

SYSTEM ADMINISTRATION LAB TASK PART-III

```
(base) ammad@ammad-HP-EliteBook-840-G1:~$ sudo apt install docker.io
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following packages were automatically installed and are no longer required:
  gir1.2-geocodeglib-1.0 libfwup1 liblvm8 libreadline5 linux-headers-5.3.0-40
  linux-headers-5.3.0-40-generic linux-image-5.3.0-40-generic
  linux-modules-5.3.0-40-generic linux-modules-extra-5.3.0-40-generic
  ubuntu-web-launchers
Use 'sudo apt autoremove' to remove them.
The following additional packages will be installed:
  bridge-utils cgroupfs-mount containerd git git-man liberror-perl pigz runc
  ubuntu-fan
Suggested packages:
  aufs-tools btrfs-progs debootstrap docker-doc rinse zfs-fuse | zfsutils
  git-daemon-run | git-daemon-sysvinit git-doc git-el git-email git-gui gitk
  gitweb git-cvs git-mediawiki git-svn
The following NEW packages will be installed:
  bridge-utils cgroupfs-mount containerd docker.io git git-man liberror-perl
  pigz runc ubuntu-fan
0 upgraded, 10 newly installed, 0 to remove and 115 not upgraded.
Need to get 68.5 MB of archives.
After this operation, 353 MB of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 http://ci.archive.ubuntu.com/ubuntu bionic/universe amd64 pigz amd64 2.4-1 [57.4 kB]
Get:2 http://ci.archive.ubuntu.com/ubuntu bionic/main amd64 bridge-utils amd64 1.5-15ubuntu1 [30.1 kB]
Get:3 http://ci.archive.ubuntu.com/ubuntu bionic/universe amd64 cgroupfs-mount all 1.4 [6,320 B]
Get:4 http://ci.archive.ubuntu.com/ubuntu bionic-updates/universe amd64 runc amd64 1.0.0-rc10-0ubuntu1-18.04.2 [2,000 kB]
7% [4 runc 1,055 kB/2,000 kB 53%]
8% [4 runc 1,250 kB/2,000 kB 63%]
13.9 kB/s 1h 207% [4 ru
5,574 B/s 3h 20min 45s
```

this is the first screenshot where I am issuing the command to install the docker.

```
(base) ammad@ammad-HP-EliteBook-840-G1:~$ sudo systemctl start docker
[sudo] password for ammad:
(base) ammad@ammad-HP-EliteBook-840-G1:~$ enable docker
bash: enable: docker: not a shell builtin
(base) ammad@ammad-HP-EliteBook-840-G1:~$ sudo systemctl enable docker
Created symlink /etc/systemd/system/multi-user.target.wants/docker.service → /lib/systemd/system/docker.service.
(base) ammad@ammad-HP-EliteBook-840-G1:~$
```

In the above screenshot I am issuing the command to start docket services.

```
File Edit View Search Terminal Help
(base) ammad@ammad-HP-EliteBook-840-G1:~$ sudo docker images
REPOSITORY          TAG                 IMAGE ID            CREATED             SIZE
(base) ammad@ammad-HP-EliteBook-840-G1:~$
```

In the above screenshot I am issuing the command to see the docker images, we can see currently there is no any image.

```
(base) ammad@ammad-HP-EliteBook-840-G1:~$ sudo docker pull ubuntu
Using default tag: latest
latest: Pulling from library/ubuntu
d51af753c3d3: Pull complete
fc878cd0a91c: Pull complete
6154df8ff988: Pull complete
fee5db0ff82f: Pull complete
Digest: sha256:747d2dbbaee995098c9792d99bd333c6783ce56150d1b1e333bbceed5c54d7
Status: Downloaded newer image for ubuntu:latest
docker.io/library/ubuntu:latest
(base) ammad@ammad-HP-EliteBook-840-G1:~$
```

In the above screenshot I am issuing the command to download the docker image which is ubuntu. And we can see that it has been downloaded successfully.

```
File Edit View Search Terminal Help
(base) ammad@ammad-HP-EliteBook-840-G1:~$ sudo docker images
REPOSITORY          TAG                 IMAGE ID            CREATED             SIZE
ubuntu              latest             1d622ef86b13       6 days ago         73.9MB
(base) ammad@ammad-HP-EliteBook-840-G1:~$
```

