Lab: Create docker image - Use Dockerfile

Create docker images via docker build command

Check working directory path
pwd
/root

Create working directory
mkdir   sakana

Change directory to working directory
cd   sakana/

Create Dockerfile
vi   Dockerfile
Use for comment 用於註解
convention is for them to be UPPERCASE to distinguish them from arguments more easily 後續
的流程, 前面都要大寫

FROM – Base image
FROM opensuse:42.3

MAINTAINER Author
MAINTAINER Max Huang < sakana@study-area.org >

RUN the command you want to execute
Each one is an image layer, try write it at the same line if they are the same operation, use && to
combine them
RUN zypper -n install openssh

Use docker build command to build image
You could use . (current directory path) or absolute path
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 tag repositoryName/imageName
- Path for Dockerfile

Check images

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: Image management - Tag and delete image

Setting image Tag

You could use docker tag command to set up image tag TAG

Check docker images

```
# 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
```

Create image tag via docker tag
```
# docker  tag   4466ca2b47c0   testrepo/buildimage:tagTest
```

Check docker images
```
# 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
```

Remove docker image
If you want to remove docker image, Must remove all working container with docker image

Check container
busybox without container in use, but opensuse have
```
# 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
```

Try to remove busybox image

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

Deleted: a5d4c53980c6aec4758bfea6b0cc90938ec253c3758a8b6b345a0d37cc7b35cb

Check docker images

```
# 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
```

Try to remove docker image with containers running

```
# 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
```

Check 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
```

Use docker rm command to remove container

```
# docker  rm  f4b981edb1e5
f4b981edb1e5
```

Check 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
```

It's pain - to delete container one by one
So, how to delete all containers ?
List all containers ID via docker ps with -q options

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

Think before you go
（ Delete all containers, Delete all containers, Delete all containers ）

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

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