

## 安裝 Docker

### 1. 安裝 docker

```
sudo apt-get install -y docker.io
```

```
islab1221@ubuntu:~$ sudo apt-get install -y docker.io
```

### 2. 啟動 docker

```
sudo service docker start
```

```
islab1221@ubuntu:~$ sudo service docker start
```

## 建立 docker mysql

### 1. 查找 mysql 映像檔

```
sudo docker search mysql
```

NAME	DESCRIPTION	STARS	OFFICIAL	AUTOMATED
mysql	MySQL is a widely used, open-source relation...	9153	[OK]	
mariadb	MariaDB is a community-developed fork of MyS...	3251	[OK]	
mysql/mysql-server	Optimized MySQL Server Docker images. Create...	676		[OK]
centos/mysql-57-centos7	MySQL 5.7 SQL database server	69		
mysql/mysql-cluster	Experimental MySQL Cluster Docker images. Cr...	62		
centurylink/mysql	Image containing mysql. Optimized to be link...	61		
deitrich/mysql-backup	REPLACED! Please use http://hub.docker.com/r...	41		
bitnami/mysql	Bitnami MySQL Docker Image	36		
tutum/mysql	Base docker image to run a MySQL database se...	34		
schickling/mysql-backup-s3	Backup MySQL to S3 (supports periodic backup...	29		
prom/mysqld-exporter		26		[OK]
linuxserver/mysql	A MySql container, brought to you by LinuxSe...	24		
centos/mysql-56-centos7	MySQL 5.6 SQL database server	19		
circleci/mysql	MySQL is a widely used, open-source relation...	18		
mysql/mysql-router	MySQL Router provides transparent routing be...	14		
arey/mysql-client	Run a MySQL client from a docker container	13		[OK]
database/mysql-backup	Back up mysql databases to... anywhere!	10		
openshift/mysql-55-centos7	DEPRECATED: A Centos7 based MySQL v5.5 image...	6		
fradelg/mysql-cron-backup	MySQL/MariaDB database backup using cron tas...	5		[OK]
genschsa/mysql-employees	MySQL Employee Sample Database	4		[OK]
devilbox/mysql	Retagged MySQL, MariaDB and PerconaDB offici...	2		
ansibleplaybookbundle/mysql-apb	An APB which deploys RHSCl MySQL	2		[OK]
jelastic/mysql	An image of the MySQL database server mainta...	1		
monasca/mysql-init	A minimal decoupled init container for mysql...	0		
widdpim/mysql-client	Dockerized MySQL Client (5.7) including CURL...	0		[OK]

### 2. 下載 mysql 映像檔

```
sudo docker pull mysql
```

```
islab1221@ubuntu:~$ sudo docker pull mysql
Using default tag: latest
latest: Pulling from library/mysql
619014d83c02: Pull complete
9ced578c3a5f: Pull complete
731f6e13d8ea: Pull complete
3c183de42679: Pull complete
6de69b5c2f3c: Pull complete
122a561a4196: Pull complete
1abf8e9f34f0: Pull complete
1e5887414166: Pull complete
95adaca07078: Pull complete
42c8c6542347: Pull complete
0ae93d9077ae: Pull complete
42131d6ef54e: Pull complete
Digest: sha256:c7c6c5beb312fd2eb21af4f144d14b6ef29c9c2f9c5e1f3f74ffa75e38fad1f4
Status: Downloaded newer image for mysql:latest
```

### 3. 查看 docker 映像檔

```
sudo docker images
```

REPOSITORY	TAG	IMAGE ID	CREATED	SIZE
mysql	latest	afaec1334369	3 days ago	471MB

4. 使用 mysql 映像檔啟動 mysql 服務

```
sudo docker run --name mysql -e MYSQL_ROOT_PASSWORD=密碼 -d -p  
3306:3306 mysql --default-authentication-plugin=mysql_native_password  
其中 3306 為 docker mysql 的 port
```

```
islab1221@ubuntu:~$ sudo docker run --name mysql -e MYSQL_ROOT_PASSWORD=123456 -d -p 3306:3306 mysql --default-authentication-plugin=mysql_native_password  
ae36ca883f9c34ed701fac9d8e3f43c4ea50d804b1157e797a60d114e75e35bf
```