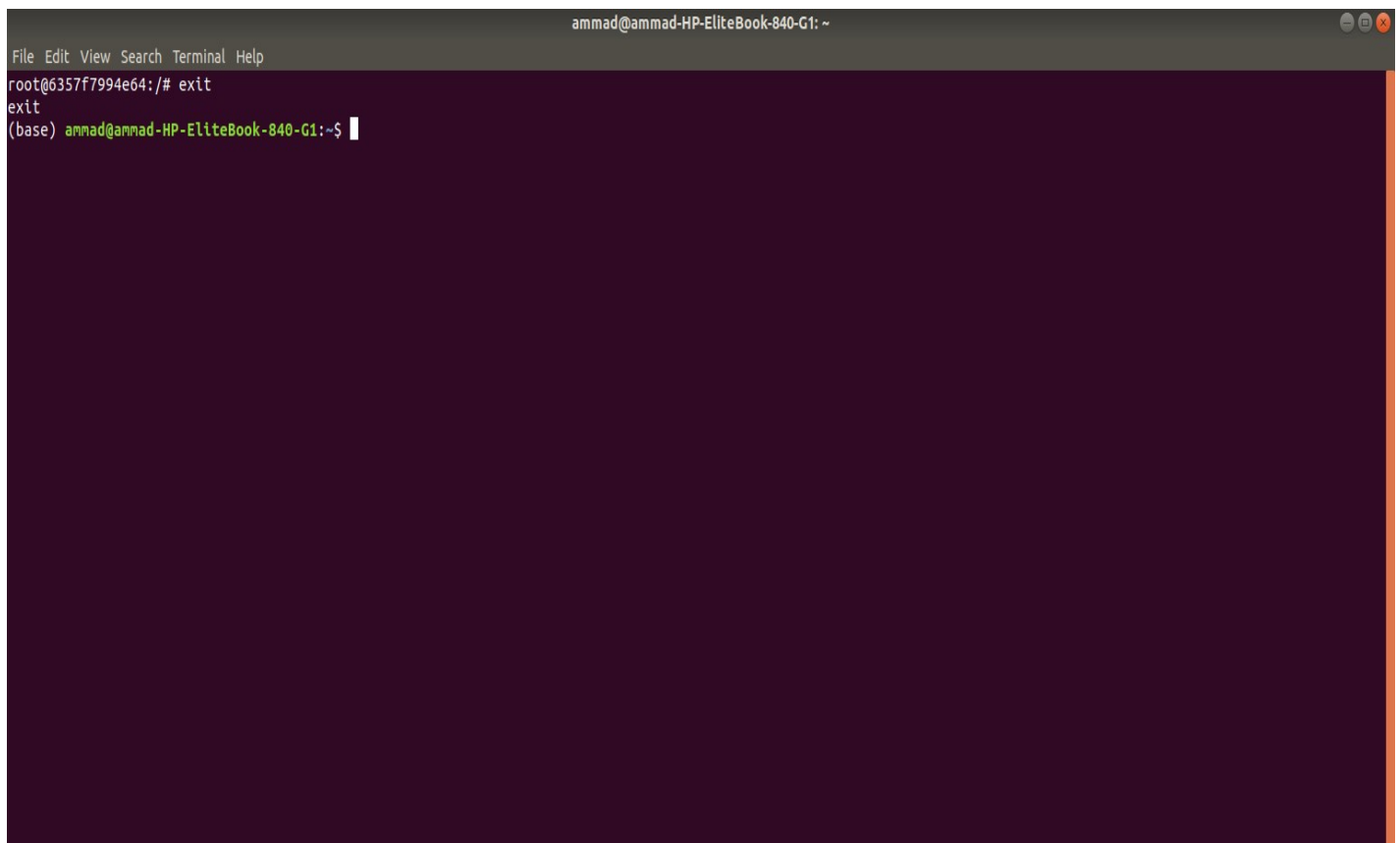
In the above screenshot we can see the newly downloaded ubuntu image.

```
(base) ammad@ammad-HP-EliteBook-840-G1:~$ sudo docker run --name mysql-container -it ubuntu
root@6357f7994e64:/# apt update
Get:1 http://security.ubuntu.com/ubuntu focal-security InRelease [101 kB]
Get:2 http://archive.ubuntu.com/ubuntu focal InRelease [265 kB]
Get:3 http://security.ubuntu.com/ubuntu focal-security/restricted amd64 Packages [2843 B]
Get:4 http://security.ubuntu.com/ubuntu focal-security/universe amd64 Packages [3003 B]
Get:5 http://security.ubuntu.com/ubuntu focal-security/main amd64 Packages [24.7 kB]
Get:6 http://archive.ubuntu.com/ubuntu focal-updates InRelease [97.0 kB]
Get:7 http://archive.ubuntu.com/ubuntu focal-backports InRelease [89.2 kB]
Get:8 http://archive.ubuntu.com/ubuntu focal/universe amd64 Packages [11.3 MB]
38% [8 Packages 3042 kB/11.3 MB 27%] 6644 B/s 24Get:8 ht
tp://archive.ubuntu.com/ubuntu focal/universe amd64 Packages [11.3 MB]
Get:8 http://archive.ubuntu.com/ubuntu focal/universe amd64 Packages [11.3 MB]
Get:9 http://archive.ubuntu.com/ubuntu focal/multiverse amd64 Packages [177 kB]
Get:10 http://archive.ubuntu.com/ubuntu focal/restricted amd64 Packages [33.4 kB]
Get:11 http://archive.ubuntu.com/ubuntu focal/main amd64 Packages [1275 kB]
Get:12 http://archive.ubuntu.com/ubuntu focal-updates/universe amd64 Packages [6363 B]
Get:13 http://archive.ubuntu.com/ubuntu focal-updates/main amd64 Packages [31.9 kB]
Get:14 http://archive.ubuntu.com/ubuntu focal-updates/restricted amd64 Packages [2843 B]
Fetched 7192 kB in 19min 32s (6134 B/s)
Reading package lists... Done
Building dependency tree
Reading state information... Done
All packages are up to date.
root@6357f7994e64:/#
```

In the above screenshot I am issuing the command to create mysql container.

```
root@6357f7994e64: /
File Edit View Search Terminal Help
root@6357f7994e64:/# apt install vim -y
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  alsa-topology-conf alsa-ucm-conf file libasound2 libasound2-data
  libcanberra0 libexpat1 libgpm2 libltdl7 libmagic-mgc libmagic1 libmpdec2
  libogg0 libpython3.8 libpython3.8-minimal libpython3.8-stdlib libreadline8
  libsqlite3-0 libssl1.1 libtdb1 libvorbis0a libvorbisfile3 mime-support
  readline-common sound-theme-freedesktop vim-common vim-runtime xxd xz-utils
Suggested packages:
  libasound2-plugins alsa-utils libcanberra-gtk0 libcanberra-pulse gpm
  readline-doc ctags vim-doc vim-scripts
The following NEW packages will be installed:
  alsa-topology-conf alsa-ucm-conf file libasound2 libasound2-data
  libcanberra0 libexpat1 libgpm2 libltdl7 libmagic-mgc libmagic1 libmpdec2
  libogg0 libpython3.8 libpython3.8-minimal libpython3.8-stdlib libreadline8
  libsqlite3-0 libssl1.1 libtdb1 libvorbis0a libvorbisfile3 mime-support
  readline-common sound-theme-freedesktop vim vim-common vim-runtime xxd
  xz-utils
0 upgraded, 30 newly installed, 0 to remove and 0 not upgraded.
Need to get 14.9 MB of archives.
After this operation, 70.3 MB of additional disk space will be used.
Get:1 http://archive.ubuntu.com/ubuntu focal/main amd64 libmagic-mgc amd64 1:5.38-4 [218 kB]
Get:2 http://archive.ubuntu.com/ubuntu focal/main amd64 libmagic1 amd64 1:5.38-4 [75.9 kB]
Get:3 http://archive.ubuntu.com/ubuntu focal/main amd64 file amd64 1:5.38-4 [23.3 kB]
Get:4 http://archive.ubuntu.com/ubuntu focal/main amd64 libexpat1 amd64 2.2.9-1build1 [73.3 kB]
Get:5 http://archive.ubuntu.com/ubuntu focal/main amd64 libmpdec2 amd64 2.4.2-3 [81.1 kB]
Get:6 http://archive.ubuntu.com/ubuntu focal/main amd64 libssl1.1 amd64 1.1.1f-1ubuntu2 [1318 kB]
Get:7 http://archive.ubuntu.com/ubuntu focal/main amd64 libpython3.8-minimal amd64 3.8.2-1ubuntu1 [705 kB]
Get:8 http://archive.ubuntu.com/ubuntu focal/main amd64 mime-support all 3.64ubuntu1 [30.6 kB]
Get:9 http://archive.ubuntu.com/ubuntu focal/main amd64 readline-common all 8.0-4 [53.5 kB]
Get:10 http://archive.ubuntu.com/ubuntu focal/main amd64 libreadline8 amd64 8.0-4 [131 kB]
Get:11 http://archive.ubuntu.com/ubuntu focal/main amd64 libsqlite3-0 amd64 3.31.1-4 [548 kB]
Get:12 http://archive.ubuntu.com/ubuntu focal/main amd64 libpython3.8-stdlib amd64 3.8.2-1ubuntu1 [1668 kB]
Get:13 http://archive.ubuntu.com/ubuntu focal/main amd64 xxd amd64 2:8.1.2269-1ubuntu5 [50.1 kB]
Get:14 http://archive.ubuntu.com/ubuntu focal/main amd64 vim-common all 2:8.1.2269-1ubuntu5 [85.1 kB]
Get:15 http://archive.ubuntu.com/ubuntu focal/main amd64 xz-utils amd64 5.2.4-1 [82.5 kB]
Get:16 http://archive.ubuntu.com/ubuntu focal/main amd64 alsa-topology-conf all 1.2.2-1 [7364 B]
Get:17 http://archive.ubuntu.com/ubuntu focal/main amd64 alsa-ucm-conf all 1.2.2-1 [20.8 kB]
Get:18 http://archive.ubuntu.com/ubuntu focal/main amd64 libasound2-data all 1.2.2-2.1 [19.0 kB]
Get:19 http://archive.ubuntu.com/ubuntu focal/main amd64 libasound2 amd64 1.2.2-2.1 [328 kB]
Get:20 http://archive.ubuntu.com/ubuntu focal/main amd64 libltdl7 amd64 2.4.6-14 [38.5 kB]
Get:21 http://archive.ubuntu.com/ubuntu focal/main amd64 libtdb1 amd64 1.4.2-3build1 [44.1 kB]
Get:22 http://archive.ubuntu.com/ubuntu focal/main amd64 libogg0 amd64 1.3.4-0ubuntu1 [24.0 kB]
```

