

Learning Docker in the Play with Docker classroom.

Learning some basic Docker commands and a simple build-ship-run workflow, starting by running some simple containers, then used a Dockerfile to build a custom app. Finally, used bind mounts to modify a running container.

```
[node1] (local) root@192.168.0.18 ~
```

```
$ git clone https://github.com/dockersamples/linux_tweet_app
```

```
Cloning into 'linux_tweet_app'...
```

```
remote: Enumerating objects: 14, done.
```

```
remote: Total 14 (delta 0), reused 0 (delta 0), pack-reused 14
```

```
Receiving objects: 100% (14/14), 10.76 KiB | 10.76 MiB/s, done.
```

```
Resolving deltas: 100% (5/5), done.
```

```
[node1] (local) root@192.168.0.18 ~
```

```
$ docker container run alpine hostname
```

```
Unable to find image 'alpine:latest' locally
```

```
latest: Pulling from library/alpine
```

```
59bf1c3509f3: Pull complete
```

```
Digest: sha256:21a3deaa0d32a8057914f36584b5288d2e5ecc984380bc0118285c70fa8c9300
```

```
Status: Downloaded newer image for alpine:latest
```

```
ad5ffef8cbbb
```

```
[node1] (local) root@192.168.0.18 ~
```

```
$ docker container ls --all
```

CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS	PORTS	NAMES
ad5ffef8cbbb	alpine	"hostname"	3 seconds ago	Exited (0) 1 second ago		blissful_northcutt

```
[node1] (local) root@192.168.0.18 ~
```

```
$ docker container run --interactive --tty --rm ubuntu bash
```

```
Unable to find image 'ubuntu:latest' locally
```

```
latest: Pulling from library/ubuntu
```

```
ea362f368469: Extracting 15.04MB/28.57MB
```

```
ea362f368469: Extracting 27.13MB/28.57MB
```

ea362f368469: Pull complete

Digest: sha256:b5a61709a9a44284d88fb12e5c48db0409cfad5b69d4ff8224077c57302df9cf

Status: Downloaded newer image for ubuntu:latest

ls /

ps aux

cat /etc/issue

root@4d5c263d1a80:## ls /

bin dev home lib32 libx32 mnt proc run srv tmp var

boot etc lib lib64 media opt root sbin sys usr

root@4d5c263d1a80:## ps aux

USER	PID	%CPU	%MEM	VSZ	RSS	TTY	STAT	START	TIME	COMMAND
------	-----	------	------	-----	-----	-----	------	-------	------	---------

root	1	0.0	0.0	4108	3588	pts/0	Ss	16:36	0:00	bash
------	---	-----	-----	------	------	-------	----	-------	------	------

root	11	0.0	0.0	5896	2888	pts/0	R+	16:36	0:00	ps aux
------	----	-----	-----	------	------	-------	----	-------	------	--------

root@4d5c263d1a80:## cat /etc/issue

Ubuntu 20.04.3 LTS \n \l

root@4d5c263d1a80:## exit

exit

[node1] (local) root@192.168.0.18 ~

\$ cat /etc/issue

Welcome to Alpine Linux 3.12

Kernel \r on an \m (\l)

[node1] (local) root@192.168.0.18 ~

\$ docker container run \

> --detach \

> --name mydb \

> -e MYSQL_ROOT_PASSWORD=my-secret-pw \

> mysql:latest

Unable to find image 'mysql:latest' locally

latest: Pulling from library/mysql

72a69066d2fe: Extracting 16.22MB/27.15MB

```
72a69066d2fe: Pull complete
93619dbc5b36: Pull complete
99da31dd6142: Extracting 4.063MB/4.179MB
99da31dd6142: Pull complete
e5c707858ec0: Pull complete
fc41578cbf60: Pull complete
4785d896ef10: Pull complete
7d250cdc93be: Pull complete
309700f41983: Pull complete
45fd33301836: Pull complete
92f970c68b71: Pull complete
bb3544339a9e: Pull complete
f66ddf4c43fa: Pull complete
Digest: sha256:d0507b008897c39f6cbc76285af1171d4551988475e00e91344060023cd9c553
```

```
Status: Downloaded newer image for mysql:latest
```

```
8eeb167e73688563943da0d6e0fa4a87d10be39d1953f64ea8cb7c47c6e94665
```

```
[node1] (local) root@192.168.0.18 ~
```

```
$ docker container ls
```

CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS	PORTS	NAMES
8eeb167e7368	mysql:latest	"docker-entrypoint.s..."	1 second ago	Up	Less than a second	3306/tcp, 33060/tcp mydb

```
[node1] (local) root@192.168.0.18 ~
```

```
$ docker container logs mydb
```

```
2022-01-20 16:36:50+00:00 [Note] [Entrypoint]: Entrypoint script for MySQL Server 8.0.28-1debian10 started.
```

```
2022-01-20 16:36:50+00:00 [Note] [Entrypoint]: Switching to dedicated user 'mysql'
```

```
[node1] (local) root@192.168.0.18 ~
```

```
$ docker container top mydb
```

PID	USER	TIME	COMMAND
839	999	0:00	{docker-entrypoi} /bin/bash /usr/local/bin/docker-entrypoint.sh mysql
954	999	0:01	mysqld --initialize-insecure --default-time-zone=SYSTEM

```
[node1] (local) root@192.168.0.18 ~
```

```
$ docker exec -it mydb \
```

```
> mysql --user=root --password=$MYSQL_ROOT_PASSWORD --version
```

mysql: [Warning] Using a password on the command line interface can be insecure.

mysql Ver 8.0.28 for Linux on x86_64 (MySQL Community Server - GPL)

[node1] (local) root@192.168.0.18 ~

\$ docker exec -it mydb sh

mysql --user=root --password=\$MYSQL_ROOT_PASSWORD --version

mysql: [Warning] Using a password on the command line interface can be insecure.

mysql Ver 8.0.28 for Linux on x86_64 (MySQL Community Server - GPL)

exit

[node1] (local) root@192.168.0.18 ~

\$ cd ~/linux_tweet_app

[node1] (local) root@192.168.0.18 ~/linux_tweet_app

\$ cat Dockerfile

FROM nginx:latest

COPY index.html /usr/share/nginx/html

COPY linux.png /usr/share/nginx/html

EXPOSE 80 443

CMD ["nginx", "-g", "daemon off;"]

[node1] (local) root@192.168.0.18 ~/linux_tweet_app

\$ export DOCKERID=paru97

[node1] (local) root@192.168.0.18 ~/linux_tweet_app

\$ echo paru97

paru97

[node1] (local) root@192.168.0.18 ~/linux_tweet_app

\$ docker image build --tag paru97/linux_tweet_app:1.0 .

Sending build context to Docker daemon 92.16kB

Step 1/5 : FROM nginx:latest

latest: Pulling from library/nginx

a2abf6c4d29d: Pull complete

a9edb18cadd1: Pull complete

589b7251471a: Pull complete

186b1aaa4aa6: Pull complete

b4df32aa5a72: Pull complete

a0bcbecc962e: Pull complete

Digest: sha256:0d17b565c37bcbd895e9d92315a05c1c3c9a29f762b011a10c54a66cd53c9b31

Status: Downloaded newer image for nginx:latest

---> 605c77e624dd

Step 2/5 : COPY index.html /usr/share/nginx/html

---> 47401cbdd813

Step 3/5 : COPY linux.png /usr/share/nginx/html

---> 69125416a2be

Step 4/5 : EXPOSE 80 443

---> Running in e7ff98771739

Removing intermediate container e7ff98771739

---> af7d44bd4c50

Step 5/5 : CMD ["nginx", "-g", "daemon off;"]

---> Running in 4759294cc06e

Removing intermediate container 4759294cc06e

---> fa3b14ee51de

Successfully built fa3b14ee51de

Successfully tagged paru97/linux_tweet_app:1.0

[node1] (local) root@192.168.0.18 ~/linux_tweet_app

\$ docker container run \

> --detach \

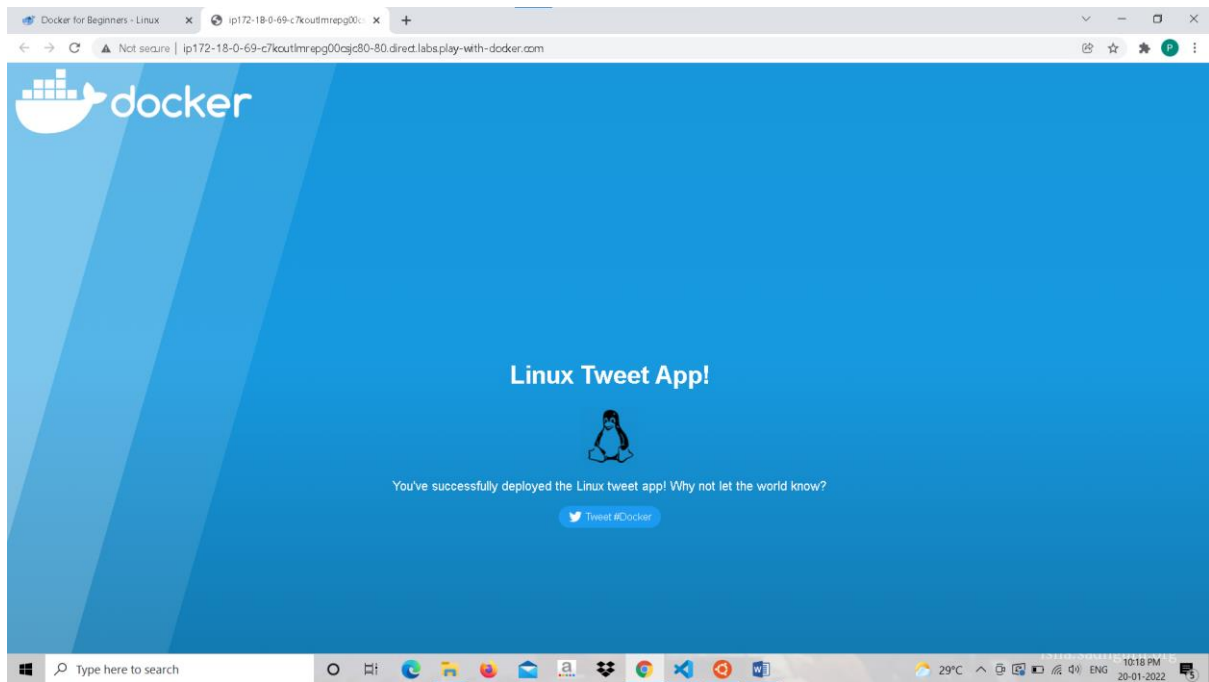
> --publish 80:80 \

> --name linux_tweet_app \

> paru97/linux_tweet_app:1.0

6d1b4ee0c8b06cfb9c5d99ca191fa7818c2d87d49b5ac2be11c8013f11e016f9

[node1] (local) root@192.168.0.18 ~/linux_tweet_app



```
[node1] (local) root@192.168.0.18 ~/linux_tweet_app
```

```
$ docker container rm --force linux_tweet_app
```

```
linux_tweet_app
```