5. 進入 mysql container

```
sudo docker exec -it mysql bash
```

```
islab1221@ubuntu:~$ sudo docker exec -it mysql bash  
root@ae36ca883f9c:/#
```

建立 database

1. 以 root 帳號進入 mysql

```
mysql -u root -p
```

輸入啟動 mysql 時設定的密碼

```
root@ae36ca883f9c:/# mysql -u root -p  
Enter password:  
Welcome to the MySQL monitor. Commands end with ; or \g.  
Your MySQL connection id is 8  
Server version: 8.0.19 MySQL Community Server - GPL  
  
Copyright (c) 2000, 2020, Oracle and/or its affiliates. All rights reserved.  
  
Oracle is a registered trademark of Oracle Corporation and/or its  
affiliates. Other names may be trademarks of their respective  
owners.  
  
Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.  
mysql> ■
```

2. 建立資料庫

```
create database 資料庫名稱;
```

```
mysql> create database dockerLab;  
Query OK, 1 row affected (0.02 sec)
```

3. 確認建立成功

```
show databases;
```

```
mysql> show databases;  
+-----+  
| Database |  
+-----+  
| dockerLab |  
| information_schema |  
| mysql |  
| performance_schema |  
| sys |  
+-----+  
5 rows in set (0.00 sec)
```

建立 table 及欄位

1. 選擇 database

use 資料庫名稱;

```
mysql> use dockerLab;
Database changed
```

2. 建立 table

create table 資料表名稱( 欄位 1, 欄位 2,.....);

範例:

```
create table student( id varchar(255), name varchar(255) );
```

```
mysql> create table student( id varchar(255), name varchar(255) );
Query OK, 0 rows affected (0.09 sec)
```

3. 確認建立成功

show tables;

```
mysql> show tables;
+-----+
| Tables_in_dockerLab |
+-----+
| student           |
+-----+
1 row in set (0.00 sec)
```

4. 利用 sql 語法建立一筆資料

範例:

```
INSERT INTO student (id,name) VALUES (1221,1221);
```

```
mysql> INSERT INTO student (id,name) VALUES (1221,1221);
Query OK, 1 row affected (0.01 sec)
```

建立使用者及使用者權限

1. 建立使用者

create user '帳號' identified by '密碼';

範例:

```
create user 'islab' identified by '123456';
```

```
mysql> create user 'islab' identified by '123456';
Query OK, 0 rows affected (0.01 sec)
```

2. 紿予使用者權限的資料庫名稱

grant all privileges on 資料庫名稱.\* to '帳號' with grant option;

範例:

```
grant all privileges on dockerLab.* to 'islab' with grant option;
```

```
mysql> grant all privileges on dockerLab.* to 'islab' with grant option;
Query OK, 0 rows affected (0.01 sec)
```

3. flush privileges;

```
mysql> flush privileges;
Query OK, 0 rows affected (0.01 sec)
```

