

贵州大学 计算机科学与技术学院 实验报告

院（系）名称	示范性软件学院	班级	软工 206	课程名称	Linux 系统
实验名称	实验一	日期	9 月 18 日	指导教师	王老师
学号、姓名	2000770081 秦小龙	成绩(10 分制):	批改日期:		

1. 实验名称

Docker+LNMP 实现个人博客

2. 实验目的

熟悉 Linux 下主流的 WEB 服务技术。

2. 内容（原理、方法）

安装 docker, 使用 docker 的 mysql 和 wordpress 镜像; 启动、配置 mysql 和 wordpress 镜像; 配置 wordpress 的 mysql 数据库。

3. 结果、分析与建议

- 环境准备

禁止 SELinux

```
[root@hadoop100 ~]# sestatus
SELinux status:                enabled
SELinuxfs mount:              /sys/fs/selinux
SELinux root directory:       /etc/selinux
Loaded policy name:            targeted
Current mode:                  enforcing
Mode from config file:         enforcing
Policy MLS status:             enabled
Policy deny_unknown status:    allowed
Max kernel policy version:     31
[root@hadoop100 ~]# setenforce 0
[root@hadoop100 ~]# sestatus
SELinux status:                enabled
SELinuxfs mount:              /sys/fs/selinux
SELinux root directory:       /etc/selinux
Loaded policy name:            targeted
Current mode:                  permissive
Mode from config file:         enforcing
Policy MLS status:             enabled
Policy deny_unknown status:    allowed
Max kernel policy version:     31
```

关闭防火墙

```
[root@hadoop100 ~]# systemctl stop firewalld
[root@hadoop100 ~]# systemctl status firewalld
● firewalld.service - firewalld - dynamic firewall daemon
   Loaded: loaded (/usr/lib/systemd/system/firewalld.service; enabled; vendor preset: enabled)
   Active: inactive (dead) since 日 2022-11-27 09:19:13 CST; 10s ago
     Docs: man:firewalld(1)
   Process: 790 ExecStart=/usr/sbin/firewalld --nofork --nopid $FIREWALLD_ARGS (code=exited, status=0/SUCCESS)
   Main PID: 790 (code=exited, status=0/SUCCESS)

11月 27 08:59:41 hadoop100 systemd[1]: Starting firewalld - dynamic firewall daemon...
11月 27 08:59:42 hadoop100 systemd[1]: Started firewalld - dynamic firewall daemon.
11月 27 08:59:43 hadoop100 firewalld[790]: WARNING: AllowZoneDrifting is enabled. This is consid...ow.
11月 27 09:19:11 hadoop100 systemd[1]: Stopping firewalld - dynamic firewall daemon...
11月 27 09:19:13 hadoop100 systemd[1]: Stopped firewalld - dynamic firewall daemon.
Hint: Some lines were ellipsized, use -l to show in full.
[root@hadoop100 ~]#
```

禁止 firewall 开机启动

```
[root@hadoop100 ~]# systemctl disable firewalld.service
Removed symlink /etc/systemd/system/multi-user.target.wants/firewalld.service.
Removed symlink /etc/systemd/system/dbus-org.fedoraproject.FirewallD1.service.
[root@hadoop100 ~]#
```

更新 yum

```
[root@hadoop100 ~]# yum update
```

```
xorg-x11-drv-ati.x86_64 0:19.0.1-3.el7_7
xorg-x11-server-Xorg.x86_64 0:1.20.4-18.el7_9
xorg-x11-server-common.x86_64 0:1.20.4-18.el7_9
xz.x86_64 0:5.2.2-2.el7_9
xz-libs.x86_64 0:5.2.2-2.el7_9
zenity.x86_64 0:3.28.1-2.el7_9
```

完毕！

```
[root@hadoop100 ~]#
```

- 安装 docker

移除 docker 旧版本

```
[root@hadoop100 ~]# yum remove docker docker-common docker-selinux docker-engine
已加载插件：fastestmirror, langpacks
参数 docker 没有匹配
参数 docker-common 没有匹配
参数 docker-selinux 没有匹配
参数 docker-engine 没有匹配
不删除任何软件包
[root@hadoop100 ~]#
```