Modify a running website

```
[node1] (local) root@192.168.0.18 ~/linux_tweet_app
```

```
$ docker container run \
```

```
> --detach \
```

```
> --publish 80:80 \
```

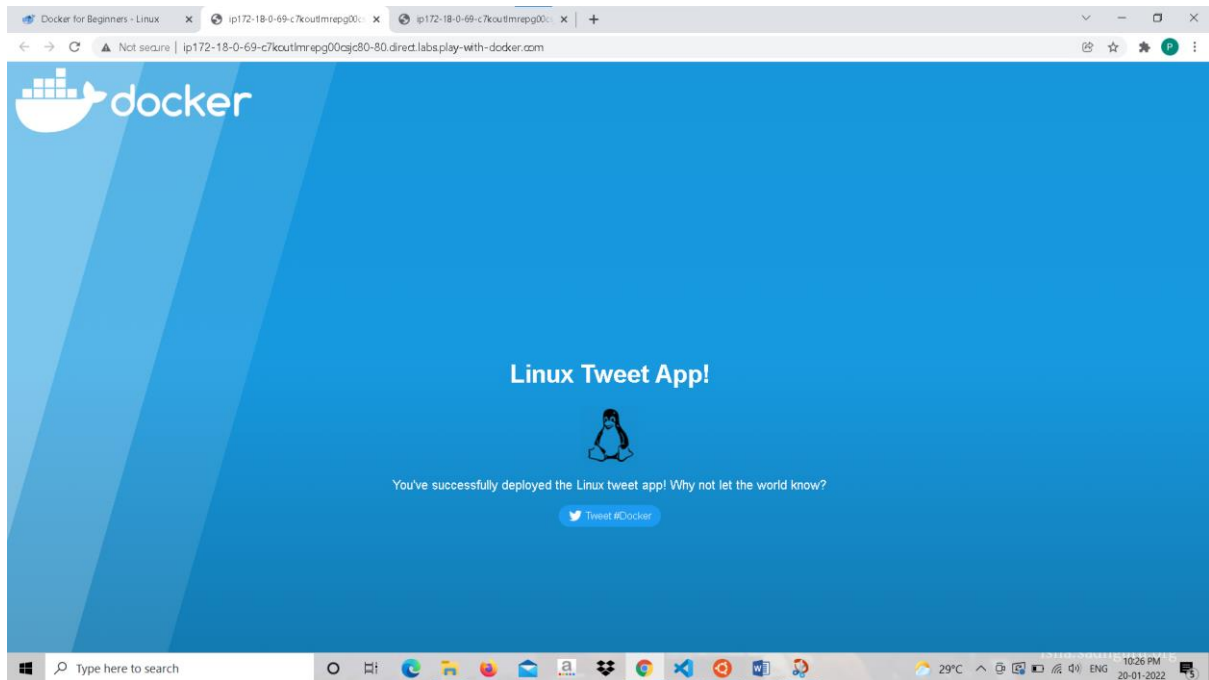
```
> --name linux_tweet_app \
```

```
> --mount type=bind,source="$(pwd)",target=/usr/share/nginx/html \
```

```
> paru97/linux_tweet_app:1.0
```

```
7a84830ef6f5fc815fc57e1adb42f2f3e5e4ae7de83eea9d50ee70b62003fec4
```

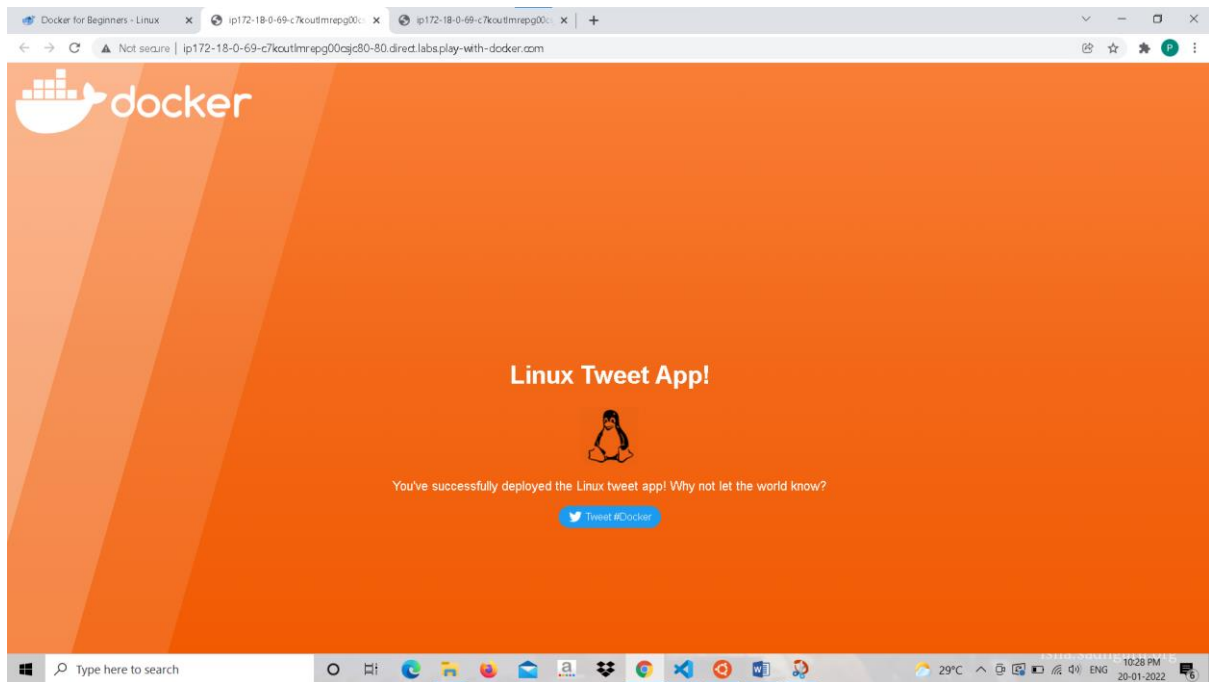
The website should be running.



Modify the running website

```
[node1] (local) root@192.168.0.18 ~/linux_tweet_app
```

```
$ cp index-new.html index.html
```



```
[node1] (local) root@192.168.0.18 ~/linux_tweet_app
```

```
$ docker rm --force linux_tweet_app
```

```
linux_tweet_app
```

```
[node1] (local) root@192.168.0.18 ~/linux_tweet_app
```

```
$ docker container run \
```

```
> --detach \
```

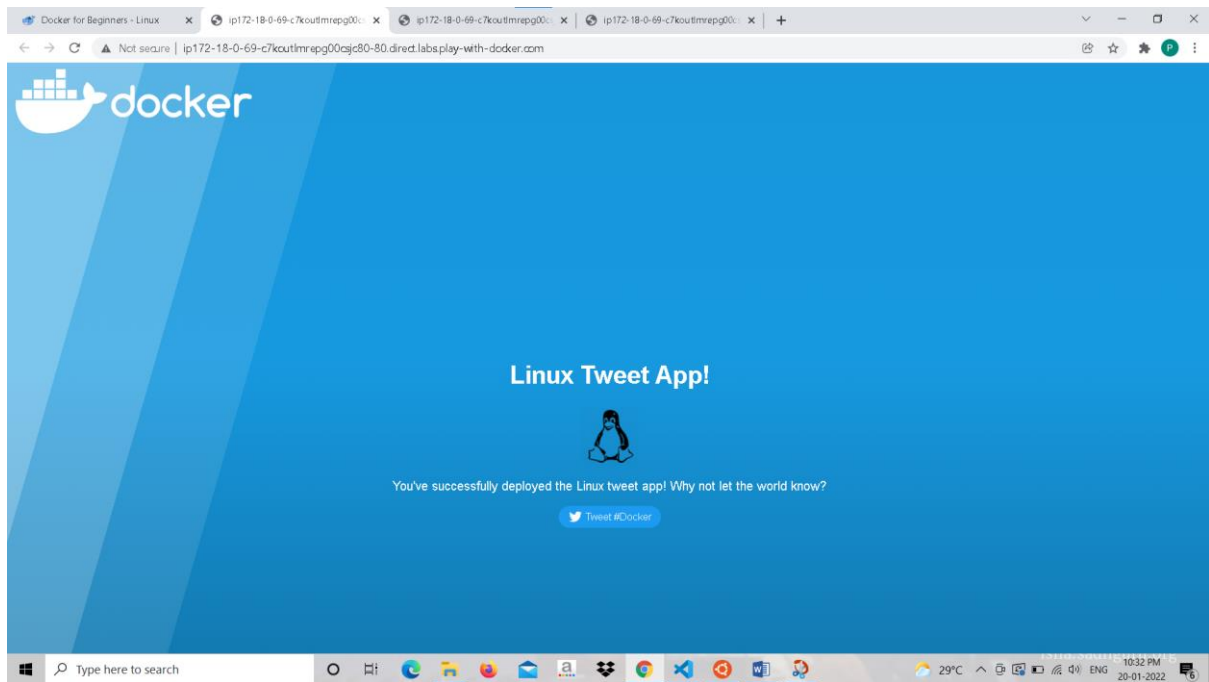
```
> --publish 80:80 \
```

```
> --name linux_tweet_app \
```

```
> paru97/linux_tweet_app:1.0
```

```
5666eb4a5b62e7b81c3e2145d96243ac86c4745e76c5ad0b7b1d7c5773b3dcd6
```

