Lab: 建立 docker 映像檔-使用 Dockerfile

透過 docker build 指令來建立映像檔

首先觀察目前的路徑

```
# pwd
/root
```

建立工作目錄

```
# mkdir    sakana
```

進入該目錄

```
# cd    sakana/
```

建立 Dockerfile

```
# vi   Dockerfile
# 用於註解
# 後續的流程, 前面都要大寫

# FROM 基於那個 image
FROM opensuse:42.3

# MAINTAINER 維護作者
MAINTAINER Max Huang < sakana@study-area.org >

# RUN 要執行的指令
# 每一行就是一個 image layer, 儘量將同一種行為放同一行 使用 && 來連接
RUN  zypper  -n  install  openssh
```

使用 docker build 指令建立 image
這邊 最後面是 Dockerfile 所在目錄, 這邊使用 . 目前目錄來指定, 也可以使用絕對路徑

```
# docker   build   -t  testrepo/buildimage  .

Sending build context to Docker daemon 2.048 kB
Step 1 : FROM opensuse:42.3
  ---> 80bd0f661aef
Step 2 : MAINTAINER Max Huang < sakana@study-area.org >
  ---> Running in c4aba3a10ec7
  ---> a3f0f611196b
Removing intermediate container c4aba3a10ec7
Step 3 : RUN zypper -n install openssh
  ---> Running in 702c7f07ba12
Retrieving repository 'NON-OSS' metadata [......done]
Building repository 'NON-OSS' cache [....done]
Retrieving repository 'OSS' metadata [..................done]
Building repository 'OSS' cache [....done]
Retrieving repository 'OSS Update' metadata [...............done]
Building repository 'OSS Update' cache [....done]
Retrieving repository 'Update Non-Oss' metadata [...done]
Building repository 'Update Non-Oss' cache [....done]
Loading repository data...
Reading installed packages...
Resolving package dependencies...

The following 3 NEW packages are going to be installed:
    libedit0 libncurses6 openssh

The following 3 packages are recommended, but will not be installed (only required packages will be installed):
    audit openssh-helpers xauth
```

```
3 new packages to install.
Overall download size: 1.2 MiB. Already cached: 0 B. After the operation, additional 5.7 MiB will be used.
Continue? [y/n/? shows all options] (y): y
Retrieving package libncurses6-5.9-53.4.x86_64 (1/3), 349.5 KiB (1020.7 KiB unpacked)
Retrieving: libncurses6-5.9-53.4.x86_64.rpm [.done]
Retrieving package libedit0-3.1.snap20140620-3.2.x86_64 (2/3),  94.9 KiB (247.1 KiB unpacked)
Retrieving: libedit0-3.1.snap20140620-3.2.x86_64.rpm [.done]
Retrieving package openssh-6.6p1-11.1.x86_64 (3/3), 830.7 KiB (  4.5 MiB unpacked)
Retrieving: openssh-6.6p1-11.1.x86_64.rpm [..done (37.8 KiB/s)]
Checking for file conflicts: [.......done]
(1/3) Installing: libncurses6-5.9-53.4.x86_64 [..........done]
(2/3) Installing: libedit0-3.1.snap20140620-3.2.x86_64 [.......done]
(3/3) Installing: openssh-6.6p1-11.1.x86_64 [............done]
Additional rpm output:
Updating /etc/sysconfig/ssh...


 ---> c823a9e4a1a0
Removing intermediate container 702c7f07ba12
Successfully built c823a9e4a1a0
```

- -t 是 tag 後面為 repository 名稱/image 名稱
- 路徑為 Dockerfile 所在目錄, 跟他上層目錄叫啥名字沒有關係...

觀察映像檔

```
# docker   images
REPOSITORY             TAG              IMAGE ID          CREATED            VIRTUAL SIZE
testrepo/buildimage    latest           4466ca2b47c0      11 seconds ago     162MB
testrepo/testimage     vTEST            c850ac798cbb      8 minutes ago      162MB
opensuse               42.3             31a67951a653      2 days ago         108MB
opensuse               latest           31a67951a653      2 days ago         108MB
busybox                latest           54511612f1c4      2 days ago         1.13MB
```

Lab: 映像檔管理 - Tag 與刪除映像檔

設定映像檔 Tag

可以透過 docker tag 設定映像檔的 TAG

觀察映像檔

```
# docker   images
REPOSITORY             TAG              IMAGE ID          CREATED            VIRTUAL SIZE
testrepo/buildimage    latest           4466ca2b47c0      11 seconds ago     162MB
testrepo/testimage     vTEST            c850ac798cbb      8 minutes ago      162MB
opensuse               42.3             31a67951a653      2 days ago         108MB
opensuse               latest           31a67951a653      2 days ago         108MB
busybox                latest           54511612f1c4      2 days ago         1.13MB
```

