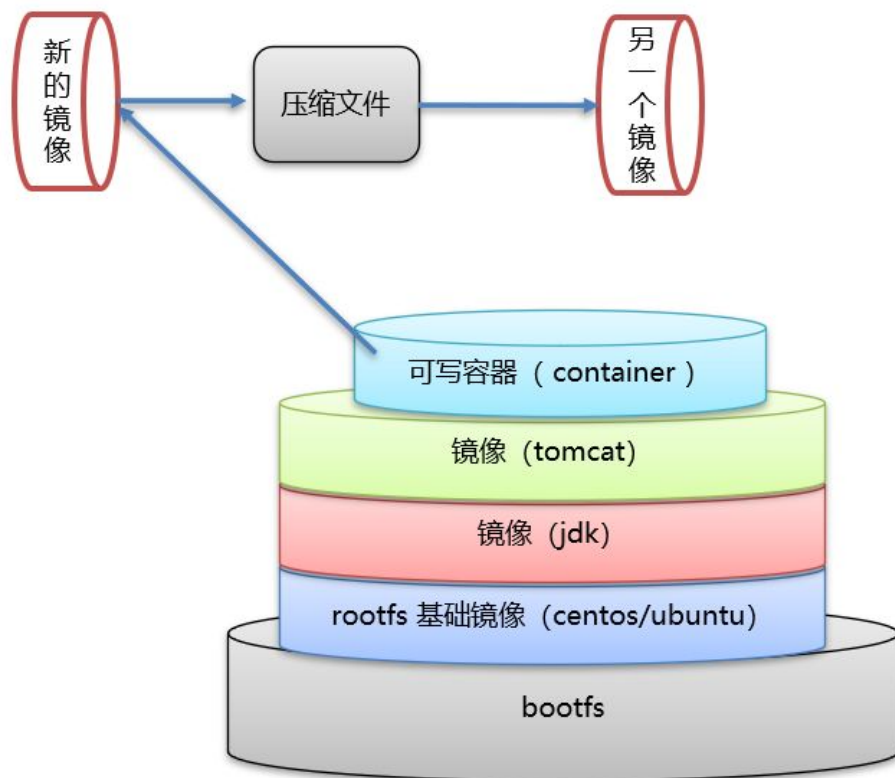# 12、DockerFile脚本文件编写及构建自己的centos镜像

0、拉取的官方原生的centos 镜像（rootfs基础镜像）

（1）可以看到运行镜像并同时进入容器时，原生镜像的工作目录默认是根目录/，因为原生镜像在通过Dockerfile文件构建时，并没有配置WORKDIR命令

（2）原生centos镜像不带vim和ifconfig命令的

```
[root@kuangshen ~]# docker images
REPOSITORY          TAG       IMAGE ID        CREATED            SIZE
kuangshen/centos    1.0       5d04f189a434    About an hour ago  237MB
mysql               5.7       e73346bdf465    33 hours ago       448MB
nginx               latest    602e111c06b6    3 weeks ago        127MB
centos              latest    470671670cac    3 months ago       237MB
[root@kuangshen ~]# docker run -it centos
[root@c7f73ce9bfa7 /]# pwd
/
[root@c7f73ce9bfa7 /]# vim
bash: vim: command not found
[root@c7f73ce9bfa7 /]# ifconfig
bash: ifconfig: command not found
[root@c7f73ce9bfa7 /]# exit
exit
[root@kuangshen ~]#
```

1、制作一个自己的centos镜像，包含了vim,net-tools的centos镜像（基于原生centos镜像）

（1）编写dockerfile文件mydockerfile-centos

- 注意：如果文件名创建为DockerFile，和官方默认的命名一样，则docker build时会自动寻找这个文件，就不用-f指定了，这里是自定义了文件名为mydockerfile-centos，所以需要-f指定mydockerfile-centos文件路径