Notice the website is back to the original version.



```
[node1] (local) root@192.168.0.18 ~/linux_tweet_app
```

```
$ docker rm --force linux_tweet_app
```

```
linux_tweet_app
```

Update the image

```
[node1] (local) root@192.168.0.18 ~/linux_tweet_app
```

```
$ docker image build --tag paru97/linux_tweet_app:2.0 .
```

Sending build context to Docker daemon 92.16kB

Step 1/5 : FROM nginx:latest

```
---> 605c77e624dd
```

Step 2/5 : COPY index.html /usr/share/nginx/html

```
---> Using cache
```

```
---> 307e37ec3dcc
```

Step 3/5 : COPY linux.png /usr/share/nginx/html

---> Using cache

---> 529a807d2447

Step 4/5 : EXPOSE 80 443

---> Using cache

---> e82dd6b54021

Step 5/5 : CMD ["nginx", "-g", "daemon off;"]

---> Using cache

---> 30279ccb8c3e

Successfully built 30279ccb8c3e

Successfully tagged paru97/linux_tweet_app:2.0

[node1] (local) root@192.168.0.18 ~/linux_tweet_app

\$ docker image ls

REPOSITORY	TAG	IMAGE ID	CREATED
paru97/linux_tweet_app	2.0	30279ccb8c3e	About a minute ago
paru97/linux_tweet_app	1.0	fa3b14ee51de	27 minutes ago
mysql	latest	5b4c624c7fe1	13 hours ago

ubuntu	latest	d13c942271d6	13 days ago	72.8MB
nginx	latest	605c77e624dd	3 weeks ago	141MB
alpine	latest	c059bfaa849c	8 weeks ago	5.59MB

Push your images to Docker Hub

```
[node1] (local) root@192.168.0.18 ~/linux_tweet_app
```

```
$ docker image ls -f reference="paru97/*"
```

REPOSITORY	TAG	IMAGE ID	CREATED	SIZE
paru97/linux_tweet_app	2.0	30279ccb8c3e	5 minutes ago	142MB
paru97/linux_tweet_app	1.0	fa3b14ee51de	32 minutes ago	142MB

```
[node1] (local) root@192.168.0.18 ~/linux_tweet_app
```

```
$ docker login
```

Login with your Docker ID to push and pull images from Docker Hub. If you don't have a Docker ID, head over to <https://hub.docker.com> to create one.

Username: paru97

Password:

WARNING! Your password will be stored unencrypted in /root/.docker/config.json.

Configure a credential helper to remove this warning. See

<https://docs.docker.com/engine/reference/commandline/login/#credentials-store>

Login Succeeded

```
[node1] (local) root@192.168.0.18 ~/linux_tweet_app
```

```
$ docker image push paru97/linux_tweet_app:1.0
```

The push refers to repository [docker.io/paru97/linux_tweet_app]

e96581b31170: Pushed

a101024465b3: Pushed

d874fd2bc83b: Layer already exists

32ce5f6a5106: Layer already exists

f1db227348d0: Layer already exists

```
b8d6e692a25e: Layer already exists
e379e8aedd4d: Layer already exists
2edcec3590a4: Layer already exists
1.0: digest: sha256:f71112be7ad693a85bf7f3cdea2484cb70a7bbcd5138812d18f189cda4146d94 size: 1985
[node1] (local) root@192.168.0.18 ~/linux_tweet_app
$ docker image push paru97/linux_tweet_app:2.0
The push refers to repository [docker.io/paru97/linux_tweet_app]
6cf7d5a47aa2: Pushed
2dbcef094184: Pushed
d874fd2bc83b: Layer already exists
32ce5f6a5106: Layer already exists
f1db227348d0: Layer already exists
b8d6e692a25e: Layer already exists
e379e8aedd4d: Layer already exists
2edcec3590a4: Layer already exists
2.0: digest: sha256:b1433cc08c45cb751b14ca5ed415eece9d2d76d2f1b37ccb561d41685be132c7 size: 1985
```

Application Containerization and Microservice Orchestration

```
[node1] (local) root@192.168.0.28 ~
$ git clone https://github.com/ibnesayeed/linkextractor.git
Cloning into 'linkextractor'...
remote: Enumerating objects: 144, done.
remote: Counting objects: 100% (4/4), done.
remote: Compressing objects: 100% (4/4), done.
remote: Total 144 (delta 0), reused 1 (delta 0), pack-reused 140Receiving objects: 100% (144/144), 44.55 KiB |
5.57 MiB/s, done.Resolving deltas: 100% (43/43), done.[node1] (local) root@192.168.0.28 ~$ cd
linkextractor[node1] (local) root@192.168.0.28 ~/linkextractor$ git checkout demoBranch 'demo' set up to track
remote branch 'demo' from 'origin'.Switched to a new branch 'demo'[node1] (local) root@192.168.0.28
~/linkextractor$ git checkout step0Branch 'step0' set up to track remote branch 'step0' from 'origin'.Switched to a
new branch 'step0'[node1] (local) root@192.168.0.28 ~/linkextractor
$ tree
```

```
.
|— README.md
|— linkextractor.py
```

0 directories, 2 files

[node1] (local) root@192.168.0.28 ~/linkextractor

\$ cat linkextractor.py

```
#!/usr/bin/env python
```

```
import sys
```

```
import requests
```

```
from bs4 import BeautifulSoup
```

```
res = requests.get(sys.argv[-1])
```

```
soup = BeautifulSoup(res.text, "html.parser")
```

```
for link in soup.find_all("a"):
```

```
    print(link.get("href"))
```

[node1] (local) root@192.168.0.28 ~/linkextractor

\$./linkextractor.py http://example.com/

bash: ./linkextractor.py: Permission denied

[node1] (local) root@192.168.0.28 ~/linkextractor

\$ ls -l linkextractor.py

```
-rw-r--r--  1 root  root    220 Jan 20 17:13 linkextractor.py
```

[node1] (local) root@192.168.0.28 ~/linkextractor

\$ python3 linkextractor.py

Traceback (most recent call last):

File "linkextractor.py", line 5, in <module>

```
    from bs4 import BeautifulSoup
```

ModuleNotFoundError: No module named 'bs4'

[node1] (local) root@192.168.0.28 ~/linkextractor

\$ git checkout step1

Branch 'step1' set up to track remote branch 'step1' from 'origin'.

Switched to a new branch 'step1'

[node1] (local) root@192.168.0.28 ~/linkextractor

\$ tree

```
.
├── Dockerfile
├── README.md
└── linkextractor.py
```

0 directories, 3 files

[node1] (local) root@192.168.0.28 ~/linkextractor

\$ cat Dockerfile

FROM python:3

LABEL maintainer="Sawood Alam <@ibnesayeed>"

RUN pip install beautifulsoup4

RUN pip install requests

WORKDIR /app

COPY linkextractor.py /app/

RUN chmod a+x linkextractor.py

ENTRYPOINT ["/linkextractor.py"]

[node1] (local) root@192.168.0.28 ~/linkextractor

\$ docker image build -t linkextractor:step1 .

Sending build context to Docker daemon 107.5kB

Step 1/8 : FROM python:3

3: Pulling from library/python

0e29546d541c: Pull complete

9b829c73b52b: Pull complete

cb5b7ae36172: Pull complete

6494e4811622: Pull complete

6f9f74896dfa: Pull complete

fc6d5f7c986: Pull complete

3445db4c939c: Pull complete

def920d3ef5d: Pull complete

aabf25a1ee4b: Pull complete

Digest: sha256:a780eec51b47c0684d81315d48524b92e84873f93558f86373333e558d628b6

Status: Downloaded newer image for python:3

---> cecf555903c6

Step 2/8 : LABEL maintainer="Sawood Alam <@ibnesayeed>"

---> Running in b64dc599cb40

Removing intermediate container b64dc599cb40

---> 5ec4cde815ec

Step 3/8 : RUN pip install beautifulsoup4

---> Running in 0350273d73ee

Collecting beautifulsoup4

Downloading beautifulsoup4-4.10.0-py3-none-any.whl (97 kB)

Collecting soupsieve>1.2

Downloading soupsieve-2.3.1-py3-none-any.whl (37 kB)

Installing collected packages: soupsieve, beautifulsoup4

WARNING: Running pip as the 'root' user can result in broken permissions and conflicting behaviour with the system package manager. It is recommended to use a virtual environment instead:

<https://pip.pypa.io/warnings/venv>

Successfully installed beautifulsoup4-4.10.0 soupsieve-2.3.1

WARNING: You are using pip version 21.2.4; however, version 21.3.1 is available.

You should consider upgrading via the '/usr/local/bin/python -m pip install --upgrade pip' command.

Removing intermediate container 0350273d73ee

---> da970c37e197

Step 4/8 : RUN pip install requests

---> Running in 40b37aadee4f

Collecting requests

Downloading requests-2.27.1-py2.py3-none-any.whl (63 kB)

Collecting idna<4,>=2.5

Downloading idna-3.3-py3-none-any.whl (61 kB)

Collecting certifi>=2017.4.17

Downloading certifi-2021.10.8-py2.py3-none-any.whl (149 kB)

Collecting urllib3<1.27,>=1.21.1

Downloading urllib3-1.26.8-py2.py3-none-any.whl (138 kB)

Collecting charset-normalizer~=2.0.0

Downloading charset_normalizer-2.0.10-py3-none-any.whl (39 kB)

Installing collected packages: urllib3, idna, charset-normalizer, certifi, requests

Successfully installed certifi-2021.10.8 charset-normalizer-2.0.10 idna-3.3 requests-2.27.1 urllib3-1.26.8

WARNING: Running pip as the 'root' user can result in broken permissions and conflicting behaviour with the system package manager. It is recommended to use a virtual environment instead:

<https://pip.pypa.io/warnings/venv>

WARNING: You are using pip version 21.2.4; however, version 21.3.1 is available.