4. 設定完成後，輸入 exit 兩次離開

## 建立 docker tomcat

1. 查找 tomcat 映像檔

```
sudo docker search tomcat
```

NAME	DESCRIPTION	STARS	OFFICIAL	AUTOMATED
tomcat	Apache Tomcat is an open source implementati...	2645	[OK]	
tomee	Apache TomEE is an all-Apache Java EE certif...	74	[OK]	
dordoka/tomcat	Ubuntu 14.04, Oracle JDK 8 and Tomcat 8 base...	53		[OK]
bitnami/tomcat	Bitnami Tomcat Docker Image	31		[OK]
kubeguide/tomcat-app	Tomcat image for Chapter 1	28		
consol/tomcat-7.0	Tomcat 7.0.57, 8080, "admin/admin"	17		[OK]
cloudesire/tomcat	Tomcat server, 6/7/8	15		[OK]
aallam/tomcat-mysql	Debian, Oracle JDK, Tomcat & MySQL	12		[OK]
arm32v7/tomcat	Apache Tomcat is an open source implementati...	10		
rightctrl/tomcat	CentOS , Oracle Java, tomcat application ssl...	6		[OK]
maluuba/tomcat-java8	Tomcat7 with java8.	4		
unidata/tomcat-docker	Security-hardened Tomcat Docker container.	4		[OK]
amd64/tomcat	Apache Tomcat is an open source implementati...	2		
arm64v8/tomcat	Apache Tomcat is an open source implementati...	2		
i386/tomcat	Apache Tomcat is an open source implementati...	1		
ppc64le/tomcat	Apache Tomcat is an open source implementati...	1		
99taxis/tomcat7	Tomcat7	1		[OK]
campocamp/tomcat-logback	Docker image for tomcat with logback integra...	1		[OK]
oobsri/tomcat8	Testing CI Jobs with different names.	1		
jelastic/tomcat	An image of the Tomcat Java application serv...	0		
cfje/tomcat-resource	Tomcat Concourse Resource	0		
secoresearch/tomcat-varnish	Tomcat and Varnish 5.0	0		[OK]
picoded/tomcat7	tomcat7 with jre8 and MANAGER_USER / MANAGER...	0		[OK]
s390x/tomcat	Apache Tomcat is an open source implementati...	0		
appsvc/tomcat		0		

2. 下載 tomcat 映像檔

```
sudo docker pull tomcat
```

```
islab1221@ubuntu:~$ sudo docker pull tomcat
Using default tag: latest
latest: Pulling from library/tomcat
dc65f448a2e2: Pull complete
346ffb2b67d7: Pull complete
dea4ecac934f: Pull complete
8ac92ddf84b3: Pull complete
d8ef64070a18: Pull complete
6577248b0d6e: Pull complete
576c0a3a6af9: Pull complete
6e0159bd18db: Pull complete
3c831308dd9e: Pull complete
c603174def53: Pull complete
Digest: sha256:e895bcbfa20cf4f3f19ca11451dabc166fc8e827dfad9dd714ecaa8c065a3b18
Status: Downloaded newer image for tomcat:latest
```

3. 查看 docker tomcat 映像檔

```
sudo docker images|grep tomcat
```

```
islab1221@ubuntu:~$ sudo docker images|grep tomcat
tomcat          latest           aeea3708743f      12 days ago    529MB
```

4. 執行映像檔

```
sudo docker run -d -p 8088:8080 tomcat
```

其中 8088 為 docker tomcat 的 port

```
islab1221@ubuntu:~$ sudo docker run -d -p 8088:8080 tomcat
ed1214c1e6341630cbc1e874005d6f86d2a312ae77aba7ff8e805672b6d6a2d1
```

## 5. 查看 docker tomcat 的 CONTAINER ID

```
sudo docker ps -a
```

CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS	PORTS	NAMES
ed1214c1e634	tomcat	"catalina.sh run"	3 minutes ago	Up 3 minutes	0.0.0.0:8080->8080/tcp 0.0.0.0:3306->3306/tcp, 33060/tcp	frosty_bardeen
ae36ca883f9c	mysql	"docker-entrypoint.s..."	33 minutes ago	Up 33 minutes		mysql