> FROM：基于原生镜像构建新镜像
>
> WORKDIR：运行镜像并进入容器内部时，会切换到此目录
>
> RUN：docker build构建镜像时需要运行的命令
>
> EXPOSE：对外暴露的访问端口
>
> CMD：运行镜像时要运行的命令，每行CMD指令都会被执行，但一行CMD中有多个指令，仅执行最后一个指令；
>
> ENV：添加一个环境变量，键值对的形式，类似window的系统环境变量配置（变量名：MYPATH，变量值：/usr/local），后面的命令可以通过$MYPATH引用

```
[root@kuangshen dockerfile]# ls
[root@kuangshen dockerfile]# vim mydockerfile-centos
[root@kuangshen dockerfile]# cat mydockerfile-centos
FROM centos
MAINTAINER kuangshen<24736743@qq.com>

ENV MYPATH /usr/local
WORKDIR $MYPATH

RUN yum -y install vim
RUN yum -y install net-tools

EXPOSE 80

CMD echo $MYPATH
CMD echo "----end----"
CMD /bin/bash

[root@kuangshen dockerfile]#
```

（2）通过docker build命令来执行此Dockerfile文件，进行构建centos镜像

- docker build -f dockerfile文件的路径 -t 镜像名:[tag]

```
[root@kuangshen dockerfile]# docker build -f mydockerfile-centos -t mycentos:0.1 .
Sending build context to Docker daemon   2.048kB
Step 1/10 : FROM centos                           -f 指定dockerfile文件路径
 ---> 470671670cac
Step 2/10 : MAINTAINER kuangshen<24736743@qq.com>   -t 指定要构建成的镜像名
 ---> Running in f656282880c7
Removing intermediate container f656282880c7         点 当前路径
 ---> dd49e297cf3f
Step 3/10 : ENV MYPATH /usr/local
 ---> Running in 7636c3caaf80
Removing intermediate container 7636c3caaf80
 ---> 040660792d53
Step 4/10 : WORKDIR $MYPATH        构建步骤
 ---> Running in b28e291e58b8
Removing intermediate container b28e291e58b8
 ---> 4ac051612f7a
Step 5/10 : RUN yum -y install vim
 ---> Running in 929d1bd0c540
CentOS-8 - AppStream                    5.3 MB/s | 7.0 MB     00:01
CentOS-8 - Base                         488 kB/s | 2.2 MB     00:04
CentOS-8 - Extras                       4.8 kB/s | 5.9 kB     00:01
Dependencies resolved.
================================================================================
 Package          Arch       Version              Repository      Size
================================================================================
Installing:
 vim-enhanced     x86_64     2:8.0.1763-13.el8     AppStream       1.4 M
Installing dependencies:
 gpm-libs         x86_64     1.20.7-15.el8         AppStream       39 k
 vim-common       x86_64     2:8.0.1763-13.el8     AppStream       6.3 M
 vim-filesystem   noarch     2:8.0.1763-13.el8     AppStream       48 k
 which            x86_64     2.21-10.el8           BaseOS          49 k
```

```
Transaction Summary
================================================================================
Install  1 Package

Total download size: 323 k
Installed size: 1.0 M
Downloading Packages:
net-tools-2.0-0.51.20160912git.el8.x86_64.rpm   670 kB/s | 323 kB     00:00
--------------------------------------------------------------------------------
Total                                           313 kB/s | 323 kB     00:01
```

```
Running transaction check
Transaction check succeeded.
Running transaction test
Transaction test succeeded.
Running transaction
  Preparing        :                                              1/1
  Installing       : net-tools-2.0-0.51.20160912git.el8.x86_64    1/1
  Running scriptlet: net-tools-2.0-0.51.20160912git.el8.x86_64    1/1
  Verifying        : net-tools-2.0-0.51.20160912git.el8.x86_64    1/1

Installed:
  net-tools-2.0-0.51.20160912git.el8.x86_64

Complete!
Removing intermediate container ba7145a1d1c2
 ---> 9c313a823a7a
Step 7/10 : EXPOSE 80
 ---> Running in 54932205701f
Removing intermediate container 54932205701f
 ---> adcc54d79a7d
Step 8/10 : CMD echo $MYPATH
 ---> Running in 0a85b073cb16
Removing intermediate container 0a85b073cb16
 ---> 33e135ffad58
Step 9/10 : CMD echo "----end----"
 ---> Running in 9a210db09b33
Removing intermediate container 9a210db09b33
 ---> 90d92de7ef5b
Step 10/10 : CMD /bin/bash
 ---> Running in 90d185b275db
Removing intermediate container 90d185b275db
 ---> e2bd75cfe070
Successfully built e2bd75cfe070
Successfully tagged mycentos:0.1
[root@kuangshen dockerfile]#
```