In the above screenshot I am issuing the command to install vim in the newly created mysql container.

A screenshot of a terminal window. The title bar at the top reads "ammad@ammad-HP-EliteBook-840-G1: ~". The terminal has a menu bar with "File", "Edit", "View", "Search", "Terminal", and "Help". The command history shows "root@6357f7994e64:/# exit" followed by "exit". The current prompt is "(base) ammad@ammad-HP-EliteBook-840-G1:~\$" with a cursor. The terminal background is dark purple, and the window has a thin orange border on the right side.

```
File Edit View Search Terminal Help
root@6357f7994e64:/# exit
exit
(base) ammad@ammad-HP-EliteBook-840-G1:~$
```

In the above screenshot I exit from the guest operating system and came into the host operating system, which is indicated by the change in the terminal.


```
File Edit View Search Terminal Help
(base) ammad@ammad-HP-EliteBook-840-G1:~$ sudo docker ps -a
[sudo] password for ammad:
CONTAINER ID        IMAGE               COMMAND             CREATED             STATUS              PORTS              NAMES
6357f7994e64        ubuntu             "/bin/bash"        2 hours ago        Exited (0) About a minute ago        mysql-container
(base) ammad@ammad-HP-EliteBook-840-G1:~$
```

In the above screenshot we can see that the mysql-container has been exited

```
(base) ammad@ammad-HP-EliteBook-840-G1:~$ sudo docker start mysql-container
[sudo] password for ammad:
mysql-container
(base) ammad@ammad-HP-EliteBook-840-G1:~$
```

```
File Edit View Search Terminal Help
(ammad@ammad-HP-EliteBook-840-G1: ~)
(base) ammad@ammad-HP-EliteBook-840-G1:~$ sudo docker ps -a
[sudo] password for ammad:
CONTAINER ID        IMAGE               COMMAND             CREATED             STATUS              PORTS              NAMES
6357f7994e64        ubuntu             "/bin/bash"        2 hours ago        Exited (0) About a minute ago                mysql-container
(base) ammad@ammad-HP-EliteBook-840-G1:~$ sudo docker ps -a
CONTAINER ID        IMAGE               COMMAND             CREATED             STATUS              PORTS              NAMES
6357f7994e64        ubuntu             "/bin/bash"        2 hours ago        Up 8 seconds                mysql-container
(base) ammad@ammad-HP-EliteBook-840-G1:~$
```

in the above screenshots as we can see that after getting exit from mysql-container I again start mysql-container and we can clearly see I the second screenshot mysql-container is up from last 8 seconds.

```
ammad@ammad-HP-EliteBook-840-G1: ~  
File Edit View Search Terminal Help  
Every 2.0s: sudo docker ps -a  
ammad-HP-EliteBook-840-G1: Thu Apr 30 03:26:40 2020  


| CONTAINER ID | IMAGE  | COMMAND     | CREATED     | STATUS       | PORTS | NAMES           |
|--------------|--------|-------------|-------------|--------------|-------|-----------------|
| 6357f7994e64 | ubuntu | "/bin/bash" | 2 hours ago | Up 2 minutes |       | mysql-container |


```

In the above screenshot I am issuing the command so that the terminal will update itself once in two seconds so that if some changes happen in the container it will reflect here.

```
root@6357f7994e64: /
File Edit View Search Terminal Help

(base) ammad@ammad-HP-EliteBook-840-G1:~$ sudo docker start mysql-container
[sudo] password for ammad:
mysql-container
(base) ammad@ammad-HP-EliteBook-840-G1:~$ sudo docker exec -it mysql-container bash
root@6357f7994e64: /#
```