## 6. 將網頁(須將 DB 連線的部分設為 docker mysql 的 ip)build 完產生的 war 檔傳入 docker tomcat 執行

查詢 ip:

```
Ifconfig
```

ip 為下圖紅框處

```
islab1221@ubuntu:~$ ifconfig
docker0  Link encap:Ethernet HWaddr 02:42:9b:32:60:80
          inet addr:172.17.0.1 Bcast:172.17.255.255 Mask:255.255.0.0
          inet6 addr: fe80::42:9bff:fe32:6080/64 Scope:Link
            UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:1
            RX packets:587 errors:0 dropped:0 overruns:0 frame:0
            TX packets:709 errors:0 dropped:0 overruns:0 carrier:0
            collisions:0 txqueuelen:0
            RX bytes:153051 (153.0 KB) TX bytes:127922 (127.9 KB)

ens33  Link encap:Ethernet HWaddr 00:0c:29:6d:8c:01
        inet addr:192.168.154.133 Bcast:192.168.154.255 Mask:255.255.255.0
        inet6 addr: fe80::b19:d5e6:101a:3528/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:1
          RX packets:529972 errors:0 dropped:0 overruns:0 frame:0
          TX packets:183513 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:769696811 (769.6 MB) TX bytes:11731272 (11.7 MB)

lo    Link encap:Local Loopback
      inet addr:127.0.0.1 Mask:255.0.0.0
      inet6 addr: ::1/128 Scope:Host
        UP LOOPBACK RUNNING MTU:65536 Metric:1
        RX packets:2658 errors:0 dropped:0 overruns:0 frame:0
        TX packets:2658 errors:0 dropped:0 overruns:0 carrier:0
        collisions:0 txqueuelen:1000
        RX bytes:318161 (318.1 KB) TX bytes:318161 (318.1 KB)

vethd50141e Link encap:Ethernet HWaddr 0a:5b:8b:55:94:6f
           inet6 addr: fe80::85b:8bff:fe55:946f/64 Scope:Link
             UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:1
             RX packets:468 errors:0 dropped:0 overruns:0 frame:0
             TX packets:666 errors:0 dropped:0 overruns:0 carrier:0
             collisions:0 txqueuelen:0
             RX bytes:128998 (128.9 KB) TX bytes:99027 (99.0 KB)
```

war 檔傳入 docker tomcat 執行

war 檔範例:

[https://drive.google.com/file/d/1s8isF\\_qkSDszZhy2GdIF4HFaUboAMbDM/view?usp=sharing](https://drive.google.com/file/d/1s8isF_qkSDszZhy2GdIF4HFaUboAMbDM/view?usp=sharing)

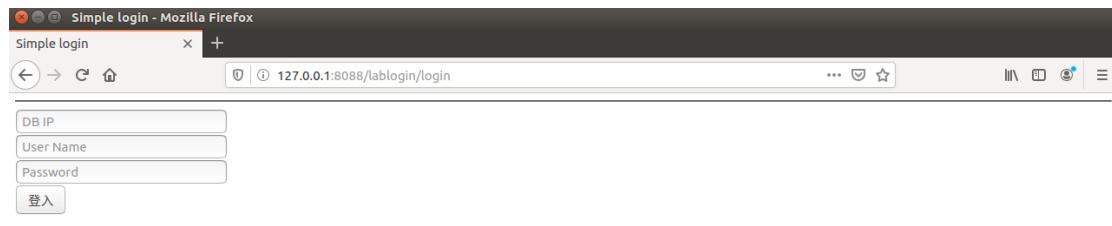
```
sudo docker cp "war 檔路徑" "CONTAINER ID":/usr/local/tomcat/webapps/
```

範例:

```
sudo docker cp Desktop/lablogin.war ed1214c1e634:/usr/local/tomcat/webapps/
```

```
islab1221@ubuntu:~$ sudo docker cp Desktop/lablogin.war ed1214c1e634:/usr/local/tomcat/webapps/
islab1221@ubuntu:~$
```

7. 透過 `http://127.0.0.1:8088/"war 檔名"/"jsp 檔名"` 即可瀏覽網頁



如重開 ubuntu 須重啟 docker container

1. 查看 CONTAINER ID

```
sudo docker ps -a
```

2. 啟動 container

```
sudo docker start "CONTAINER ID"
```