You should consider upgrading via the '/usr/local/bin/python -m pip install --upgrade pip' command.

Removing intermediate container 40b37aadee4f

---> 850e02eeaad4

Step 5/8 : WORKDIR /app

---> Running in 83db56a9e6fb

Removing intermediate container 83db56a9e6fb

---> 94f63db4a3e9

Step 6/8 : COPY linkextractor.py /app/

---> 7eb1307f3bb5

Step 7/8 : RUN chmod a+x linkextractor.py

---> Running in 3e569d43b6e3

Removing intermediate container 3e569d43b6e3

---> 37f17a705b59

Step 8/8 : ENTRYPOINT ["/linkextractor.py"]

---> Running in 9dfafe5c2d57

Removing intermediate container 9dfafe5c2d57

---> 3e8bdedef1ba

Successfully built 3e8bdedef1ba

Successfully tagged linkextractor:step1

[node1] (local) root@192.168.0.28 ~/linkextractor

\$ docker image ls

REPOSITORY	TAG	IMAGE ID	CREATED	SIZE
------------	-----	----------	---------	------

linkextractor step1 3e8bde1ba 4 seconds ago 927MB

python 3 cecf555903c6 45 hours ago 917MB

[node1] (local) root@192.168.0.28 ~/linkextractor

\$ docker container run -it --rm linkextractor:step1 http://example.com/

https://www.iana.org/domains/example

[node1] (local) root@192.168.0.28 ~/linkextractor

\$ docker container run -it --rm linkextractor:step1 https://training.play-with-docker.com/

/

/about/

#ops

#dev

/ops-stage1

/ops-stage2

/ops-stage3

/dev-stage1

/dev-stage2

/dev-stage3

/alacart

https://twitter.com/intent/tweet?text=Play with Docker Classroom&url=https://training.play-with-docker.com/&via=docker&related=docker

https://facebook.com/sharer.php?u=https://training.play-with-docker.com/

https://plus.google.com/share?url=https://training.play-with-docker.com/

http://www.linkedin.com/shareArticle?mini=true&url=https://training.play-with-docker.com/&title=Play%20with%20Docker%20Classroom&source=https://training.play-with-docker.com

https://www.docker.com/dockercon/

https://www.docker.com/dockercon/

https://dockr.ly/slack

https://www.docker.com/legal/docker-terms-service

https://www.docker.com

https://www.facebook.com/docker.run

https://twitter.com/docker

https://www.github.com/play-with-docker/play-with-docker.github.io

[node1] (local) root@192.168.0.28 ~/linkextractor

```
$ git checkout step2
```

Branch 'step2' set up to track remote branch 'step2' from 'origin'.

Switched to a new branch 'step2'

```
[node1] (local) root@192.168.0.28 ~/linkextractor
```

```
$ tree
```

```
.
├── Dockerfile
├── README.md
└── linkextractor.py
```

0 directories, 3 files

```
[node1] (local) root@192.168.0.28 ~/linkextractor
```

```
$ cat linkextractor.py
```

```
#!/usr/bin/env python
```

```
import sys
```

```
import requests
```

```
from bs4 import BeautifulSoup
```

```
from urllib.parse import urljoin
```

```
def extract_links(url):
```

```
    res = requests.get(url)
```

```
    soup = BeautifulSoup(res.text, "html.parser")
```

```
    base = url
```

```
    # TODO: Update base if a <base> element is present with the href attribute
```

```
    links = []
```

```
    for link in soup.find_all("a"):
```

```
        links.append({
```

```
            "text": " ".join(link.text.split()) or "[IMG]",
```

```
            "href": urljoin(base, link.get("href"))
```

```
        })
```

```
    return links
```

```

if __name__ == "__main__":
    if len(sys.argv) != 2:
        print("\nUsage:\n\t{<URL>\n".format(sys.argv[0]))
        sys.exit(1)
    for link in extract_links(sys.argv[-1]):
        print("{}({})".format(link["text"], link["href"]))

```

[node1] (local) root@192.168.0.28 ~/linkextractor

\$ docker image build -t linkextractor:step2 .

Sending build context to Docker daemon 110.1kB

Step 1/8 : FROM python:3

---> cecf555903c6

Step 2/8 : LABEL maintainer="Sawood Alam <@ibnesayeed>"

---> Using cache

---> 5ec4cde815ec

Step 3/8 : RUN pip install beautifulsoup4

---> Using cache

---> da970c37e197

Step 4/8 : RUN pip install requests

---> Using cache

---> 850e02eeaad4

Step 5/8 : WORKDIR /app

---> Using cache

---> 94f63db4a3e9

Step 6/8 : COPY linkextractor.py /app/

---> 526535b1a30b

Step 7/8 : RUN chmod a+x linkextractor.py

---> Running in 42b3ddc65fbe

Removing intermediate container 42b3ddc65fbe

---> 92c8326c1af4

Step 8/8 : ENTRYPOINT ["/linkextractor.py"]

---> Running in 71141a1bfd4d

docker image ls

Removing intermediate container 71141a1bfd4d

---> 89e10b802be9

Successfully built 89e10b802be9

Successfully tagged linkextractor:step2

[node1] (local) root@192.168.0.28 ~/linkextractor

\$ docker image ls

REPOSITORY	TAG	IMAGE ID	CREATED	SIZE
linkextractor	step2	89e10b802be9	Less than a second ago	927MB
linkextractor	step1	3e8bdedef1ba	25 seconds ago	927MB
python	3	cecf555903c6	45 hours ago	917MB

[node1] (local) root@192.168.0.28 ~/linkextractor

\$ docker container run -it --rm linkextractor:step2 https://training.play-with-docker.com/

[Play with Docker classroom](https://training.play-with-docker.com/)

[About](https://training.play-with-docker.com/about/)

[IT Pros and System Administrators](https://training.play-with-docker.com/#ops)

[Developers](https://training.play-with-docker.com/#dev)

[Stage 1: The Basics](https://training.play-with-docker.com/ops-stage1)

[Stage 2: Digging Deeper](https://training.play-with-docker.com/ops-stage2)

[Stage 3: Moving to Production](https://training.play-with-docker.com/ops-stage3)

[Stage 1: The Basics](https://training.play-with-docker.com/dev-stage1)

[Stage 2: Digging Deeper](https://training.play-with-docker.com/dev-stage2)

[Stage 3: Moving to Staging](https://training.play-with-docker.com/dev-stage3)

[Full list of individual labs](https://training.play-with-docker.com/alacart)

[[IMG]](https://twitter.com/intent/tweet?text=Play with Docker Classroom&url=https://training.play-with-docker.com/&via=docker&related=docker)

[[IMG]](https://facebook.com/sharer.php?u=https://training.play-with-docker.com/)

[[IMG]](https://plus.google.com/share?url=https://training.play-with-docker.com/)

[[IMG]](http://www.linkedin.com/shareArticle?mini=true&url=https://training.play-with-docker.com/&title=Play%20with%20Docker%20Classroom&source=https://training.play-with-docker.com)

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[[IMG]](https://twitter.com/docker)

[[IMG]](https://www.github.com/play-with-docker/play-with-docker.github.io)

[node1] (local) root@192.168.0.28 ~/linkextractor

\$ docker container run -it --rm linkextractor:step1 https://training.play-with-docker.com/

/

/about/

#ops

#dev

/ops-stage1

/ops-stage2

/ops-stage3

/dev-stage1

/dev-stage2

/dev-stage3

/alacart

https://twitter.com/intent/tweet?text=Play with Docker Classroom&url=https://training.play-with-docker.com/&via=docker&related=docker

https://facebook.com/sharer.php?u=https://training.play-with-docker.com/

https://plus.google.com/share?url=https://training.play-with-docker.com/

http://www.linkedin.com/shareArticle?mini=true&url=https://training.play-with-docker.com/&title=Play%20with%20Docker%20Classroom&source=https://training.play-with-docker.com

https://www.docker.com/dockercon/

https://www.docker.com/dockercon/

https://dockr.ly/slack

https://www.docker.com/legal/docker-terms-service

https://www.docker.com

https://www.facebook.com/docker.run

https://twitter.com/docker

https://www.github.com/play-with-docker/play-with-docker.github.io

[node1] (local) root@192.168.0.28 ~/linkextractor

```
$ git checkout step3
```

```
Branch 'step3' set up to track remote branch 'step3' from 'origin'.
```

```
Switched to a new branch 'step3'
```

```
[node1] (local) root@192.168.0.28 ~/linkextractor
```

```
$ tree
```

```
.
├── Dockerfile
├── README.md
├── linkextractor.py
├── main.py
└── requirements.txt
```

```
0 directories, 5 files
```

```
[node1] (local) root@192.168.0.28 ~/linkextractor
```

```
$ cat Dockerfile
```

```
FROM    python:3
```

```
LABEL   maintainer="Sawood Alam <@ibnesayeed>"
```

```
WORKDIR /app
```

```
COPY    requirements.txt /app/
```

```
RUN     pip install -r requirements.txt
```

```
COPY    *.py /app/
```

```
RUN     chmod a+x *.py
```

```
CMD     ["/main.py"]
```

```
[node1] (local) root@192.168.0.28 ~/linkextractor
```

```
$ cat main.py
```

```
#!/usr/bin/env python
```

```
from flask import Flask
```

```
from flask import request
```

```

from flask import jsonify
from linkextractor import extract_links

app = Flask(__name__)

@app.route("/")
def index():
    return "Usage: http://<hostname>[:<prt>]/api/<url>"

@app.route("/api/<path:url>")
def api(url):
    qs = request.query_string.decode("utf-8")
    if qs != "":
        url += "?" + qs
    links = extract_links(url)
    return jsonify(links)