（3）运行镜像，并进入容器内部

- docker images先查看下构建好的镜像

- 运行镜像时同时进入容器内部，默认会进入通过dockerfile文件构建镜像时WORKDIR命令配置的工作目录：/usr/local

- ifconfig和vim命令可以使用了（在基于原生基础镜像centos上进行构建了新的我自己的centos镜像，新镜像的安装了vim，net-tools）

```
[root@kuangshen dockerfile]# docker images
REPOSITORY           TAG          IMAGE ID         CREATED              SIZE
mycentos             0.1          e2bd75cfe070     About a minute ago   321MB
kuangshen/centos     1.0          5d04f189a434     About an hour ago    237MB
mysql                5.7          e73346bdf465     33 hours ago         448MB
nginx                latest       602e111c06b6     3 weeks ago          127MB
centos               latest       470671670cac     3 months ago         237MB
[root@kuangshen dockerfile]# docker run -it mycentos:0.1
[root@53e421b6f2a5 local]# pwd
/usr/local
[root@53e421b6f2a5 local]# ifconfig
eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
        inet 172.18.0.2  netmask 255.255.0.0  broadcast 172.18.255.255
        ether 02:42:ac:12:00:02  txqueuelen 0  (Ethernet)
        RX packets 0  bytes 0 (0.0 B)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 0  bytes 0 (0.0 B)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING>  mtu 65536
        inet 127.0.0.1  netmask 255.0.0.0
        loop  txqueuelen 1000  (Local Loopback)
        RX packets 0  bytes 0 (0.0 B)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 0  bytes 0 (0.0 B)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0

[root@53e421b6f2a5 local]# vim test
[root@53e421b6f2a5 local]#
```

（4）查看镜像的每一步构建历史

- docker history 镜像名或IMAGEID

- 可以看出，每一步构建都是一层镜像，有对应的镜像ID，所有构建步骤构成一个完整的mycentos:0.1镜像

```
[root@kuangshen dockerfile]# docker images
REPOSITORY          TAG                 IMAGE ID            CREATED             SIZE
mycentos            0.1                 e2bd75cfe070        4 minutes ago       321MB
kuangshen/centos    1.0                 5d04f189a434        About an hour ago   237MB
mysql               5.7                 e73346bdf465        33 hours ago        448MB
nginx               latest              602e111c06b6        3 weeks ago         127MB
centos              latest              470671670cac        3 months ago        237MB
[root@kuangshen dockerfile]# docker history e2bd75cfe070
IMAGE               CREATED             CREATED BY                                      SIZE                COMMENT
e2bd75cfe070        4 minutes ago       /bin/sh -c #(nop)  CMD ["/bin/sh" "-c" "/bin…   0B
90d92de7ef5b        4 minutes ago       /bin/sh -c #(nop)  CMD ["/bin/sh" "-c" "echo…   0B
33e135ffad58        4 minutes ago       /bin/sh -c #(nop)  CMD ["/bin/sh" "-c" "echo…   0B
adcc54d79a7d        4 minutes ago       /bin/sh -c #(nop)  EXPOSE 80                     0B
9c313a823a7a        4 minutes ago       /bin/sh -c yum -y install net-tools             24MB
c4d9183ad346        4 minutes ago       /bin/sh -c yum -y install vim                   59.8MB
4ac051612f7a        5 minutes ago       /bin/sh -c #(nop)  WORKDIR /usr/local           0B
040660792d53        5 minutes ago       /bin/sh -c #(nop)  ENV MYPATH=/usr/local        0B
dd49e297cf3f        5 minutes ago       /bin/sh -c #(nop)  MAINTAINER kuangshen<2473…   0B
470671670cac        3 months ago        /bin/sh -c #(nop)  CMD ["/bin/bash"]            0B
<missing>           3 months ago        /bin/sh -c #(nop)  LABEL org.label-schema.sc…   0B
<missing>           4 months ago        /bin/sh -c #(nop) ADD file:aa54047c80ba30064…   237MB
[root@kuangshen dockerfile]#
```