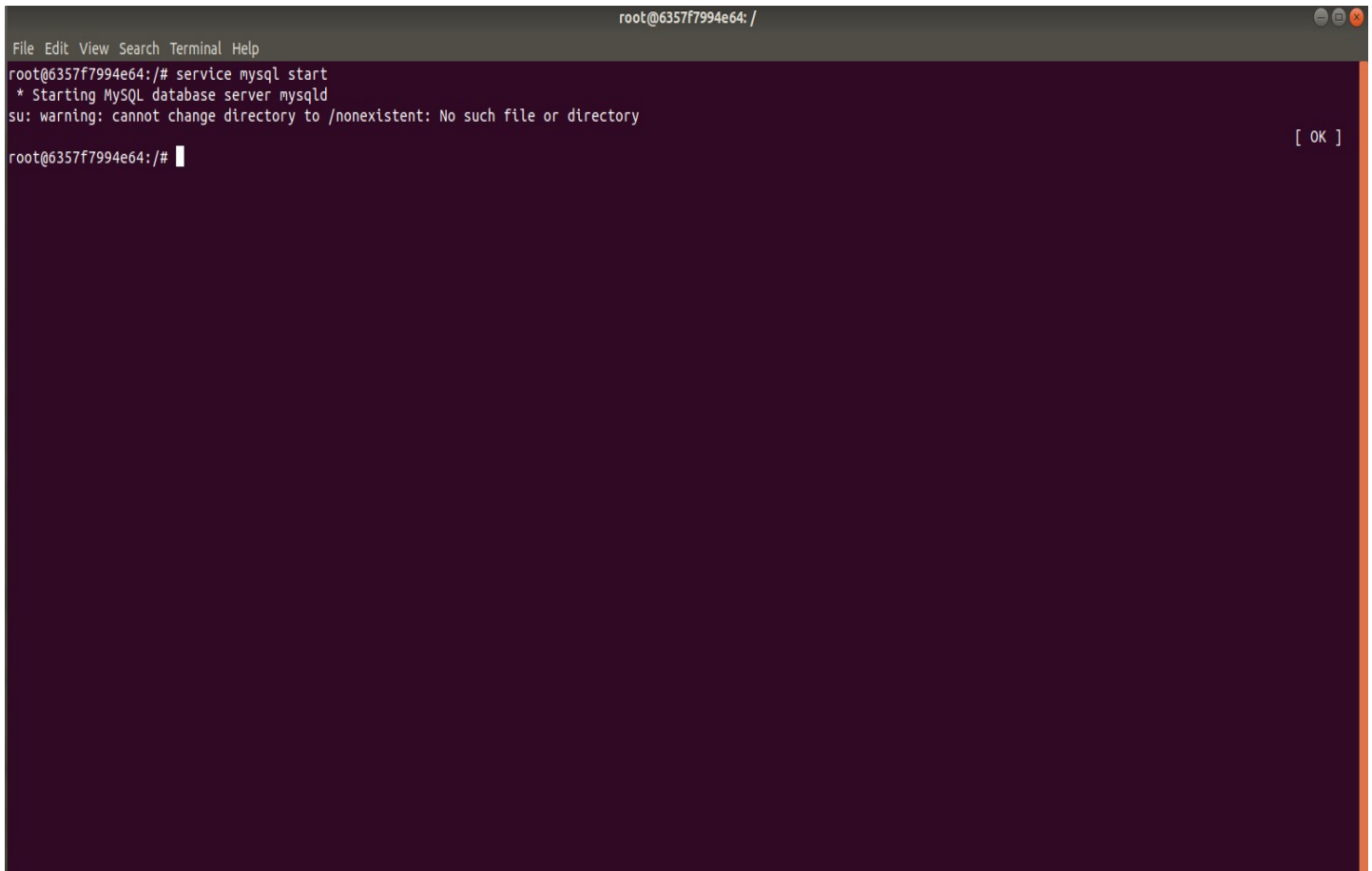
In the above screenshot if I get exit from my guest OS through the above command I can log in again.

```

root@6357f7994e64:/# apt install mysql-server -y
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  libaio1 libbsd0 libcgi-fast-perl libcgi-pm-perl libedit2 libencode-locale-perl libevent-core-2.1-7 libfcgi-perl libgdbm-compat4 libgdbm6 libhtml-parser-perl
  libhtml-tagset-perl libhtml-template-perl libhttp-date-perl libhttp-message-perl libio-html-perl liblwp-mediatypes-perl libmecab2 libnuma1 libperl5.30
  libtimedate-perl liburi-perl mecab-ipadic mecab-ipadic-utf8 mecab-utils mysql-client-8.0 mysql-client-core-8.0 mysql-common mysql-server-8.0 mysql-server-core-8.0
  netbase perl perl-modules-5.30 psmisc
Suggested packages:
  gdbm-l10n libdata-dump-perl libipc-sharedcache-perl libwww-perl mailx tinycat perl-doc libterm-readline-gnu-perl | libterm-readline-perl-perl make libb-debug-perl
  liblocale-codes-perl
The following NEW packages will be installed:
  libaio1 libbsd0 libcgi-fast-perl libcgi-pm-perl libedit2 libencode-locale-perl libevent-core-2.1-7 libfcgi-perl libgdbm-compat4 libgdbm6 libhtml-parser-perl
  libhtml-tagset-perl libhtml-template-perl libhttp-date-perl libhttp-message-perl libio-html-perl liblwp-mediatypes-perl libmecab2 libnuma1 libperl5.30
  libtimedate-perl liburi-perl mecab-ipadic mecab-ipadic-utf8 mecab-utils mysql-client-8.0 mysql-client-core-8.0 mysql-common mysql-server mysql-server-8.0
  mysql-server-core-8.0 netbase perl perl-modules-5.30 psmisc
0 upgraded, 35 newly installed, 0 to remove and 0 not upgraded.
Need to get 32.6 MB/37.3 MB of archives.
After this operation, 293 MB of additional disk space will be used.
Get:1 http://archive.ubuntu.com/ubuntu focal/main amd64 mysql-server-core-8.0 amd64 8.0.19-0ubuntu5 [17.0 MB]
Get:2 http://archive.ubuntu.com/ubuntu focal/main amd64 mysql-server-core-8.0 amd64 8.0.19-0ubuntu5 [17.0 MB]
Get:3 http://archive.ubuntu.com/ubuntu focal/main amd64 perl-modules-5.30 all 5.30.0-9build1 [2737 kB]
Get:4 http://archive.ubuntu.com/ubuntu focal/main amd64 libgdbm6 amd64 1.18.1-5 [27.4 kB]
Get:5 http://archive.ubuntu.com/ubuntu focal/main amd64 libgdbm-compat4 amd64 1.18.1-5 [6244 B]
Get:6 http://archive.ubuntu.com/ubuntu focal/main amd64 libperl5.30 amd64 5.30.0-9build1 [3943 kB]
Get:7 http://archive.ubuntu.com/ubuntu focal/main amd64 libperl5.30 amd64 5.30.0-9build1 [3943 kB]
Get:8 http://archive.ubuntu.com/ubuntu focal/main amd64 perl amd64 5.30.0-9build1 [224 kB]
Get:9 http://archive.ubuntu.com/ubuntu focal/main amd64 psmisc amd64 23.3-1 [53.3 kB]
Get:10 http://archive.ubuntu.com/ubuntu focal/main amd64 mysql-server-8.0 amd64 8.0.19-0ubuntu5 [1215 kB]
Get:11 http://archive.ubuntu.com/ubuntu focal/main amd64 netbase all 6.1 [13.1 kB]
Get:12 http://archive.ubuntu.com/ubuntu focal/main amd64 libhtml-tagset-perl all 3.20-4 [12.5 kB]
Get:13 http://archive.ubuntu.com/ubuntu focal/main amd64 liburi-perl all 1.76-2 [77.5 kB]
Get:14 http://archive.ubuntu.com/ubuntu focal/main amd64 libhtml-parser-perl amd64 3.72-5 [86.3 kB]
Get:15 http://archive.ubuntu.com/ubuntu focal/main amd64 libcgi-pm-perl all 4.46-1 [186 kB]
Get:16 http://archive.ubuntu.com/ubuntu focal/main amd64 libfcgi-perl amd64 0.79-1 [33.1 kB]
Get:17 http://archive.ubuntu.com/ubuntu focal/main amd64 libcgi-fast-perl all 1:2.15-1 [10.5 kB]
Get:18 http://archive.ubuntu.com/ubuntu focal/main amd64 libencode-locale-perl all 1:0.12-1 [12.3 kB]

```

In the above screenshot I am issuing the command to install the mysql server.