使用 docker tag 指令建立 TAG

```
# docker   tag   4466ca2b47c0   testrepo/buildimage:tagTest
```

觀察映像檔

```
# docker  images
REPOSITORY            TAG              IMAGE ID          CREATED            VIRTUAL SIZE
testrepo/buildimage   latest           4466ca2b47c0      3 minutes ago      162MB
testrepo/buildimage   tagTest          4466ca2b47c0      3 minutes ago      162MB
testrepo/testimage    vTEST            c850ac798cbb      11 minutes ago     162MB
opensuse              42.3             31a67951a653      2 days ago         108MB
opensuse              latest           31a67951a653      2 days ago         108MB
busybox               latest           54511612f1c4      2 days ago         1.13MB
```

移除映像檔
如果要移除映像檔, 必須沒有作用中的 container 才可以移除

觀察 container
目前 busybox 沒有 container 使用中, opensuse 有 container 使用中

```
# docker  ps
CONTAINER ID      IMAGE          COMMAND          CREATED          STATUS          PORTS          NAMES
```

```
# docker  ps -a
CONTAINER ID      IMAGE          COMMAND          CREATED          STATUS                           PORTS          NAMES
f4b981edb1e5      opensuse       "/bin/bash"      12 hours ago     Exited (0) 26 minutes ago                       sleepy_bhabha
3965b5144bdf      opensuse       "/bin/bash"      13 hours ago     Exited (0) 12 hours ago                         elegant_brown
1dd047e1ec6b      opensuse       "/bin/bash"      13 hours ago     Exited (0) 13 hours ago                         thirsty_archimedes
```

首先嘗試 移除 busybox 映像檔

```
# docker   rmi   busybox
Untagged: busybox:latest
Deleted: b41c5284db849fbc4d486094a8896ba46a470f9d397ddec08e8a3d5dd4b725cd
Deleted: a5d4c53980c6aec4758bfea6b0cc90938ec253c3758a8b6b345a0d37cc7b35cb
```

觀察映像檔

```
# docker   images
REPOSITORY           TAG              IMAGE ID         CREATED            VIRTUAL SIZE
testrepo/buildimage  latest           c823a9e4a1a0     28 minutes ago     168.9 MB
testrepo/buildimage  tagTest          c823a9e4a1a0     28 minutes ago     168.9 MB
testrepo/testimage   vTEST            c840a5f6ade6     12 hours ago       168.9 MB
opensuse             latest           80bd0f661aef     5 weeks ago        97.74 MB
opensuse             42.1             80bd0f661aef     5 weeks ago        97.74 MB
```

接下來嘗試刪除 有 container 執行的 image

```
# docker  rmi  opensuse:42.3
Error response from daemon: conflict: unable to remove repository reference
"opensuse" (must force) - container 1f964a2deda
5 is using its referenced image 31a67951a653
```

因為 container 仍然使用中所以不能刪除

觀察 container

```
# docker  ps  -a
CONTAINER ID     IMAGE           COMMAND         CREATED          STATUS                    PORTS          NAMES
f4b981edb1e5     80bd0f661aef    "/bin/bash"     13 hours ago     Exited (0) 34 minutes ago                sleepy_bhabha
3965b5144bdf     80bd0f661aef    "/bin/bash"     13 hours ago     Exited (0) 13 hours ago                  elegant_brown
1dd047e1ec6b     80bd0f661aef    "/bin/bash"     13 hours ago     Exited (0) 13 hours ago                  thirsty_archimedes
```

透過 docker rm 來移除 container

```
# docker  rm  f4b981edb1e5
f4b981edb1e5
```

觀察 container

```
# docker  ps -a
CONTAINER ID     IMAGE           COMMAND         CREATED          STATUS                    PORTS          NAMES
3965b5144bdf     80bd0f661aef    "/bin/bash"     13 hours ago     Exited (0) 13 hours ago                  elegant_brown
1dd047e1ec6b     80bd0f661aef    "/bin/bash"     13 hours ago     Exited (0) 13 hours ago                  thirsty_archimedes
```

一個一個刪除 container 有時候在實驗環境有點麻煩
所以就把腦筋動到一次刪除所有的 container
docker ps 指令加上 -q 只會列出 container ID

```
# docker   ps   -aq
3965b5144bdf
1dd047e1ec6b
```

但是做這件事的時候要三思而後行
（ 會刪除所有的 container, 會刪除所有的 container, 會刪除所有的 container ）

```
# docker   rm   $(docker ps -a -q )
3965b5144bdf
1dd047e1ec6b
```

觀察 container

```
# docker  ps  -a
CONTAINER ID     IMAGE           COMMAND         CREATED          STATUS          PORTS          NAMES
```

接下來就可以將沒有 container 使用中的 image 刪除了