```

```
app.run(host="0.0.0.0")
```

```
[node1] (local) root@192.168.0.28 ~/linkextractor
```

```
$ docker image build -t linkextractor:step3 .
```

```
Sending build context to Docker daemon 115.2kB
```

```
Step 1/8 : FROM python:3
```

```
---> cecf555903c6
```

```
Step 2/8 : LABEL maintainer="Sawood Alam <@ibnesayeed>"
```

```
---> Using cache
```

```
---> 5ec4cde815ec
```

```
Step 3/8 : WORKDIR /app
```

```
---> Running in f69c6ae19e06
```

```
Removing intermediate container f69c6ae19e06
```

```
---> 39e75d940a9e
```

```
Step 4/8 : COPY requirements.txt /app/
```

```
---> ed511e240382
```

Step 5/8 : RUN pip install -r requirements.txt

----> Running in 87393a02f5d2

docker container run -d -p 5000:5000 --name=linkextractor linkextractor:step3

docker container ls

Collecting beautifulsoup4

Downloading beautifulsoup4-4.10.0-py3-none-any.whl (97 kB)

Collecting flask

Downloading Flask-2.0.2-py3-none-any.whl (95 kB)

Collecting requests

Downloading requests-2.27.1-py2.py3-none-any.whl (63 kB)

Collecting soupsieve>1.2

Downloading soupsieve-2.3.1-py3-none-any.whl (37 kB)

Collecting Werkzeug>=2.0

Downloading Werkzeug-2.0.2-py3-none-any.whl (288 kB)

Collecting itsdangerous>=2.0

Downloading itsdangerous-2.0.1-py3-none-any.whl (18 kB)

curl -i http://localhost:5000/api/http://example.com/

Collecting Jinja2>=3.0

Downloading Jinja2-3.0.3-py3-none-any.whl (133 kB)

Collecting click>=7.1.2

Downloading click-8.0.3-py3-none-any.whl (97 kB)

Collecting idna<4,>=2.5

Downloading idna-3.3-py3-none-any.whl (61 kB)

Collecting charset-normalizer~=2.0.0

Downloading charset_normalizer-2.0.10-py3-none-any.whl (39 kB)

Collecting urllib3<1.27,>=1.21.1

Downloading urllib3-1.26.8-py2.py3-none-any.whl (138 kB)

Collecting certifi>=2017.4.17

Downloading certifi-2021.10.8-py2.py3-none-any.whl (149 kB)

Collecting MarkupSafe>=2.0

Downloading MarkupSafe-2.0.1-cp310-cp310-manylinux_2_5_x86_64.manylinux1_x86_64.manylinux_2_12_x86_64.manylinux2010_x86_64.whl (30 kB)

Installing collected packages: MarkupSafe, Werkzeug, urllib3, soupsieve, Jinja2, itsdangerous, idna, click, charset-normalizer, certifi, requests, flask, beautifulsoup4

Successfully installed Jinja2-3.0.3 MarkupSafe-2.0.1 Werkzeug-2.0.2 beautifulsoup4-4.10.0 certifi-2021.10.8 charset-normalizer-2.0.10 click-8.0.3 flask-2.0.2 idna-3.3 itsdangerous-2.0.1 requests-2.27.1 soupsieve-2.3.1 urllib3-1.26.8

WARNING: Running pip as the 'root' user can result in broken permissions and conflicting behaviour with the system package manager. It is recommended to use a virtual environment instead:
<https://pip.pypa.io/warnings/venv>

WARNING: You are using pip version 21.2.4; however, version 21.3.1 is available.

You should consider upgrading via the '/usr/local/bin/python -m pip install --upgrade pip' command.

Removing intermediate container 87393a02f5d2

---> 92781c071c8d

Step 6/8 : COPY *.py /app/

---> dd6e731a2ad1

Step 7/8 : RUN chmod a+x *.py

---> Running in fb49d25c2a0d

Removing intermediate container fb49d25c2a0d

---> 73d9771acb53

Step 8/8 : CMD ["/main.py"]

---> Running in 29458638a196

Removing intermediate container 29458638a196

---> 166dbcc8d1eb

Successfully built 166dbcc8d1eb

Successfully tagged linkextractor:step3

[node1] (local) root@192.168.0.28 ~/linkextractor

\$ docker container run -d -p 5000:5000 --name=linkextractor linkextractor:step3

d4f14416a3c4602d81d99e3c8b54545e06ad88b7b653c5e9e74007c49abb5433

[node1] (local) root@192.168.0.28 ~/linkextractor

\$ docker container ls

CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS	PORTS
d4f14416a3c4	linkextractor:step3	"/main.py"	Less than a second ago	Up	Less than a second
0.0.0.0:5000->5000/tcp	linkextractor				

[node1] (local) root@192.168.0.28 ~/linkextractor

\$ curl -i http://localhost:5000/api/http://example.com/

curl: (56) Recv failure: Connection reset by peer

[node1] (local) root@192.168.0.28 ~/linkextractor

\$ docker container logs linkextractor

* Serving Flask app 'main' (lazy loading)

* Environment: production

WARNING: This is a development server. Do not use it in a production deployment.

Use a production WSGI server instead.

* Debug mode: off

* Running on all addresses.

WARNING: This is a development server. Do not use it in a production deployment.

* Running on http://172.17.0.2:5000/ (Press CTRL+C to quit)

[node1] (local) root@192.168.0.28 ~/linkextractor

\$ docker container rm -f linkextractor

linkextractor

[node1] (local) root@192.168.0.28 ~/linkextractor

\$ git checkout step4

Branch 'step4' set up to track remote branch 'step4' from 'origin'.

Switched to a new branch 'step4'

[node1] (local) root@192.168.0.28 ~/linkextractor

\$ tree

.

|— README.md

|— api

| |— Dockerfile

| |— linkextractor.py

| |— main.py

| |— requirements.txt

|— docker-compose.yml

|— www

|— index.php

2 directories, 7 files

```
[node1] (local) root@192.168.0.28 ~/linkextractor
```

```
$ cat docker-compose.yml
```

```
version: '3'
```

```
services:
```

```
  api:
```

```
    image: linkextractor-api:step4-python
```

```
    build: ./api
```

```
    ports:
```

```
      - "5000:5000"
```

```
  web:
```

```
    image: php:7-apache
```

```
    ports:
```

```
      - "80:80"
```

```
    environment:
```

```
      - API_ENDPOINT=http://api:5000/api/
```

```
    volumes:
```

```
      - ./www:/var/www/html
```

```
[node1] (local) root@192.168.0.28 ~/linkextractor
```

```
$ cat www/index.php
```

```
<!DOCTYPE html>
```

```
<?php
```

```
  $api_endpoint = $_ENV["API_ENDPOINT"] ? "http://localhost:5000/api/";
```

```
  $url = "";
```

```
  if(isset($_GET["url"]) && $_GET["url"] != "") {
```

```
    $url = $_GET["url"];
```

```
    $json = @file_get_contents($api_endpoint . $url);
```

```
    if($json == false) {
```

```
      $err = "Something is wrong with the URL: " . $url;
```

```
    } else {
```

```
      $links = json_decode($json, true);
```

```
$domains = [];  
foreach($links as $link) {  
    array_push($domains, parse_url($link["href"], PHP_URL_HOST));  
}  
$domainct = @array_count_values($domains);  
arsort($domainct);  
}  
}  
?>
```

```
<html>  
<head>  
    <meta charset="utf-8">  
    <title>Link Extractor</title>  
    <style media="screen">  
        html {  
            background: #EAE7D6;  
            font-family: sans-serif;  
        }  
        body {  
            margin: 0;  
        }  
        h1 {  
            padding: 10px;  
            margin: 0 auto;  
            color: #EAE7D6;  
            max-width: 600px;  
        }  
        h1 a {  
            text-decoration: none;  
            color: #EAE7D6;  
        }  
    </style>  
</head>  
<body>  
    <h1>Link Extractor</h1>  
</body>  
</html>
```

```
h2 {
  background: #082E41;
  color: #EAE7D6;
  margin: -10px;
  padding: 10px;
}

p {
  margin: 25px 5px 5px;
}

section {
  max-width: 600px;
  margin: 10px auto;
  padding: 10px;
  border: 1px solid #082E41;
}

div.header {
  background: #082E41;
  margin: 0;
}

div.footer {
  background: #082E41;
  margin: 0;
  padding: 5px;
}

.footer p {
  margin: 0 auto;
  max-width: 600px;
  color: #EAE7D6;
  text-align: center;
}

.footer p a {
  color: #24C2CB;
```

```
    text-decoration: none;
}
.error {
    color: #DA2536;
}
form {
    display: flex;
}
input {
    font-size: 20px;
    padding: 3px;
    height: 40px;
}
input.text {
    box-sizing: border-box;
    flex-grow: 1;
    border-color: #082E41;
}
input.button {
    width: 150px;
    background: #082E41;
    border-color: #082E41;
    color: #EAE7D6;
}
table {
    width: 100%;
    text-align: left;
    margin-top: 10px;
}
table th, table td {
    padding: 3px;
}
```

```

table th:last-child, table td:last-child {
    width: 70px;
    text-align: right;
}
table th {
    border-top: 1px solid #082E41;
    border-bottom: 1px solid #082E41;
}
table tr:last-child td {
    border-top: 1px solid #082E41;
    border-bottom: 1px solid #082E41;
}
</style>
</head>
<body>
<div class="header">
    <h1><a href="/">Link Extractor</a></h1>
</div>

<section>
    <form action="/">
        <input class="text" type="text" name="url" placeholder="http://example.com/" value="<?php echo $url; ?>">
        <input class="button" type="submit" value="Extract Links">
    </form>
</section>

<?php if(isset($err)): ?>
    <section>
        <h2>Error</h2>
        <p class="error"><?php echo $err; ?></p>
    </section>
<?php endif; ?>