A terminal window with a dark purple background and a grey title bar. The title bar contains the text 'root@6357f7994e64: /' and standard window control buttons. The terminal shows the command 'service mysql start' being executed. The output includes a status message '* Starting MySQL database server mysqld' and a warning 'su: warning: cannot change directory to /nonexistent: No such file or directory'. A '[OK]' message is visible on the right side of the terminal. The prompt 'root@6357f7994e64: /# ' is visible at the bottom left.

```
root@6357f7994e64: /  
File Edit View Search Terminal Help  
root@6357f7994e64: /# service mysql start  
* Starting MySQL database server mysqld  
su: warning: cannot change directory to /nonexistent: No such file or directory  
root@6357f7994e64: /# [ OK ]
```

In the above screenshot I am issuing the command to start mysql services.

```
root@6357f7994e64:/# mysql
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 10
Server version: 8.0.19-0ubuntu5 (Ubuntu)

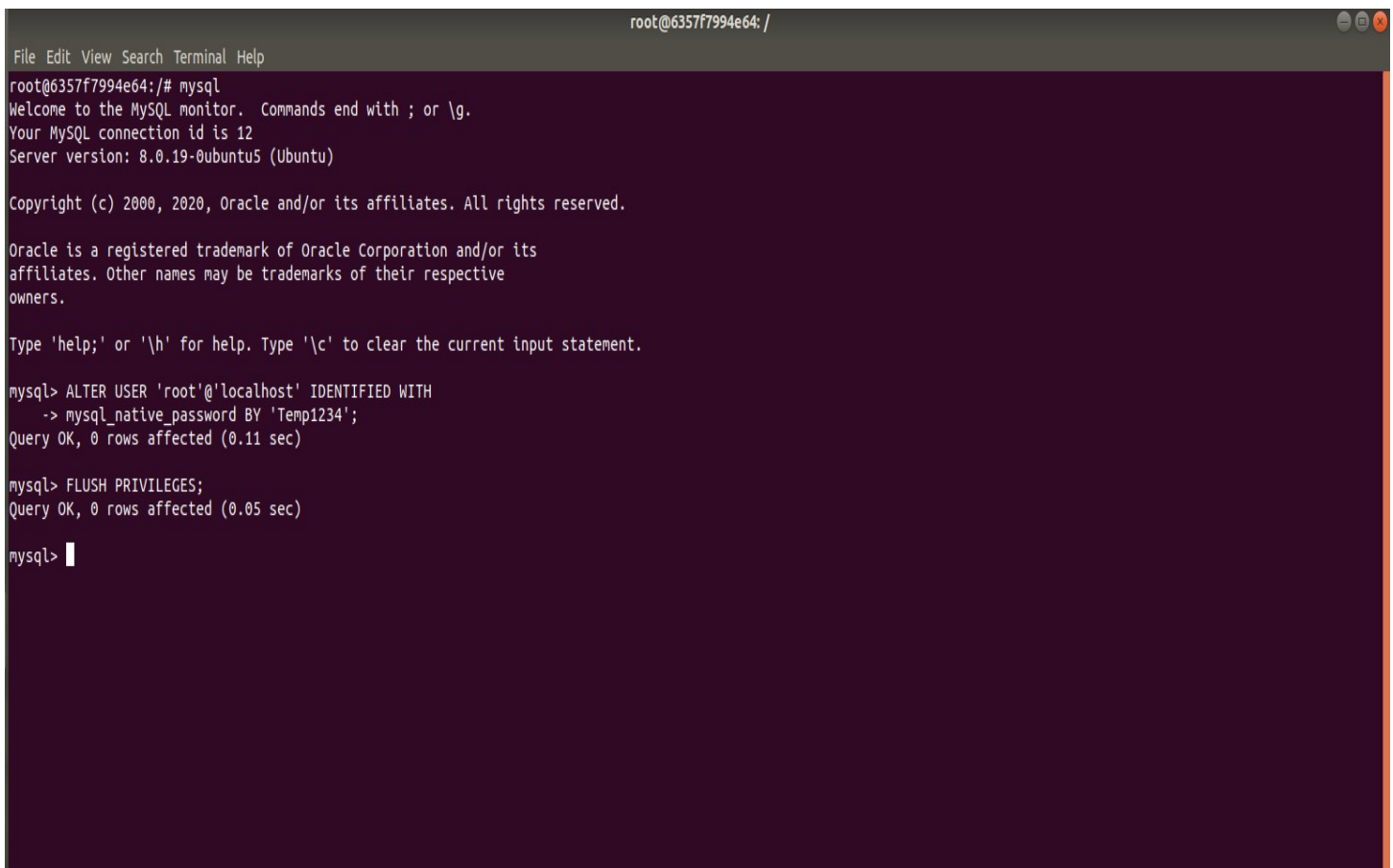
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affiliates. Other names may be trademarks of their respective
owners.

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

mysql> exit
Bye
root@6357f7994e64:/#
```

After the installation of mysql server and starting its services in the above screenshot I can successfully access the mysql.

A screenshot of a terminal window with a dark background and light text. The window title bar at the top shows 'root@6357f7994e64: /' and standard window control buttons. The terminal content shows the user running 'mysql' at the prompt 'root@6357f7994e64:/#'. It displays the MySQL welcome message, version information (8.0.19-0ubuntu5), and copyright notice. The user then enters two SQL commands: 'ALTER USER 'root'@'localhost' IDENTIFIED WITH mysql_native_password BY 'Temp1234';' and 'FLUSH PRIVILEGES;'. Both commands are confirmed as successful with 'Query OK, 0 rows affected' and execution times of 0.11 sec and 0.05 sec respectively. The prompt returns to 'mysql>' with a cursor.

```
root@6357f7994e64: /
File Edit View Search Terminal Help
root@6357f7994e64:/# mysql
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 12
Server version: 8.0.19-0ubuntu5 (Ubuntu)

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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> ALTER USER 'root'@'localhost' IDENTIFIED WITH
-> mysql_native_password BY 'Temp1234';
Query OK, 0 rows affected (0.11 sec)

mysql> FLUSH PRIVILEGES;
Query OK, 0 rows affected (0.05 sec)

mysql> █
```

In the above screenshot I am setting the password to access mysql.


```
root@6357f7994e64: /
File Edit View Search Terminal Help
root@6357f7994e64:/# mysql
ERROR 1045 (28000): Access denied for user 'root'@'localhost' (using password: NO)
root@6357f7994e64:/# mysql -uroot -p
Enter password:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 14
Server version: 8.0.19-0ubuntu5 (Ubuntu)

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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> █
```

