองเข้า Database ด้วย User 'dev_user2' ผ่านทาง Localhost

7.1 ใช้คำสั่ง docker exec -it [container_name] mysql -u [username] -p -h localhost

```

int222@int222-project:~$ docker exec -it mysql:database mysql -u dev_user2 -p -h localhost
Enter password:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 39
Server version: 8.0.26 MySQL Community Server - GPL

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owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql>

```

7.2 ใช้คำสั่ง show databases; และ use int222_project;

```

mysql> show databases;
+-----+
| Database |
+-----+
| information_schema |
| int222_project |
+-----+
2 rows in set (0.00 sec)

mysql> use int222_project;
Reading table information for completion of table and column names
You can turn off this feature to get a quicker startup with -A

```

8 ทดลอง Select data จากใน database

```
mysql> show tables;
+-----+
| Tables_in_int222_project |
+-----+
| authentication          |
| brand                   |
| category                |
| color                   |
| coupon                  |
| orderdetail             |
| orders                  |
| product                 |
| productcolor            |
| review                  |
| users                   |
+-----+
11 rows in set (0.01 sec)
```

```
mysql> select * from product where pid > 0 and pid < 3 \G
***** 1. row *****
      pid: 1
     name: Razer Basilisk V3
    price: 2349.99
description: Customizable Gaming Mouse with Razer Chroma™ RGB
release_date: 2021-09-08
     image: basiliskv3.png
    amount: 5
   warranty: 2
        bid: 1
       catid: 1
***** 2. row *****
      pid: 2
     name: Razer Viper Mini Ultralight
    price: 1028.77
description: Fastest Gaming Switches - 8500 DPI Optical Sensor - Chroma RGB Underglow Lighting - 6
Programmmable Buttons - Drag-Free Cord
release_date: 2020-03-04
     image: razor_viper_lw.jpg
    amount: 15
   warranty: 2
        bid: 1
       catid: 1
2 rows in set (0.00 sec)

mysql>
```

เมื่อเลิกใช้ให้พิมพ์ exit

เพิ่มเติม

docker inspect ส่วน network

```
    "Networks": {
      "int222_project": {
        "IPAMConfig": {
          "IPv4Address": "172.23.30.3"
        },
        "Links": null,
        "Aliases": [
          "mysqldatabase",
          "1a67d637a1ce"
        ],
        "NetworkID": "5415624e082797fd1519527300df319eb669ad9b02f471b5f612c2f2e680b1a3",
        "EndpointID": "c2cc41999dd8e56614fd32612cbc0b3d082e5accff3f7bf486aeadfa50a2225f"
      },
      "Gateway": "172.23.1.1",
      "IPAddress": "172.23.30.3",
      "IPPrefixLen": 16,
      "IPv6Gateway": "",
      "GlobalIPv6Address": "",
      "GlobalIPv6PrefixLen": 0,
      "MacAddress": "02:42:ac:17:1e:03",
      "DriverOpts": null
    }
  }
```