```

```

<?php if($url != "" && !isset($err)): ?>
<section>
<h2>Summary</h2>
<p>
<strong>Page:</strong> <?php echo "<a href=\"\" . $url . "\"" . $url . "</a>"; ?>
</p>
<table>
<tr>
<th>Domain</th>
<th># Links</th>
</tr>
<?php
foreach($domainct as $key => $value) {
    echo "<tr>";
    echo "<td>" . $key . "</td>";
    echo "<td>" . $value . "</td>";
    echo "</tr>";
}
?>
<tr>
<td><strong>Total</strong></td>
<td><strong><?php echo count($links); ?></strong></td>
</tr>
</table>
</section>

```

```

<section>
<h2>Links</h2>
<ul>
<?php
foreach($links as $link) {

```



```

        echo "<li><a href=\"\" . $link["href"] . "\">\" . $link["text"] . "</a></li>";
    }
?>

</ul>

</section>

<?php endif; ?>

<div class="footer">

    <p><a href="https://github.com/ibnesayeed/linkextractor">Link Extractor</a> by <a
href="https://twitter.com/ibnesayeed">@ibnesayeed</a> from

    <a href="https://ws-dl.cs.odu.edu/">WS-DL, ODU</a>

    </p>

</div>

</body>

</html>

```

[node1] (local) root@192.168.0.28 ~/linkextractor

\$ docker-compose up -d --build

Creating network "linkextractor_default" with the default driver

Building api

Step 1/8 : FROM python:3

----> cecf555903c6

Step 2/8 : LABEL maintainer="Sawood Alam <@ibnesayeed>"

----> Using cache

----> 5ec4cde815ec

Step 3/8 : WORKDIR /app

----> Using cache

----> 39e75d940a9e

Step 4/8 : COPY requirements.txt /app/

----> 9b308ac39ae2

Step 5/8 : RUN pip install -r requirements.txt

----> Running in 5536f38353ff

docker container ls

Collecting beautifulsoup4

Downloading beautifulsoup4-4.10.0-py3-none-any.whl (97 kB)

Collecting flask

Downloading Flask-2.0.2-py3-none-any.whl (95 kB)

Collecting requests

Downloading requests-2.27.1-py2.py3-none-any.whl (63 kB)

Collecting soupsieve>1.2

Downloading soupsieve-2.3.1-py3-none-any.whl (37 kB)

Collecting Werkzeug>=2.0

Downloading Werkzeug-2.0.2-py3-none-any.whl (288 kB)

Collecting click>=7.1.2

Downloading click-8.0.3-py3-none-any.whl (97 kB)

Collecting Jinja2>=3.0

Downloading Jinja2-3.0.3-py3-none-any.whl (133 kB)

Collecting itsdangerous>=2.0

Downloading itsdangerous-2.0.1-py3-none-any.whl (18 kB)

curl -i http://localhost:5000/api/http://example.com/

Collecting charset-normalizer~=2.0.0

Downloading charset_normalizer-2.0.10-py3-none-any.whl (39 kB)

Collecting urllib3<1.27,>=1.21.1

Downloading urllib3-1.26.8-py2.py3-none-any.whl (138 kB)

Collecting certifi>=2017.4.17

Downloading certifi-2021.10.8-py2.py3-none-any.whl (149 kB)

Collecting idna<4,>=2.5

Downloading idna-3.3-py3-none-any.whl (61 kB)

Collecting MarkupSafe>=2.0

Downloading MarkupSafe-2.0.1-cp310-cp310-manylinux_2_5_x86_64.manylinux1_x86_64.manylinux_2_12_x86_64.manylinux2010_x86_64.whl (30 kB)

Installing collected packages: MarkupSafe, Werkzeug, urllib3, soupsieve, Jinja2, itsdangerous, idna, click, charset-normalizer, certifi, requests, flask, beautifulsoup4

Successfully installed Jinja2-3.0.3 MarkupSafe-2.0.1 Werkzeug-2.0.2 beautifulsoup4-4.10.0 certifi-2021.10.8 charset-normalizer-2.0.10 click-8.0.3 flask-2.0.2 idna-3.3 itsdangerous-2.0.1 requests-2.27.1 soupsieve-2.3.1 urllib3-1.26.8

WARNING: Running pip as the 'root' user can result in broken permissions and conflicting behaviour with the system package manager. It is recommended to use a virtual environment instead:
<https://pip.pypa.io/warnings/venv>

WARNING: You are using pip version 21.2.4; however, version 21.3.1 is available.

You should consider upgrading via the '/usr/local/bin/python -m pip install --upgrade pip' command.

Removing intermediate container 5536f38353ff

---> 7206faa044e5

Step 6/8 : COPY *.py /app/

---> 4f2c28bd0fd8

Step 7/8 : RUN chmod a+x *.py

---> Running in 9fdab49bd030

Removing intermediate container 9fdab49bd030

---> 77514e20352f

Step 8/8 : CMD ["/main.py"]

---> Running in 0a86104e9c75

Removing intermediate container 0a86104e9c75

---> 4950596c983f

Successfully built 4950596c983f

Successfully tagged linkextractor-api:step4-python

Pulling web (php:7-apache)...

7-apache: Pulling from library/php

a2abf6c4d29d: Pull complete

c5608244554d: Pull complete

2d07066487a0: Pull complete

1b6dfaf1958c: Pull complete

32c5e6a60073: Pull complete

90cf855b27cc: Pull complete

8b0f1068c586: Pull complete

5355461305e8: Pull complete

ad1eec592342: Pull complete

e03fbc76cb78: Pull complete

1f5796e48b39: Pull complete

72fbe8e1d4e7: Pull complete

96edece66175: Pull complete

Digest: sha256:729ad01c7d8e10fd992a6d4f3eb05dce3fb69bdf5c4fb4a9de4be4f4f5ae4dcc

Status: Downloaded newer image for php:7-apache

Creating linkextractor_api_1 ... done

Creating linkextractor_web_1 ... done

[node1] (local) root@192.168.0.28 ~/linkextractor

\$ docker container ls

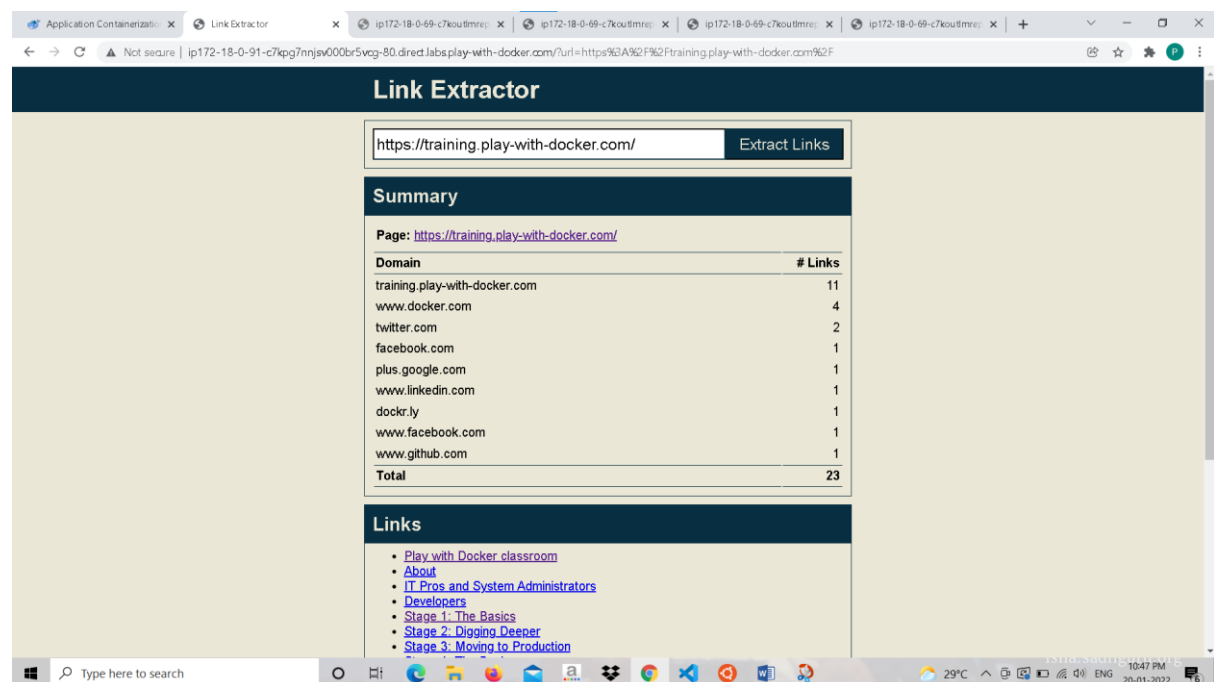
CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS	PORTS	NAMES
4512f3921e95	php:7-apache	"docker-php-entrypoi..."	1 second ago	Up	Less than a second	
0.0.0.0:80->80/tcp	linkextractor_web_1					

1031b334be36	linkextractor-api:step4-python	"./main.py"	1 second ago	Up	Less than a second	
0.0.0.0:5000->5000/tcp	linkextractor_api_1					