In the above screenshot I am accessing mysql services by providing the right password.

```
root@ac14c0225f9e: /
File Edit View Search Terminal Help
logout Log out from a Docker registry
logs Fetch the logs of a container
pause Pause all processes within one or more containers
port List port mappings or a specific mapping for the container
ps List containers
pull Pull an image or a repository from a registry
push Push an image or a repository to a registry
rename Rename a container
restart Restart one or more containers
rm Remove one or more containers
rmi Remove one or more images
run Run a command in a new container
save Save one or more images to a tar archive (streamed to STDOUT by default)

search Search the Docker Hub for images
start Start one or more stopped containers
stats Display a live stream of container(s) resource usage statistics
stop Stop one or more running containers
tag Create a tag TARGET_IMAGE that refers to SOURCE_IMAGE
top Display the running processes of a container
unpause Unpause all processes within one or more containers
update Update configuration of one or more containers
version Show the Docker version information
wait Block until one or more containers stop, then print their exit codes

Run 'docker COMMAND --help' for more information on a command.

(base) ammad@ammad-HP-EliteBook-840-G1:~$ clear

(base) ammad@ammad-HP-EliteBook-840-G1:~$ sudo docker run --name apache-container -
it ubuntu
root@ac14c0225f9e:/#
```

```
ammad@ammad-HP-EliteBook-840-G1: ~
File Edit View Search Terminal Help
Every 2.0s: sudo docker ps -a ammad-HP-EliteBook-840-G1: Thu Apr 30 13:02:54 2020

CONTAINER ID        IMAGE               COMMAND             CREATED             STATUS              PORTS
TUS                 ac14c0225f9e       ubuntu             49 seconds ago     Up                  0.0.0.0:22->22
6357f7994e64       ubuntu             "/bin/bash"        11 hours ago       Up                  0.0.0.0:22->22
10 hours           mysql-container
```

In the above screenshot I am creating a new container named as apache-container. And on the right side we can see that the newly created apache server has been appeared.

```
root@ac14c0225f9e: /
File Edit View Search Terminal Help
root@ac14c0225f9e:/# apt update
Get:1 http://archive.ubuntu.com/ubuntu focal InRelease [265 kB]
Get:2 http://security.ubuntu.com/ubuntu focal-security InRelease [101 kB]
Get:3 http://security.ubuntu.com/ubuntu focal-security/universe amd64 Packages [3003 B]
Get:4 http://security.ubuntu.com/ubuntu focal-security/restricted amd64 Packages [3190 B]
Get:5 http://security.ubuntu.com/ubuntu focal-security/main amd64 Packages [27.0 kB]
Get:6 http://archive.ubuntu.com/ubuntu focal-updates InRelease [97.0 kB]
Get:7 http://archive.ubuntu.com/ubuntu focal-backports InRelease [89.2 kB]
Get:8 http://archive.ubuntu.com/ubuntu focal/universe amd64 Packages [11.3 MB]
Get:9 http://archive.ubuntu.com/ubuntu focal/main amd64 Packages [1275 kB]
Ign:9 http://archive.ubuntu.com/ubuntu focal/main amd64 Packages
Get:10 http://archive.ubuntu.com/ubuntu focal/restricted amd64 Packages [33.4 kB]
Get:11 http://archive.ubuntu.com/ubuntu focal/multiverse amd64 Packages [177 kB]
Get:12 http://archive.ubuntu.com/ubuntu focal-updates/restricted amd64 Packages [3190 B]
Get:13 http://archive.ubuntu.com/ubuntu focal-updates/main amd64 Packages [34.2 kB]
Get:14 http://archive.ubuntu.com/ubuntu focal-updates/universe amd64 Packages [6363 B]
Get:9 http://archive.ubuntu.com/ubuntu focal/main amd64 Packages [1275 kB]
Fetched 13.5 MB in 10min 59s (20.4 kB/s)
Reading package lists... Done
Building dependency tree
Reading state information... Done
All packages are up to date.
root@ac14c0225f9e:/#
```

In the above screenshot I am issuing the command to update the newly created container apache-container.

```

root@ac14c0225f9e: /
File Edit View Search Terminal Help
root@ac14c0225f9e:/# apt install apache2
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  apache2-bin apache2-data apache2-utils ca-certificates file krb5-locales libapr1 libaprutil1 libaprutil1-dbd-sqlite3 libaprutil1-ldap libasn1-8-heimdal libbrotli1
  libcurl4 libexpat1 libgdbm-compat4 libgdbm6 libgssapi-krb5-2 libgssapi3-heimdal libhcrypto4-heimdal libheimbase1-heimdal libheimntlm0-heimdal libhx509-5-heimdal
  libicu66 libjansson4 libk5crypto3 libkeyutils1 libkrb5-26-heimdal libkrb5-3 libkrb5support0 libldap-2.4-2 libldap-common liblua5.2-0 libmagic-mgc libmagic1
  libnghttp2-14 libperl5.30 libpsl5 libroken18-heimdal librtmp1 libsas2-2 libsas2-modules libsas2-modules-db libsqlite3-0 libssh-4 libssl1.1 libwind0-heimdal
  libxml2 mime-support netbase openssl perl perl-modules-5.30 publicsuffix ssl-cert tzdata xz-utils
Suggested packages:
  apache2-doc apache2-suexec-pristine | apache2-suexec-custom www-browser ufw gdbm-1.0n krb5-doc krb5-user libsasl2-modules-gssapi-mit
  | libsasl2-modules-gssapi-heimdal libsasl2-modules-ldap libsasl2-modules-otp libsasl2-modules-sql perl-doc libterm-readline-gnu-perl | libterm-readline-perl-perl
  make libdb-dev-perl liblocale-codes-perl openssl-blacklist
The following NEW packages will be installed:
  apache2 apache2-bin apache2-data apache2-utils ca-certificates file krb5-locales libapr1 libaprutil1 libaprutil1-dbd-sqlite3 libaprutil1-ldap libasn1-8-heimdal
  libbrotli1 libcurl4 libexpat1 libgdbm-compat4 libgdbm6 libgssapi-krb5-2 libgssapi3-heimdal libhcrypto4-heimdal libheimbase1-heimdal libheimntlm0-heimdal
  libhx509-5-heimdal libicu66 libjansson4 libk5crypto3 libkeyutils1 libkrb5-26-heimdal libkrb5-3 libkrb5support0 libldap-2.4-2 libldap-common liblua5.2-0 libmagic-mgc
  libmagic1 libnghttp2-14 libperl5.30 libpsl5 libroken18-heimdal librtmp1 libsas2-2 libsas2-modules libsas2-modules-db libsqlite3-0 libssh-4 libssl1.1
  libwind0-heimdal libxml2 mime-support netbase openssl perl perl-modules-5.30 publicsuffix ssl-cert tzdata xz-utils
0 upgraded, 57 newly installed, 0 to remove and 0 not upgraded.
Need to get 24.1 MB of archives.
After this operation, 117 MB of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 http://archive.ubuntu.com/ubuntu focal/main amd64 perl-modules-5.30 all 5.30.0-9build1 [2737 kB]
Get:2 http://archive.ubuntu.com/ubuntu focal/main amd64 libgdbm6 amd64 1.18.1-5 [27.4 kB]
Get:3 http://archive.ubuntu.com/ubuntu focal/main amd64 libgdbm-compat4 amd64 1.18.1-5 [6244 B]
Get:4 http://archive.ubuntu.com/ubuntu focal/main amd64 libperl5.30 amd64 5.30.0-9build1 [3943 kB]
Get:5 http://archive.ubuntu.com/ubuntu focal/main amd64 perl amd64 5.30.0-9build1 [224 kB]
Get:6 http://archive.ubuntu.com/ubuntu focal/main amd64 libapr1 amd64 1.6.5-1ubuntu1 [91.4 kB]
Get:7 http://archive.ubuntu.com/ubuntu focal/main amd64 libexpat1 amd64 2.2.9-1build1 [73.3 kB]
Get:8 http://archive.ubuntu.com/ubuntu focal/main amd64 libssl1.1 amd64 1.1.1f-1ubuntu2 [1318 kB]
Get:9 http://archive.ubuntu.com/ubuntu focal/main amd64 libaprutil1 amd64 1.6.1-4ubuntu2 [84.7 kB]
Get:10 http://archive.ubuntu.com/ubuntu focal/main amd64 libsqlite3-0 amd64 3.31.1-4 [548 kB]
Get:11 http://archive.ubuntu.com/ubuntu focal/main amd64 libaprutil1-dbd-sqlite3 amd64 1.6.1-4ubuntu2 [10.5 kB]
Get:12 http://archive.ubuntu.com/ubuntu focal/main amd64 libroken18-heimdal amd64 7.7.0+dfsg-1ubuntu1 [41.8 kB]
Get:13 http://archive.ubuntu.com/ubuntu focal/main amd64 libasn1-8-heimdal amd64 7.7.0+dfsg-1ubuntu1 [181 kB]
Get:14 http://archive.ubuntu.com/ubuntu focal/main amd64 libheimbase1-heimdal amd64 7.7.0+dfsg-1ubuntu1 [29.7 kB]
Get:15 http://archive.ubuntu.com/ubuntu focal/main amd64 libhcrypto4-heimdal amd64 7.7.0+dfsg-1ubuntu1 [87.9 kB]
Get:16 http://archive.ubuntu.com/ubuntu focal/main amd64 libwind0-heimdal amd64 7.7.0+dfsg-1ubuntu1 [48.0 kB]
Get:17 http://archive.ubuntu.com/ubuntu focal/main amd64 libhx509-5-heimdal amd64 7.7.0+dfsg-1ubuntu1 [107 kB]
Get:18 http://archive.ubuntu.com/ubuntu focal/main amd64 libkrb5-26-heimdal amd64 7.7.0+dfsg-1ubuntu1 [208 kB]
Get:19 http://archive.ubuntu.com/ubuntu focal/main amd64 libheimntlm0-heimdal amd64 7.7.0+dfsg-1ubuntu1 [15.1 kB]
Get:20 http://archive.ubuntu.com/ubuntu focal/main amd64 libgssapi3-heimdal amd64 7.7.0+dfsg-1ubuntu1 [96.1 kB]
Get:21 http://archive.ubuntu.com/ubuntu focal/main amd64 libsas2-modules-db amd64 2.1.27+dfsg-2 [14.9 kB]
Get:22 http://archive.ubuntu.com/ubuntu focal/main amd64 libsasl2-modules-gssapi-mit amd64 2:1.16.0-3ubuntu1 [10.5 kB]