安装 yum 包

```
[root@hadoop100 ~]# yum install -y yum-utils device-mapper-persistent-data lvm2
已加载插件：fastestmirror, langpacks
Loading mirror speeds from cached hostfile
* base: mirrors.bfsu.edu.cn
* epel: mirrors.bfsu.edu.cn
* extras: mirrors.bfsu.edu.cn
* updates: mirrors.bfsu.edu.cn
软件包 yum-utils-1.1.31-54.el7_8.noarch 已安装并且是最新版本
软件包 device-mapper-persistent-data-0.8.5-3.el7_9.2.x86_64 已安装并且是最新版本
软件包 7:lvm2-2.02.187-6.el7_9.5.x86_64 已安装并且是最新版本
无须任何处理
[root@hadoop100 ~]#
```

```
[root@hadoop100 ~]# yum install docker
```

```
python-dmidecode.x86_64 0:3.12.2-4.el7
python-pytoml.noarch 0:0.1.14-1.git7dea353.el7
python-syspurpose.x86_64 0:1.24.51-1.el7.centos
slirp4netns.x86_64 0:0.4.3-4.el7_8
subscription-manager.x86_64 0:1.24.51-1.el7.centos
subscription-manager-rhsm.x86_64 0:1.24.51-1.el7.centos
subscription-manager-rhsm-certificates.x86_64 0:1.24.51-1.el7.centos
```

完毕！

启动并加入开机启动

```
[root@hadoop100 ~]# systemctl start docker
[root@hadoop100 ~]# systemctl enable docker
Created symlink from /etc/systemd/system/multi-user.target.wants/docker.service to /usr/lib/systemd/system/docker.service.
[root@hadoop100 ~]# docker version
Client:
 Version:      1.13.1
 API version:  1.26
 Package version: docker-1.13.1-209.git7d71120.el7.centos.x86_64
 Go version:   go1.10.3
 Git commit:   7d71120/1.13.1
 Built:        Wed Mar  2 15:25:43 2022
 OS/Arch:      linux/amd64

Server:
 Version:      1.13.1
 API version:  1.26 (minimum version 1.12)
 Package version: docker-1.13.1-209.git7d71120.el7.centos.x86_64
 Go version:   go1.10.3
 Git commit:   7d71120/1.13.1
 Built:        Wed Mar  2 15:25:43 2022
 OS/Arch:      linux/amd64
 Experimental: false
[root@hadoop100 ~]#
```

拉取 mysql, wordpress 的 docker 镜像

```
[root@hadoop100 ~]# docker pull wordpress
Using default tag: latest
Trying to pull repository docker.io/library/wordpress ...
latest: Pulling from docker.io/library/wordpress
a603fa5e3b41: Pull complete
c428f1a49423: Pull complete
156740b07ef8: Pull complete
fb5a4c8af82f: Pull complete
25f85b498fd5: Pull complete
9b233e420ac7: Pull complete
fe42347c4ecf: Pull complete
d14eb2ed1e17: Pull complete
66d98f73acb6: Pull complete
d2c43c5efbc8: Pull complete
ab590b48ea47: Pull complete
80692ae2d067: Pull complete
05e465aaa99a: Pull complete
5e1d260f5864: Pull complete
1f1b92fclaf4: Pull complete
ef98b4d7e310: Pull complete
b8532900ff77: Pull complete
34541aa160dd: Pull complete
179671110bb5: Pull complete
c75ef74dd73f: Pull complete
df68d832c77c: Pull complete
Digest: sha256:7e46cf3373751b6d62b7a0fc3a7d6686f641a34a2a0eb18947da5375c55fd009
Status: Downloaded newer image for docker.io/wordpress:latest
[root@hadoop100 ~]#
```

```
[root@hadoop100 ~]# docker pull mysql
Using default tag: latest
Trying to pull repository docker.io/library/mysql ...
latest: Pulling from docker.io/library/mysql
0bb5c0c24818: Pull complete
cbb3106fbb5a: Pull complete
550536ae1d5e: Pull complete
33f98928796e: Pull complete
a341087cfff1: Pull complete
0e26ac5b33f6: Pull complete
c883b83a7112: Pull complete
873af5c876c6: Pull complete
8fe8ebd061d5: Pull complete
7ac2553cf6b4: Pull complete
ad655e218e12: Pull complete
Digest: sha256:96439dd0d8d085cd90c8001be2c9dde07b8a68b472bd20efcbe3df78cff66492
Status: Downloaded newer image for docker.io/mysql:latest
[root@hadoop100 ~]#
```