[node1] (local) root@192.168.0.28 ~/linkextractor

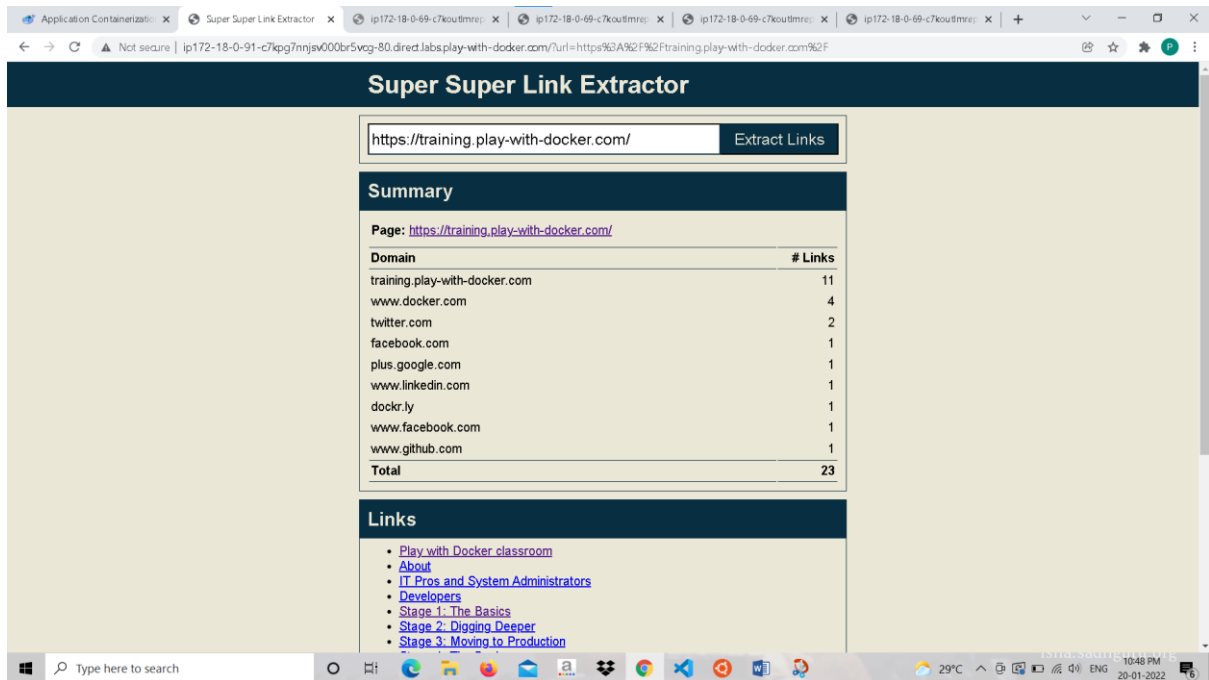
\$ curl -i http://localhost:5000/api/http://example.com/

curl: (56) Recv failure: Connection reset by peer



[node1] (local) root@192.168.0.28 ~/linkextractor

\$ sed -i 's/Link Extractor/Super Link Extractor/g' www/index.php



[node1] (local) root@192.168.0.28 ~/linkextractor

\$ git reset --hard

HEAD is now at 2a3ec3e Synchronize branch step4

[node1] (local) root@192.168.0.28 ~/linkextractor

\$ docker-compose down

Stopping linkextractor_web_1 ... done

Stopping linkextractor_api_1 ... done

Removing linkextractor_web_1 ... done

Removing linkextractor_api_1 ... done

Removing network linkextractor_default

[node1] (local) root@192.168.0.28 ~/linkextractor

\$ git checkout step5

Branch 'step5' set up to track remote branch 'step5' from 'origin'.

Switched to a new branch 'step5'

[node1] (local) root@192.168.0.28 ~/linkextractor

\$ tree

```
.
├── README.md
├── api
│   ├── Dockerfile
│   ├── linkextractor.py
│   ├── main.py
│   └── requirements.txt
├── docker-compose.yml
└── www
    ├── Dockerfile
    └── index.php
```

2 directories, 8 files

[node1] (local) root@192.168.0.28 ~/linkextractor

\$ cat www/Dockerfile

FROM php:7-apache

LABEL maintainer="Sawood Alam <@ibnesayeed>"

ENV API_ENDPOINT="http://localhost:5000/api/"

COPY . /var/www/html/

[node1] (local) root@192.168.0.28 ~/linkextractor

\$ cat api/main.py

#!/usr/bin/env python

```
import os
import json
import redis
from flask import Flask
from flask import request
from linkextractor import extract_links

app = Flask(__name__)
redis_conn = redis.from_url(os.getenv("REDIS_URL", "redis://localhost:6379"))

@app.route("/")
def index():
    return "Usage: http://<hostname>[:<prt>]/api/<url>"

@app.route("/api/<path:url>")
def api(url):
    qs = request.query_string.decode("utf-8")
    if qs != "":
        url += "?" + qs

    jsonlinks = redis_conn.get(url)
    if not jsonlinks:
        links = extract_links(url)
        jsonlinks = json.dumps(links, indent=2)
        redis_conn.set(url, jsonlinks)
```

```
response = app.response_class(  
    status=200,  
    mimetype="application/json",  
    response=jsonlinks  
)
```

```
return response
```

```
app.run(host="0.0.0.0")
```

```
[node1] (local) root@192.168.0.28 ~/linkextractor
```

```
$ cat docker-compose.yml
```

```
version: '3'
```

```
services:
```

```
  api:
```

```
    image: linkextractor-api:step5-python
```

```
    build: ./api
```

```
    ports:
```

```
      - "5000:5000"
```

```
    environment:
```

```
      - REDIS_URL=redis://redis:6379
```

```
  web:
```

```
    image: linkextractor-web:step5-php
```

```
    build: ./www
```

```
    ports:
```

```
      - "80:80"
```

```
    environment:
```


- API_ENDPOINT=http://api:5000/api/

redis:

image: redis

[node1] (local) root@192.168.0.28 ~/linkextractor

\$ docker-compose up -d --build

Creating network "linkextractor_default" with the default driver

Building api

Step 1/9 : FROM python:3

---> cecf555903c6

Step 2/9 : LABEL maintainer="Sawood Alam <@ibnesayeed>"

---> Using cache

---> 5ec4cde815ec

Step 3/9 : ENV REDIS_URL="redis://localhost:6379"

---> Running in e6095fc27d5a

docker-compose exec redis redis-cli monitor

Removing intermediate container e6095fc27d5a

---> aca2b9f76abc

Step 4/9 : WORKDIR /app

---> Running in fa089f1270c6

Removing intermediate container fa089f1270c6

---> 263fadd02ad0

Step 5/9 : COPY requirements.txt /app/

---> c42ab9a9aa8b

Step 6/9 : RUN pip install -r requirements.txt

---> Running in e4bbbb709935

Collecting beautifulsoup4

Downloading beautifulsoup4-4.10.0-py3-none-any.whl (97 kB)

Collecting flask

Downloading Flask-2.0.2-py3-none-any.whl (95 kB)

Collecting redis

Downloading redis-4.1.1-py3-none-any.whl (173 kB)

Collecting requests

Downloading requests-2.27.1-py2.py3-none-any.whl (63 kB)

Collecting soupsieve>1.2

Downloading soupsieve-2.3.1-py3-none-any.whl (37 kB)

Collecting Werkzeug>=2.0

Downloading Werkzeug-2.0.2-py3-none-any.whl (288 kB)

Collecting click>=7.1.2

Downloading click-8.0.3-py3-none-any.whl (97 kB)

Collecting itsdangerous>=2.0

Downloading itsdangerous-2.0.1-py3-none-any.whl (18 kB)

Collecting Jinja2>=3.0

Downloading Jinja2-3.0.3-py3-none-any.whl (133 kB)

Collecting deprecated>=1.2.3

Downloading Deprecated-1.2.13-py2.py3-none-any.whl (9.6 kB)

Collecting packaging>=20.4

Downloading packaging-21.3-py3-none-any.whl (40 kB)

Collecting urllib3<1.27,>=1.21.1

Downloading urllib3-1.26.8-py2.py3-none-any.whl (138 kB)

Collecting certifi>=2017.4.17

Downloading certifi-2021.10.8-py2.py3-none-any.whl (149 kB)

Collecting idna<4,>=2.5

Downloading idna-3.3-py3-none-any.whl (61 kB)

Collecting charset-normalizer~=2.0.0

Downloading charset_normalizer-2.0.10-py3-none-any.whl (39 kB)

Collecting wrapt<2,>=1.10

Downloading wrapt-1.13.3-cp310-cp310-manylinux_2_5_x86_64.manylinux1_x86_64.manylinux_2_12_x86_64.manylinux2010_x86_64.whl (81 kB)

Collecting MarkupSafe>=2.0

Downloading MarkupSafe-2.0.1-cp310-cp310-manylinux_2_5_x86_64.manylinux1_x86_64.manylinux_2_12_x86_64.manylinux2010_x86_64.whl (30 kB)

Collecting pyparsing!=3.0.5,>=2.0.2

Downloading pyparsing-3.0.6-py3-none-any.whl (97 kB)

Installing collected packages: wrapt, pyparsing, MarkupSafe, Werkzeug, urllib3, soupsieve, packaging, Jinja2, itsdangerous, idna, deprecated, click, charset-normalizer, certifi, requests, redis, flask, beautifulsoup4

Successfully installed Jinja2-3.0.3 MarkupSafe-2.0.1 Werkzeug-2.0.2 beautifulsoup4-4.10.0 certifi-2021.10.8 charset-normalizer-2.0.10 click-8.0.3 deprecated-1.2.13 flask-2.0.2 idna-3.3 itsdangerous-2.0.1 packaging-21.3 pyparsing-3.0.6 redis-4.1.1 requests-2.27.1 soupsieve-2.3.1 urllib3-1.26.8 wrapt-1.13.3

WARNING: Running pip as the 'root' user can result in broken permissions and conflicting behaviour with the system package manager. It is recommended to use a virtual environment instead: <https://pip.pypa.io/warnings/venv>

WARNING: You are using pip version 21.2.4; however, version 21.3.1 is available.

You should consider upgrading via the '/usr/local/bin/python -m pip install --upgrade pip' command.

