

Assignment on Virtualisation and Containers

DOCKER
AND
CONTAINER
: INSTALLATION & DEPLOYMENT

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1. Installation of Docker and Container.

```
Activities Terminal May 16 21:42 feba@feba-VirtualBox:~$
Get:27 http://ft.archive.ubuntu.com/ubuntu focal/multiverse Translation-en [104 kB]
Get:28 http://ft.archive.ubuntu.com/ubuntu focal/multiverse amd64 DEP-11 Metadata [48.4 kB]
Get:29 http://ft.archive.ubuntu.com/ubuntu focal/multiverse DEP-11 48x48 Icons [23.1 kB]
Get:30 http://ft.archive.ubuntu.com/ubuntu focal/multiverse DEP-11 64x64 Icons [192 kB]
Get:31 http://ft.archive.ubuntu.com/ubuntu focal/multiverse DEP-11 64x642 Icons [214 B]
Get:32 http://ft.archive.ubuntu.com/ubuntu focal/multiverse amd64 c-n-f Metadata [9,316 B]
Get:33 http://ft.archive.ubuntu.com/ubuntu focal-updates/main amd64 Packages [1,798 kB]
Get:34 http://ft.archive.ubuntu.com/ubuntu focal-updates/main Translation-en [338 kB]
Get:35 http://ft.archive.ubuntu.com/ubuntu focal-updates/main amd64 DEP-11 Metadata [278 kB]
Get:36 http://ft.archive.ubuntu.com/ubuntu focal-updates/main DEP-11 48x48 Icons [60.8 kB]
Get:37 http://ft.archive.ubuntu.com/ubuntu focal-updates/main DEP-11 64x64 Icons [98.3 kB]
Get:38 http://ft.archive.ubuntu.com/ubuntu focal-updates/main DEP-11 64x642 Icons [79 B]
Get:39 http://ft.archive.ubuntu.com/ubuntu focal-updates/main amd64 c-n-f Metadata [15.1 kB]
Get:40 http://ft.archive.ubuntu.com/ubuntu focal-updates/restricted Packages [24.3 kB]
Get:41 http://ft.archive.ubuntu.com/ubuntu focal-updates/restricted Translation-en [139 kB]
Get:42 http://ft.archive.ubuntu.com/ubuntu focal-updates/restricted amd64 Packages [975 kB]
Get:43 http://ft.archive.ubuntu.com/ubuntu focal-updates/restricted Translation-en [139 kB]
Get:44 http://ft.archive.ubuntu.com/ubuntu focal-updates/restricted amd64 c-n-f Metadata [528 B]
Get:45 http://ft.archive.ubuntu.com/ubuntu focal-updates/universe amd64 Packages [921 kB]
Get:46 http://ft.archive.ubuntu.com/ubuntu focal-updates/universe Translation-en [296 kB]
Get:47 http://ft.archive.ubuntu.com/ubuntu focal-updates/universe amd64 DEP-11 Metadata [391 kB]
Get:48 http://ft.archive.ubuntu.com/ubuntu focal-updates/universe DEP-11 48x48 Icons [297 kB]
Get:49 http://ft.archive.ubuntu.com/ubuntu focal-updates/universe DEP-11 64x64 Icons [459 kB]
Get:50 http://ft.archive.ubuntu.com/ubuntu focal-updates/universe DEP-11 64x642 Icons [29 B]
Get:51 http://ft.archive.ubuntu.com/ubuntu focal-updates/universe amd64 c-n-f Metadata [20.6 kB]
Get:52 http://ft.archive.ubuntu.com/ubuntu focal-updates/multiverse amd64 Packages [24.4 kB]
Get:53 http://ft.archive.ubuntu.com/ubuntu focal-updates/multiverse Translation-en [7,338 B]
Get:54 http://ft.archive.ubuntu.com/ubuntu focal-updates/multiverse amd64 DEP-11 Metadata [544 B]
Get:55 http://ft.archive.ubuntu.com/ubuntu focal-updates/multiverse DEP-11 48x48 Icons [1,867 B]
Get:56 http://ft.archive.ubuntu.com/ubuntu focal-updates/multiverse DEP-11 64x64 Icons [22.7 kB]
Get:57 http://ft.archive.ubuntu.com/ubuntu focal-updates/multiverse DEP-11 64x642 Icons [28 B]
Get:58 http://ft.archive.ubuntu.com/ubuntu focal-updates/multiverse amd64 c-n-f Metadata [592 B]
Get:59 http://ft.archive.ubuntu.com/ubuntu focal-backports/main Packages [136.8 kB]
Get:60 http://ft.archive.ubuntu.com/ubuntu focal-backports/main amd64 Packages [42.2 kB]
Get:61 http://ft.archive.ubuntu.com/ubuntu focal-backports/main Translation-en [18.1 kB]
Get:62 http://ft.archive.ubuntu.com/ubuntu focal-backports/main amd64 DEP-11 Metadata [9,588 B]
Get:63 http://ft.archive.ubuntu.com/ubuntu focal-backports/main DEP-11 48x48 Icons [6,962 B]