- 启动 mysql 和 wordpress

运行 mysql

```
[root@hadoop100 ~]# docker images
REPOSITORY          TAG                 IMAGE ID            CREATED             SIZE
docker.io/wordpress  latest             1730fea0ae8e       10 days ago        612 MB
docker.io/mysql       latest             3842e9cdfd2        10 days ago        538 MB
[root@hadoop100 ~]# docker run --name=mysql -it -p 3306:3306 -e MYSQL_ROOT_PASSWORD=22222 -d mysql
3ff9639676f59c3ed3f808507903485a8ce086739cb2540d4bd7957df318935f
[root@hadoop100 ~]# docker ps
CONTAINER ID        IMAGE               COMMAND             CREATED             STATUS
PORTS              NAMES
3ff9639676f5       mysql              "docker-entrypoint..." 14 seconds ago     Up 13 seconds
0.0.0.0:3306->3306/tcp, 33060/tcp    mysql
```

```
[root@hadoop100 ~]# docker logs mysql
2022-11-27 01:49:18400:00 [Note] [Entrypoint]: Entrypoint script for MySQL Server 8.0.31-1.el8 started.
2022-11-27 01:49:19400:00 [Note] [Entrypoint]: Switching to dedicated user 'mysql'
2022-11-27 01:49:19400:00 [Note] [Entrypoint]: Entrypoint script for MySQL Server 8.0.31-1.el8 started.
2022-11-27 01:49:19400:00 [Note] [Entrypoint]: Initializing database files
2022-11-27T01:49:19.325438Z 0 [Warning] [MY-011068] [Server] The syntax '--skip-host-cache' is deprecated and will be removed in a future release. Please use SET GLOBAL host_cache_size=0 instead.
2022-11-27T01:49:19.325615Z 0 [System] [MY-013169] [Server] /usr/sbin/mysqld (mysqld 8.0.31) initializing of server in progress as process 81
2022-11-27T01:49:19.338018Z 1 [System] [MY-013576] [InnoDB] InnoDB initialization has started.
2022-11-27T01:49:19.879835Z 1 [System] [MY-013577] [InnoDB] InnoDB initialization has ended.
2022-11-27T01:49:21.737648Z 6 [Warning] [MY-010453] [Server] root@localhost is created with an empty password
```

进入 mysql 容器

```
[root@hadoop100 ~]# docker exec -it mysql /bin/bash
bash-4.4# mysql -u root -p
Enter password:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 8
Server version: 8.0.31 MySQL Community Server - GPL

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owners.

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

mysql> █
```

创建数据库

```
mysql> create database wordpress;
Query OK, 1 row affected (0.00 sec)

mysql> use wordpress;
Database changed
mysql> grant all on *.* to 'root'@'%';
Query OK, 0 rows affected (0.00 sec)

mysql> alter user 'root'@'localhost' identified by '22222' password expire never;
Query OK, 0 rows affected (0.00 sec)
```

```
mysql> alter user 'root'@'%' identified with mysql_native_password by '22222';
Query OK, 0 rows affected (0.01 sec)

mysql> flush privileges;
Query OK, 0 rows affected (0.00 sec)

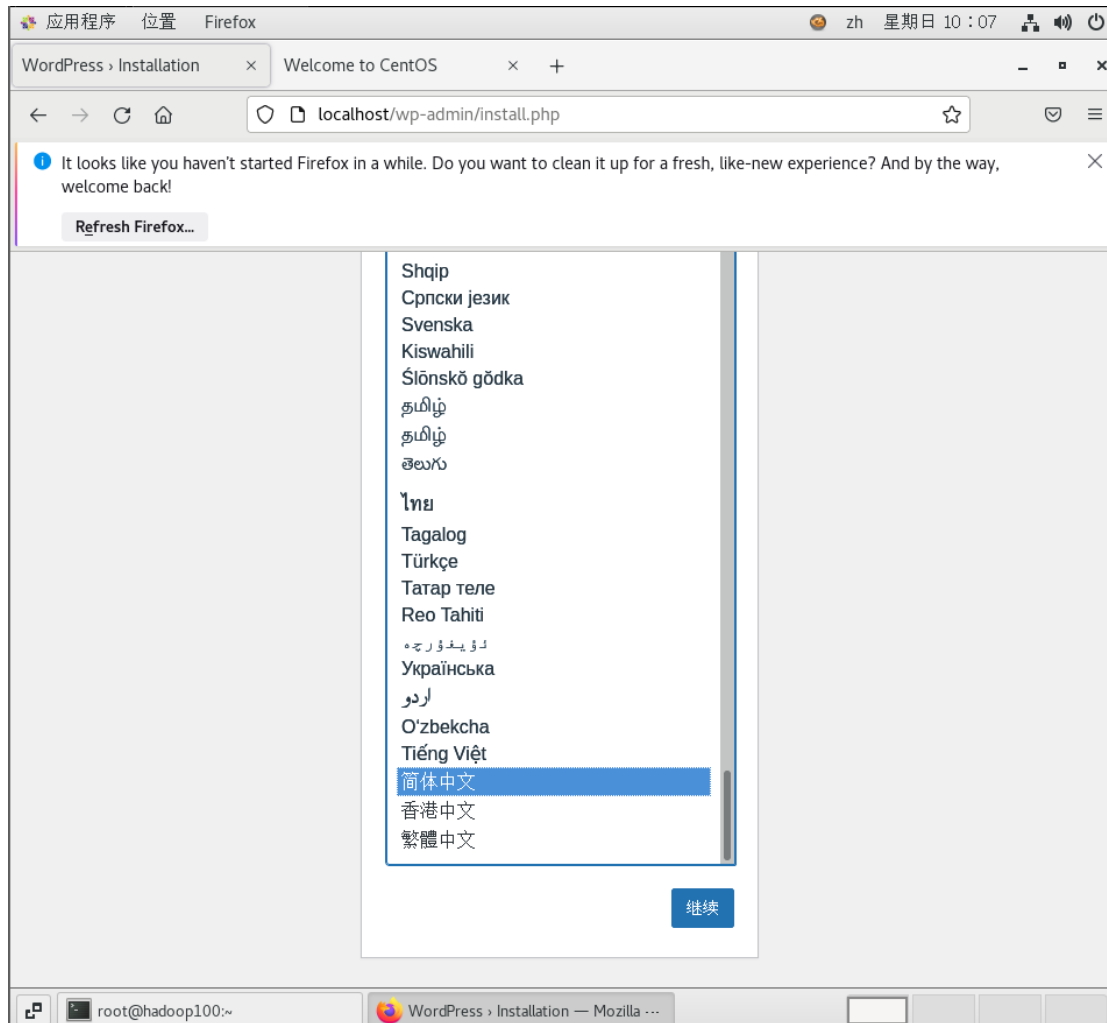
mysql> quit
Bye
bash-4.4# █
```