```

In the above screenshot I am issuing the command to install apache2.

```
root@ac14c0225f9e: /
File Edit View Search Terminal Help
root@ac14c0225f9e:/# apt install vim -y
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  alsa-topology-conf alsa-ucm-conf libasound2 libasound2-data libcanberra0 libgpm2 libltdl7 libmpdec2 libogg0 libpython3.8 libpython3.8-minimal libpython3.8-stdlib
  libreadline8 libtdb1 libvorbis0a libvorbisfile3 readline-common sound-theme-freedesktop vim-common vim-runtime xxd
Suggested packages:
  libasound2-plugins alsa-utils libcanberra-gtk0 libcanberra-pulse gpm readline-doc ctags vim-doc vim-scripts
The following NEW packages will be installed:
  alsa-topology-conf alsa-ucm-conf libasound2 libasound2-data libcanberra0 libgpm2 libltdl7 libmpdec2 libogg0 libpython3.8 libpython3.8-minimal libpython3.8-stdlib
  libreadline8 libtdb1 libvorbis0a libvorbisfile3 readline-common sound-theme-freedesktop vim vim-common vim-runtime xxd
0 upgraded, 22 newly installed, 0 to remove and 0 not upgraded.
Need to get 12.5 MB of archives.
After this operation, 57.8 MB of additional disk space will be used.
Get:1 http://archive.ubuntu.com/ubuntu focal/main amd64 libmpdec2 amd64 2.4.2-3 [81.1 kB]
Get:2 http://archive.ubuntu.com/ubuntu focal/main amd64 libpython3.8-minimal amd64 3.8.2-1ubuntu1 [705 kB]
Get:3 http://archive.ubuntu.com/ubuntu focal/main amd64 readline-common all 8.0-4 [53.5 kB]
Get:4 http://archive.ubuntu.com/ubuntu focal/main amd64 libreadline8 amd64 8.0-4 [131 kB]
Get:5 http://archive.ubuntu.com/ubuntu focal/main amd64 libpython3.8-stdlib amd64 3.8.2-1ubuntu1 [1668 kB]
Get:6 http://archive.ubuntu.com/ubuntu focal/main amd64 xxd amd64 2:8.1.2269-1ubuntu5 [50.1 kB]
Get:7 http://archive.ubuntu.com/ubuntu focal/main amd64 vim-common all 2:8.1.2269-1ubuntu5 [85.1 kB]
Get:8 http://archive.ubuntu.com/ubuntu focal/main amd64 alsa-topology-conf all 1.2.2-1 [7364 B]
Get:9 http://archive.ubuntu.com/ubuntu focal/main amd64 alsa-ucm-conf all 1.2.2-1 [20.8 kB]
Get:10 http://archive.ubuntu.com/ubuntu focal/main amd64 libasound2-data all 1.2.2-2.1 [19.0 kB]
Get:11 http://archive.ubuntu.com/ubuntu focal/main amd64 libasound2 amd64 1.2.2-2.1 [328 kB]
Get:12 http://archive.ubuntu.com/ubuntu focal/main amd64 libltdl7 amd64 2.4.6-14 [38.5 kB]
Get:13 http://archive.ubuntu.com/ubuntu focal/main amd64 libtdb1 amd64 1.4.2-3build1 [44.1 kB]
Get:14 http://archive.ubuntu.com/ubuntu focal/main amd64 libogg0 amd64 1.3.4-0ubuntu1 [24.0 kB]
Get:15 http://archive.ubuntu.com/ubuntu focal/main amd64 libvorbis0a amd64 1.3.6-2ubuntu1 [87.0 kB]
Get:16 http://archive.ubuntu.com/ubuntu focal/main amd64 libvorbisfile3 amd64 1.3.6-2ubuntu1 [16.1 kB]
Get:17 http://archive.ubuntu.com/ubuntu focal/main amd64 sound-theme-freedesktop all 0.8-2ubuntu1 [384 kB]
Get:18 http://archive.ubuntu.com/ubuntu focal/main amd64 libcanberra0 amd64 0.30-7ubuntu1 [38.1 kB]
Get:19 http://archive.ubuntu.com/ubuntu focal/main amd64 libgpm2 amd64 1.20.7-5 [15.1 kB]
Get:20 http://archive.ubuntu.com/ubuntu focal/main amd64 libpython3.8 amd64 3.8.2-1ubuntu1 [1620 kB]
Get:21 http://archive.ubuntu.com/ubuntu focal/main amd64 vim-runtime all 2:8.1.2269-1ubuntu5 [5873 kB]
Get:22 http://archive.ubuntu.com/ubuntu focal/main amd64 vim amd64 2:8.1.2269-1ubuntu5 [1238 kB]
Fetched 12.5 MB in 6min 32s (31.9 kB/s)
debconf: delaying package configuration, since apt-utils is not installed
Selecting previously unselected package libmpdec2:amd64.
(Reading database ... 9368 files and directories currently installed.)
Preparing to unpack .../00-libmpdec2_2.4.2-3_amd64.deb ...
Unpacking libmpdec2:amd64 (2.4.2-3) ...
Selecting previously unselected package libpython3.8-minimal:amd64.
Preparing to unpack .../01-libpython3.8-minimal_3.8.2-1ubuntu1_amd64.deb ...
Unpacking libpython3.8-minimal:amd64 (3.8.2-1ubuntu1) ...
```