Get:64 http://ft.archive.ubuntu.com/ubuntu focal-backports/main DEP-11 64x64 Icons [18.5 kB]
Get:65 http://ft.archive.ubuntu.com/ubuntu focal-backports/main DEP-11 64x642 Icons [28 B]
Get:66 http://ft.archive.ubuntu.com/ubuntu focal-backports/main amd64 c-n-f Metadata [864 B]
Get:67 http://ft.archive.ubuntu.com/ubuntu focal-backports/main amd64 c-n-f Metadata [116 B]
Get:68 http://ft.archive.ubuntu.com/ubuntu focal-backports/universe Packages [12.8 kB]
Get:69 http://ft.archive.ubuntu.com/ubuntu focal-backports/universe Translation-en [15.5 kB]
Get:70 http://ft.archive.ubuntu.com/ubuntu focal-backports/universe amd64 DEP-11 Metadata [30.6 kB]
Get:71 http://ft.archive.ubuntu.com/ubuntu focal-backports/universe DEP-11 48x48 Icons [13.2 kB]
Get:72 http://ft.archive.ubuntu.com/ubuntu focal-backports/universe DEP-11 64x64 Icons [22.6 kB]
Get:73 http://ft.archive.ubuntu.com/ubuntu focal-backports/universe DEP-11 64x642 Icons [28 B]
Get:74 http://ft.archive.ubuntu.com/ubuntu focal-backports/universe amd64 c-n-f Metadata [864 B]
Get:75 http://ft.archive.ubuntu.com/ubuntu focal-backports/universe amd64 c-n-f Metadata [116 B]
Fetched 44.8 MB in 29s (107 kB/s)
Reading package lists... Done
feba@feba-VirtualBox:~$
```

```
Activities Terminal May 16 22:02 feba@feba-VirtualBox:~$
$ docker run -it ubuntu bash
Share images, automate workflows, and more with a free Docker ID:
https://hub.docker.com/
For more examples and ideas, visit:
https://docs.docker.com/get-started/
feba@feba-VirtualBox:~$ sudo docker ps
CONTAINER ID   IMAGE     COMMAND   CREATED   STATUS    PORTS   NAMES
feba@feba-VirtualBox:~$ sudo docker ps -a
CONTAINER ID   IMAGE     COMMAND   CREATED   STATUS    PORTS   NAMES
feba@feba-VirtualBox:~$ sudo docker images
REPOSITORY    TAG       IMAGE ID       CREATED      SIZE
hello-world    latest   fe83df98e635   7 months ago  13.3kB
feba@feba-VirtualBox:~$ sudo docker pull mysql
Using default tag: latest
latest: Pulling from library/mysql
c32ce6654453: Pull complete
415d6ee4031a: Pull complete
7a38fec344f1: Pull complete
352881ee8fe9: Pull complete
b8e260d2b166: Pull complete
69c2a8cc1999: Pull complete
d3a3a8e49878: Pull complete
e33a4812bec1: Pull complete
410b042bbab28: Pull complete
d5323c9d6265: Pull complete
321277731649: Pull complete
d0032d4b0dc5: Pull complete
Digest: sha256:a0805d37d4d298bd1e0dfac1fdddfef4080b453fa25d7aad420485a02417eab
Status: Downloaded newer image for mysql:latest
docker.io/library/mysql:latest
feba@feba-VirtualBox:~$ sudo docker run -d --p0.0.0.0:80:80 mysql:latest
c08a2b77c8eb95986d551740606971b30b18555d8e0d04021390c8e3e37e399
feba@feba-VirtualBox:~$ sudo docker run -it --name sl mysql /bin/bash
root@sl41d302af02e:/# exit
exit
feba@feba-VirtualBox:~$ sudo docker start sl
sl
feba@feba-VirtualBox:~$ sudo docker stop sl
Error response from daemon: cannot stop container: sl: permission denied
feba@feba-VirtualBox:~$ sudo docker kill sl
Error response from daemon: Cannot kill container: sl: permission denied
feba@feba-VirtualBox:~$ sudo docker rm -f $(docker ps -q)
Untagged: mysql:latest
Untagged: mysql@sha256:a0805d37d4d298bd1e0dfac1fdddfef4080b453fa25d7aad420485a02417eab
Error: No such image: mysql
feba@feba-VirtualBox:~$ sudo docker ps -a
CONTAINER ID   IMAGE     COMMAND   CREATED   STATUS    PORTS   NAMES
341c0204bba   76152be08449   "docker-entrypoint.s..."  4 minutes ago   Up 3 minutes   3306/tcp, 33060/tcp   sl
c08a2b77c8eb   76152be08449   "docker-entrypoint.s..."  7 minutes ago   Exited (1) 7 minutes ago   sad_franklin
1c9f7a0631c   hello-world   "/hello"    10 minutes ago   Exited (0) 10 minutes ago   blissful_williams
feba@feba-VirtualBox:~$
```