运行 wordpress

```
[root@hadoop100 ~]# docker run --name wordpress --link mysql:mysql -p 80:80 -v /var/www/html:/var/www/html -e WORDPRESS_DB_HOST=mysql -e WORDPRESS_DB_USER=root -e WORDPRESS_DB_PASSWORD=22222 -e WORDPRESS_DB_NAME=wordpress -d wordpress
19b341d0a328a67ad2aa74239bc55e09e1e583aa13db9c319919abffd0d00d23
[root@hadoop100 ~]#
```

- 配置 wordpress 数据库

在浏览器上访问 localhost，配置 wordpress 的 mysql 数据库



localhost/wp-admin/install.php?step=1

欢迎使用著名的WordPress五分钟安装程序！请简单地填写下面的表单，来开始使用这个世界上最具扩展性、最强大的个人信息发布平台。

需要信息

请填写以下信息：无需担心填错，您以后可以随时更改这些设置。

站点标题

my homepage

用户名

qxl

用户名只能含有字母、数字、空格、下划线、连字符、句号和“@”符号。

密码

22222

Very weak

隐藏

重要：

您将需要此密码来登录，请将其保存在安全的位置。

确认密码

☒ 确认使用弱密码

您的电子邮箱地址

1572866163@qq.com

请仔细检查电子邮箱地址后再继续。

对搜索引擎的可见性

☒ 建议搜索引擎不索引本站点

搜索引擎将本着自觉自愿的原则对待WordPress提出的请求。并不是所有搜索引擎都会遵守这类请求。

安装WordPress

localhost/wp-admin/install.php?step=2



成功！

WordPress安装完成。谢谢！

用户名

qxl

密码

您选择的密码。

登录



```

[root@hadoop100 ~]# docker ps
CONTAINER ID   IMAGE      COMMAND                  CREATED        STATUS        PORTS                    NAMES
19b341d0a328   wordpress  "docker-entrypoint..." 10 minutes ago Up 10 minutes 0.0.0.0:80->80/tcp        wordpress
3ff9639676f5   mysql     "docker-entrypoint..." 26 minutes ago Up 26 minutes 0.0.0.0:3306->3306/tcp, 33060/tcp mysql

[root@hadoop100 ~]# docker exec -it 3ff9639676f5 bash
bash-4.4# mysql -u root -p
Enter password:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 32
Server version: 8.0.31 MySQL Community Server - GPL

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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>

```

```

mysql> show tables;
+-----+
| Tables_in_wordpress |
+-----+
| wp_commentmeta      |
| wp_comments         |
| wp_links            |
| wp_options          |
| wp_postmeta         |
| wp_posts            |
| wp_term_relationships|
| wp_term_taxonomy    |
| wp_termmeta         |
| wp_terms            |
| wp_usermeta         |
| wp_users            |
+-----+
12 rows in set (0.00 sec)

```

4. 附录(如源程序)
源码如上截图