Removing intermediate container e4bbbb709935

---> e306a376049e

Step 7/9 : COPY *.py /app/

---> 9b475e1196e7

Step 8/9 : RUN chmod a+x *.py

---> Running in 9490d6a6b35a

Removing intermediate container 9490d6a6b35a

---> ca09544995f9

Step 9/9 : CMD ["./main.py"]

---> Running in 0447f72680bf

Removing intermediate container 0447f72680bf

---> 6c1f827ab8c7

Successfully built 6c1f827ab8c7

Successfully tagged linkextractor-api:step5-python

Building web

Step 1/4 : FROM php:7-apache

---> 0a4f19d60710

Step 2/4 : LABEL maintainer="Sawood Alam <@ibnesayeed>"

---> Running in cffb4372ccac

Removing intermediate container cffb4372ccac

---> 9ef6a6d868b1

Step 3/4 : ENV API_ENDPOINT="http://localhost:5000/api/"

---> Running in 52cbcd60dc14

Removing intermediate container 52cbcd60dc14

---> 7297c8d31685

Step 4/4 : COPY . /var/www/html/

---> 4df080eadd92

Successfully built 4df080eadd92

Successfully tagged linkextractor-web:step5-php

Pulling redis (redis:)...

latest: Pulling from library/redis

a2abf6c4d29d: Already exists

c7a4e4382001: Pull complete

4044b9ba67c9: Pull complete

c8388a79482f: Pull complete

413c8bb60be2: Pull complete

1abfd3011519: Pull complete

Digest:

sha256:db485f2e245b5b3329fdc7eff4eb00f913e09d8feb9ca720788059fdc2ed8339

Status: Downloaded newer image for redis:latest

Creating linkextractor_api_1 ... done

Creating linkextractor_web_1 ... done

Creating linkextractor_redis_1 ... done

[node1] (local) root@192.168.0.28 ~/linkextractor

\$ docker-compose exec redis redis-cli monitor

OK

^C[node1] (local) root@192.168.0.28 ~/linkextractor

\$ sed -i 's/Link Extractor/Super Link Extractor/g' www/index.php

[node1] (local) root@192.168.0.28 ~/linkextractor

\$ git reset --hard

HEAD is now at 3dbb7eb Synchronize branch step5

[node1] (local) root@192.168.0.28 ~/linkextractor

\$ docker-compose down

Stopping linkextractor_web_1 ... done

Stopping linkextractor_api_1 ... done

Stopping linkextractor_redis_1 ... done

Removing linkextractor_web_1 ... done

Removing linkextractor_api_1 ... done

Removing linkextractor_redis_1 ... done

Removing network linkextractor_default

[node1] (local) root@192.168.0.28 ~/linkextractor

\$ git checkout step6

Branch 'step6' set up to track remote branch 'step6' from 'origin'.

Switched to a new branch 'step6'

[node1] (local) root@192.168.0.28 ~/linkextractor

\$ tree

```
.
├── README.md
├── api
│   ├── Dockerfile
│   ├── Gemfile
│   └── linkextractor.rb
├── docker-compose.yml
├── logs
└── www
    ├── Dockerfile
    └── index.php
```

3 directories, 7 files

[node1] (local) root@192.168.0.28 ~/linkextractor

\$ cat api/linkextractor.rb

```
#!/usr/bin/env ruby
```

```
# encoding: utf-8
```

```
require "sinatra"
```

```
require "open-uri"
```

```
require "uri"
```

```
require "nokogiri"
```

```
require "json"
```

```
require "redis"
```

```
set :protection, :except=>:path_traversal
```

```
redis = Redis.new(url: ENV["REDIS_URL"] || "redis://localhost:6379")
```

```
Dir.mkdir("logs") unless Dir.exist?("logs")
```

```
cache_log = File.new("logs/extraction.log", "a")
```

```
get "/" do
```

```
  "Usage: http://<hostname>[:<prt>]/api/<url>"
```

```
end
```

```
get "/api/*" do
```

```
  url = [params['splat'].first, request.query_string].reject(&:empty?).join("?")
```

```
  cache_status = "HIT"
```

```
  jsonlinks = redis.get(url)
```

```
  if jsonlinks.nil?
```

```
    cache_status = "MISS"
```

```
    jsonlinks = JSON.pretty_generate(extract_links(url))
```

```
    redis.set(url, jsonlinks)
```

```
  end
```

```
  cache_log.puts "#{Time.now.to_i}\t#{cache_status}\t#{url}"
```

```
  status 200
```

```
  headers "content-type" => "application/json"
```

```
body jsonlinks
end
```

```
def extract_links(url)
  links = []
  doc = Nokogiri::HTML(open(url))
  doc.css("a").each do |link|
    text = link.text.strip.split.join(" ")
    begin
      links.push({
        text: text.empty? ? "[IMG]" : text,
        href: URI.join(url, link["href"])
      })
    rescue
    end
  end
  links
end
```

```
[node1] (local) root@192.168.0.28 ~/linkextractor
```

```
$ cat api/Dockerfile
```

```
FROM    ruby:2.6
```

```
LABEL    maintainer="Sawood Alam <@ibnesayeed>"
```

```
ENV      LANG C.UTF-8
```

```
ENV      REDIS_URL="redis://localhost:6379"
```

```
WORKDIR  /app
```


COPY Gemfile /app/

RUN bundle install

COPY linkextractor.rb /app/

RUN chmod a+x linkextractor.rb

CMD ["/linkextractor.rb", "-o", "0.0.0.0"]

[node1] (local) root@192.168.0.28 ~/linkextractor

\$ cat docker-compose.yml

version: '3'

services:

api:

image: linkextractor-api:step6-ruby

build: ./api

ports:

- "4567:4567"

environment:

- REDIS_URL=redis://redis:6379

volumes:

- ./logs:/app/logs

web:

image: linkextractor-web:step6-php

build: ./www

ports:

- "80:80"

environment:

- API_ENDPOINT=http://api:4567/api/

redis:

image: redis

[node1] (local) root@192.168.0.28 ~/linkextractor

\$ docker-compose up -d --build

Creating network "linkextractor_default" with the default driver

Building api

Step 1/10 : FROM ruby:2.6

curl -i http://localhost:4567/api/http://example.com/

2.6: Pulling from library/ruby

0e29546d541c: Already exists

9b829c73b52b: Already exists

cb5b7ae36172: Already exists

6494e4811622: Already exists

6f9f74896dfa: Already exists

8692434624fe: Pull complete

9ffb5805107e: Pull complete

be7151ad9312: Pull complete

Digest:

sha256:634a743c2cb4b51cc9d887103c383e70aef4040b0540fa295d7aed9659320c6d

Status: Downloaded newer image for ruby:2.6

---> 9a2d45e2219e

Step 2/10 : LABEL maintainer="Sawood Alam <@ibnesayeed>"

---> Running in f3d36eee4b06

Removing intermediate container f3d36eee4b06

---> f6a8ab0f6e73

Step 3/10 : ENV LANG C.UTF-8

---> Running in 9bfe76cd8394

Removing intermediate container 9bfe76cd8394

---> 63c478c13abd

Step 4/10 : ENV REDIS_URL="redis://localhost:6379"

---> Running in 6aec4fd05f70

Removing intermediate container 6aec4fd05f70

---> 0abc472a2d1e

Step 5/10 : WORKDIR /app

---> Running in c8f8d14a7522

Removing intermediate container c8f8d14a7522

---> 25418b58c339

Step 6/10 : COPY Gemfile /app/

---> 9e8d36ded20c

Step 7/10 : RUN bundle install

---> Running in c01644e6c7ca

Fetching gem metadata from <https://rubygems.org/>.....

Resolving dependencies...

Using bundler 1.17.2

Fetching mini_portile2 2.7.1

Installing mini_portile2 2.7.1

Fetching ruby2_keywords 0.0.5

Installing ruby2_keywords 0.0.5

Fetching mustermann 1.1.1

Installing mustermann 1.1.1

Fetching racc 1.6.0

Installing racc 1.6.0 with native extensions

Fetching nokogiri 1.13.1 (x86_64-linux)

Installing nokogiri 1.13.1 (x86_64-linux)

Fetching rack 2.2.3

Installing rack 2.2.3

Fetching rack-protection 2.1.0

Installing rack-protection 2.1.0

Fetching redis 4.5.1

Installing redis 4.5.1

Fetching tilt 2.0.10

Installing tilt 2.0.10

Fetching sinatra 2.1.0

Installing sinatra 2.1.0

Bundle complete! 3 Gemfile dependencies, 11 gems now installed.

Use `bundle info [gemname]` to see where a bundled gem is installed.

Removing intermediate container c01644e6c7ca

---> 9ae962e1790d

Step 8/10 : COPY linkextractor.rb /app/

---> 549b77dbe786

Step 9/10 : RUN chmod a+x linkextractor.rb

---> Running in f7264d76eae

Removing intermediate container f7264d76eae

---> fe6d10789107

Step 10/10 : CMD ["/linkextractor.rb", "-o", "0.0.0.0"]

---> Running in d9f90c2e1fa7

Removing intermediate container d9f90c2e1fa7

---> 8e7922e95b8e

Successfully built 8e7922e95b8e

Successfully tagged linkextractor-api:step6-ruby

Building web

```
Step 1/3 : FROM      php:7-apache
---> 0a4f19d60710
Step 2/3 : LABEL      maintainer="Sawood Alam <@ibnesayeed>"
---> Using cache
---> 9ef6a6d868b1
Step 3/3 : COPY       . /var/www/html/
---> bb4682495f6d
Successfully built bb4682495f6d
Successfully tagged linkextractor-web:step6-php
Creating linkextractor_redis_1 ... done
Creating linkextractor_api_1 ... done
Creating linkextractor_web_1 ... done
[node1] (local) root@192.168.0.28 ~/linkextractor
$ curl -i http://localhost:4567/api/http://example.com/
curl: (52) Empty reply from server
[node1] (local) root@192.168.0.28 ~/linkextractor
$ docker-compose down
cat logs/extraction.log
Stopping linkextractor_web_1 ... done
Stopping linkextractor_api_1 ... done
Stopping linkextractor_redis_1 ... done
Removing linkextractor_web_1 ... done
Removing linkextractor_api_1 ... done
Removing linkextractor_redis_1 ... done
Removing network linkextractor_default
[node1] (local) root@192.168.0.28 ~/linkextractor
$ cat logs/extraction.log
```

1642699352 MISS <https://training.play-with-docker.com/>

[node1] (local) root@192.168.0.28 ~/linkextractor