2. Deployment of Apache and MySQL in your container.

```

Activities Terminal May 12, 2022 feba@feba-VirtualBox -
feba@feba-VirtualBox:~$ sudo snap install docker
[sudo] password for feba:
snap 'docker' is already installed, see 'snap help refresh'
feba@feba-VirtualBox:~$ sudo docker run hello-world
Unable to find image 'hello-world:latest' locally
latest: Pulling from library/hello-world
6b977112ee: Pull complete
Digest: sha256:80f3da1e1c7b312ba79d5080fdd7797d76acfb70e9777390d5acb9741b17
Status: Downloaded newer image for hello-world:latest

hello from Docker!

This message shows that your installation appears to be working correctly.

To generate this message, Docker took the following steps:
1. The Docker client contacted the Docker daemon.
2. The Docker daemon pulled the "hello-world" image from the Docker Hub.
   (cmd64)
3. The Docker daemon created a new container from that image which runs the
   executable that produces the output you are currently reading.
4. The Docker daemon streamed that output to the Docker client, which sent it
   to your terminal.

To try something more ambitious, you can run an Ubuntu container with:
$ docker run -it ubuntu bash

Share images, automate workflows, and more with a free Docker ID:
https://hub.docker.com/

For more examples and ideas, visit:
https://docs.docker.com/get-started/

feba@feba-VirtualBox:~$ sudo docker ps
CONTAINER ID   IMAGE     COMMAND   CREATED   STATUS    PORTS   NAMES
feba@feba-VirtualBox:~$ sudo docker ps -a
CONTAINER ID   IMAGE     COMMAND   CREATED   STATUS    PORTS   NAMES
1c89fa96631c   hello-world   /hello   30 seconds ago   Exited (0) 29 seconds ago   blissful_williams
feba@feba-VirtualBox:~$ sudo docker images
REPOSITORY   TAG       IMAGE ID   CREATED   SIZE
hello-world   latest   feba9dfeaa5   7 months ago   13.3kB
feba@feba-VirtualBox:~$ sudo docker pull mysql
Using default tag: latest
latest: Pulling from library/mysql
c33ce654453: Pull complete
330e60ee431: Pull complete
7a38fc2524f: Pull complete
3242a1a2c6f9: Pull complete
86c29d821806: Pull complete
66c28ac1999: Pull complete
c1a1a6e4878: Pull complete
e33a48832bec: Pull complete
410864758039: Pull complete
d532c9d0265: Pull complete
32127377310b: Pull complete
080224d46d5: Pull complete
Digest: sha256:a9885d37046298b61edf6a1f0dd9f64088b43fa257aad42048a62417cab