Installation of vim in the apache-container

```
File Edit View Search Terminal Help
root@ac14c0225f9e:/# ifconfig
bash: ifconfig: command not found
root@ac14c0225f9e:/# apt install inetutils-ping net-tools -y
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  libidn11
The following NEW packages will be installed:
  inetutils-ping libidn11 net-tools
0 upgraded, 3 newly installed, 0 to remove and 0 not upgraded.
Need to get 303 kB of archives.
After this operation, 1478 kB of additional disk space will be used.
Get:1 http://archive.ubuntu.com/ubuntu focal/main amd64 libidn11 amd64 1.33-2.2ubuntu2 [46.2 kB]
Get:2 http://archive.ubuntu.com/ubuntu focal/universe amd64 inetutils-ping amd64 2:1.9.4-11 [60.8 kB]
Get:3 http://archive.ubuntu.com/ubuntu focal/main amd64 net-tools amd64 1.60+git20180626.aebd88e-1ubuntu1 [196 kB]
Fetched 303 kB in 5s (58.0 kB/s)
debconf: delaying package configuration, since apt-utils is not installed
Selecting previously unselected package libidn11:amd64.
(Reading database ... 12534 files and directories currently installed.)
Preparing to unpack .../libidn11_1.33-2.2ubuntu2_amd64.deb ...
Unpacking libidn11:amd64 (1.33-2.2ubuntu2) ...
Selecting previously unselected package inetutils-ping.
Preparing to unpack .../inetutils-ping_2%3a1.9.4-11_amd64.deb ...
Unpacking inetutils-ping (2:1.9.4-11) ...
Selecting previously unselected package net-tools.
Preparing to unpack .../net-tools_1.60+git20180626.aebd88e-1ubuntu1_amd64.deb ...
Unpacking net-tools (1.60+git20180626.aebd88e-1ubuntu1) ...
Setting up net-tools (1.60+git20180626.aebd88e-1ubuntu1) ...
Setting up libidn11:amd64 (1.33-2.2ubuntu2) ...
Setting up inetutils-ping (2:1.9.4-11) ...
Processing triggers for libc-bin (2.31-0ubuntu9) ...
root@ac14c0225f9e:/# s
```

installation of some extra utilities.

File Edit View Search Terminal Help

root@ac14c0225f9e:/# ifconfig

```
eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 172.17.0.3 netmask 255.255.0.0 broadcast 172.17.255.255
    ether 02:42:ac:11:00:03 txqueuelen 0 (Ethernet)
    RX packets 43646 bytes 58777578 (58.7 MB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 26882 bytes 1874320 (1.8 MB)
    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@ac14c0225f9e:/#

[OK]

root@ac14c0225f9e:/# netstat -ntulp

Active Internet connections (only servers)

Proto	Recv-Q	Send-Q	Local Address	Foreign Address	State	PID/Program name
tcp	0	0	0.0.0.0:80	0.0.0.0:*	LISTEN	11221/apache2

root@ac14c0225f9e:/#


```
<?php
phpinfo();
```

PHP Version 7.4.3



System	Linux ac14c0225f9e 5.3.0-46-generic #38~18.04.1-Ubuntu SMP Tue Mar 31 04:17:56 UTC 2020 x86_64
Build Date	Mar 26 2020 20:24:23
Server API	Apache 2.0 Handler
Virtual Directory Support	disabled
Configuration File (php.ini) Path	/etc/php/7.4/apache2
Loaded Configuration File	/etc/php/7.4/apache2/php.ini
Scan this dir for additional .ini files	/etc/php/7.4/apache2/conf.d
Additional .ini files parsed	/etc/php/7.4/apache2/conf.d/10-mysqld.ini, /etc/php/7.4/apache2/conf.d/10-opcache.ini, /etc/php/7.4/apache2/conf.d/10-pdo.ini, /etc/php/7.4/apache2/conf.d/20-calendar.ini, /etc/php/7.4/apache2/conf.d/20-ctype.ini, /etc/php/7.4/apache2/conf.d/20-exif.ini, /etc/php/7.4/apache2/conf.d/20-ffi.ini, /etc/php/7.4/apache2/conf.d/20-fileinfo.ini, /etc/php/7.4/apache2/conf.d/20-ftp.ini, /etc/php/7.4/apache2/conf.d/20-gettext.ini, /etc/php/7.4/apache2/conf.d/20-iconv.ini, /etc/php/7.4/apache2/conf.d/20-json.ini, /etc/php/7.4/apache2/conf.d/20-mysqli.ini, /etc/php/7.4/apache2/conf.d/20-pdo_mysqli.ini, /etc/php/7.4/apache2/conf.d/20-phar.ini, /etc/php/7.4/apache2/conf.d/20-posix.ini, /etc/php/7.4/apache2/conf.d/20-readline.ini, /etc/php/7.4/apache2/conf.d/20-shmop.ini, /etc/php/7.4/apache2/conf.d/20-sockets.ini, /etc/php/7.4/apache2/conf.d/20-sysvmsg.ini, /etc/php/7.4/apache2/conf.d/20-sysvsem.ini, /etc/php/7.4/apache2/conf.d/20-sysvshm.ini, /etc/php/7.4/apache2/conf.d/20-tokenizer.ini
PHP API	20190902
PHP Extension	20190902
Zend Extension	320190902
Zend Extension Build	API320190902.NTS
PHP Extension Build	API20190902.NTS
Debug Build	no
Thread Safety	disabled
Zend Signal Handling	enabled
Zend Memory Manager	enabled
Zend Multibyte Support	disabled
IPv6 Support	enabled
DTrace Support	available, disabled