```

[illegible]

3. Research & find out how can host your own simple website with it.

The screenshot displays a Linux desktop environment with a terminal window and a web browser. The terminal window shows the following commands and output:

```
Feb@Feba-VirtualBox: ~/Desktop/website$ sudo docker build -t website .
Sending build context to Docker daemon 1.269MB
Step 1/2: FROM httpd
----> c58ef90fb57
Step 2/2: COPY . /usr/local/apache2/htdocs/
----> 7d6d03bae716
Successfully built 7d6d03bae716
Feb@Feba-VirtualBox: ~/Desktop/website$ sudo docker run -itd -p 80:80 --name website website
docker: invalid containerPort: 8080 - name.
See 'docker run --help'.
Feb@Feba-VirtualBox: ~/Desktop/website$ sudo docker run -itd -p 80:80 --name website website
0f6697b66682ec4ce74823848f0d95868c0156acbad922bccccab26878558
Feb@Feba-VirtualBox: ~/Desktop/website$ sudo docker ps
CONTAINER ID   IMAGE          COMMAND                  CREATED        STATUS        PORTS                    NAMES
0f6697b66682ec4ce74823848f0d95868c0156acbad922bccccab26878558   website   "httpd foreground"      8 seconds ago   Up 7 seconds   0.0.0.0:80->80/tcp, :::80->80/tcp   website
Feb@Feba-VirtualBox: ~/Desktop/website$ sudo docker inspect 0f6697b66682ec4ce74823848f0d95868c0156acbad922bccccab26878558
[
  {
    "Id": "0f6697b66682ec4ce74823848f0d95868c0156acbad922bccccab26878558",
    "Created": "2022-05-20T17:51:33.750926072Z",
    "Path": "httpd-foreground",
    "Args": [],
    "State": {
      "Status": "running",
      "Running": true,
      "Paused": false,
      "Restarting": false,
      "OOMKilled": false,
      "Dead": false,
      "Pid": 8052,
      "ExitCode": 0,
      "Error": "",
      "StartedAt": "2022-05-20T17:51:34.350929873Z",
      "FinishedAt": "0001-01-01T00:00:00Z"
    },
    "Image": "sha256:7d6d03bae71630e95b1657c5e14914451014f3244d404641c77962d7b7d7f8",
    "ResolvConfPath": "/var/snap/docker/common/var-lib-docker/containers/0f6697b66682ec4ce74823848f0d95868c0156acbad922bccccab26878558/resolv.conf",
    "HostnamePath": "/var/snap/docker/common/var-lib-docker/containers/0f6697b66682ec4ce74823848f0d95868c0156acbad922bccccab26878558/hostname",
    "HostsPath": "/var/snap/docker/common/var-lib-docker/containers/0f6697b66682ec4ce74823848f0d95868c0156acbad922bccccab26878558/hosts",
    "LogPath": "/var/snap/docker/common/var-lib-docker/containers/0f6697b66682ec4ce74823848f0d95868c0156acbad922bccccab26878558",
    "OpenLog": true,
    "Name": "/website",
    "RestartCount": 0,
    "Driver": "overlay2",
    "Platform": "linux",
    "HostLabel": "",
    "ProcessLabel": "",
    "AppArmorProfile": "docker-default",
    "ExecIDs": null,
    "HostConfig": {
      "Binds": null,
      "ContainerPort": "",
      "LogConfig": {
        "Type": "json-file",
        "Config": {}
      },
      "NetworkMode": "default",
      "PortBindings": {
        "80/tcp": [
          {
            "HostIp": "",
            "HostPort": "80"
          }
        ]
      },
      "RestartPolicy": {
        "Name": "no",
        "MaximumRetryCount": 0
      }
    }
  }
]
```

The web browser window shows a website with the title "UXOS" and the text "BEST DESIGN MOBILE APPLICATIONS". The website features a dark blue background with a light blue sidebar containing a logo and a "READ MORE" button. The main content area displays two smartphone screens, one labeled "UXOS" and the other "UXOS", showing a mobile application interface.

```
Activities Terminal May 20 23:19 feba@feba-VirtualBox: ~/Desktop/website
update-alternatives: using /usr/bin/vim.basic to provide /usr/bin/vimdiff (vimdiff) in auto mode
update-alternatives: using /usr/bin/vim.basic to provide /usr/bin/rvim (rvim) in auto mode
update-alternatives: using /usr/bin/vim.basic to provide /usr/bin/rview (rview) in auto mode
update-alternatives: using /usr/bin/vim.basic to provide /usr/bin/vi (vi) in auto mode
update-alternatives: using /usr/bin/vim.basic to provide /usr/bin/view (view) in auto mode
update-alternatives: using /usr/bin/vim.basic to provide /usr/bin/ex (ex) in auto mode
Processing triggers for man-db (2.9.1-1) ...
feba@feba-VirtualBox:~$ sudo docker pull httpd
Using default tag: latest
latest: Pulling from library/httpd
214ca5fb9032: Pull complete
7cf31a2eeec6: Pull complete
bf666e57b9f2: Pull complete
c15a4e94ae6b: Pull complete
dc25474c7f97: Pull complete
Digest: sha256:2d1f8839d6127e400ac5f65481d8a0f17ac46a3b91de40b01e649c9a0324dea0
Status: Downloaded newer image for httpd:latest
docker.io/library/httpd:latest
feba@feba-VirtualBox:~$ vim Dockerfile
feba@feba-VirtualBox:~$ cd Desktop/
feba@feba-VirtualBox:~/Desktop$ cd website/
feba@feba-VirtualBox:~/Desktop/website$ vim Dockerfile
feba@feba-VirtualBox:~/Desktop/website$

Activities Terminal May 20 23:19 feba@feba-VirtualBox: ~/Desktop/website
Processing triggers for systemd (245.4-4ubuntu3.15) ...
feba@feba-VirtualBox:~$ sudo snap install docker
docker 20.10.14 from Canonical* installed
feba@feba-VirtualBox:~$ sudo apt install vim
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  vim-runtime
Suggested packages:
  ctags vim-doc vim-scripts
The following NEW packages will be installed:
  vim vim-runtime
0 upgraded, 2 newly installed, 0 to remove and 137 not upgraded.
Need to get 7,110 kB of archives.
After this operation, 34.6 MB of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 http://in.archive.ubuntu.com/ubuntu focal-updates/main amd64 vim-runtime all 2:8.1.2269-1ubuntu5.7 [5,872 kB]
Get:2 http://in.archive.ubuntu.com/ubuntu focal-updates/main amd64 vim amd64 2:8.1.2269-1ubuntu5.7 [1,238 kB]
Fetched 7,110 kB in 5s (1,346 kB/s)
Selecting previously unselected package vim-runtime.
(Reading database ... 156724 files and directories currently installed.)
Preparing to unpack .../vim-runtime_2%3a8.1.2269-1ubuntu5.7_all.deb ...
Adding 'diversion of /usr/share/vim/vim81/doc/help.txt to /usr/share/vim/vim81/doc/help.txt.vim-tiny by vim-runtime'
Adding 'diversion of /usr/share/vim/vim81/doc/tags to /usr/share/vim/vim81/doc/tags.vim-tiny by vim-runtime'
```

