

SETUP

1.0 RUNNING YOUR FIRST DOCKER CONTAINER

```
kjuserunix@Wdevice50: ~  
Preparing to unpack .../07-docker-compose-plugin_2.21.0-1~ubuntu.22.04~jammy_amd64.deb ...  
Unpacking docker-compose-plugin (2.21.0-1~ubuntu.22.04~jammy) ...  
Selecting previously unselected package libltdl7:amd64.  
Preparing to unpack .../08-libltdl7_2.4.6-15build2_amd64.deb ...  
Unpacking libltdl7:amd64 (2.4.6-15build2) ...  
Selecting previously unselected package libslirp0:amd64.  
Preparing to unpack .../09-libslirp0_4.6.1-1build1_amd64.deb ...  
Unpacking libslirp0:amd64 (4.6.1-1build1) ...  
Selecting previously unselected package slirp4netns.  
Preparing to unpack .../10-slirp4netns_1.0.1-2_amd64.deb ...  
Unpacking slirp4netns (1.0.1-2) ...  
Setting up dbus-user-session (1.12.20-2ubuntu4.1) ...  
Setting up docker-buildx-plugin (0.11.2-1~ubuntu.22.04~jammy) ...  
Setting up containerd.io (1.6.26-1) ...  
Created symlink /etc/systemd/system/multi-user.target.wants/containerd.service → /lib/systemd/system/containerd.service.  
Setting up libltdl7:amd64 (2.4.6-15build2) ...  
Setting up docker-ce-cli (5:24.0.7-1~ubuntu.22.04~jammy) ...  
Setting up libslirp0:amd64 (4.6.1-1build1) ...  
Setting up pigz (2.6-1) ...  
Setting up docker-ce-rootless-extras (5:24.0.7-1~ubuntu.22.04~jammy) ...  
Setting up slirp4netns (1.0.1-2) ...  
Setting up docker-ce (5:24.0.7-1~ubuntu.22.04~jammy) ...  
Created symlink /etc/systemd/system/multi-user.target.wants/docker.service → /lib/systemd/system/docker.service.  
Created symlink /etc/systemd/system/sockets.target.wants/docker.socket → /lib/systemd/system/docker.socket.  
Processing triggers for man-db (2.10.2-1) ...  
Processing triggers for libc-bin (2.35-0ubuntu3.1) ...  
kjuserunix@Wdevice50:~$ docker --version  
Docker version 24.0.7, build afdd53b  
kjuserunix@Wdevice50:~$ |
```

Docker installed on WSL

```
kjuserunix@wdevice50:~$ docker run hello-world
Unable to find image 'hello-world:latest' locally
latest: Pulling from library/hello-world
c1ec31eb5944: Pull complete
Digest: sha256:4bd78111b6914a99dbc560e6a20eab57ff6655aea4a80c50b0c5491968cbc2e6
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.
    (amd64)
 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/

kjuserunix@wdevice50:~$ |
```

docker run hello-world

```

kjuserunix@wdevice50:~$ docker pull alpine
Using default tag: latest
latest: Pulling from library/alpine
661ff4d9561e: Pull complete
Digest: sha256:51b67269f354137895d43f3b3d810bfacd3945438e94dc5ac55fdac340352f48
Status: Downloaded newer image for alpine:latest
docker.io/library/alpine:latest
kjuserunix@wdevice50:~$ docker images
REPOSITORY          TAG             IMAGE ID         CREATED          SIZE
alpine              latest          f8c20f8bbcb6    5 weeks ago     7.38MB
hello-world         latest         d2c94e258dcb    8 months ago    13.3kB
kjuserunix@wdevice50:~$ docker run alpine ls -l
total 56
drwxr-xr-x    2 root    root           4096 Dec  7 09:43 bin
drwxr-xr-x    5 root    root           340 Jan 14 16:39 dev
drwxr-xr-x    1 root    root           4096 Jan 14 16:39 etc
drwxr-xr-x    2 root    root           4096 Dec  7 09:43 home
drwxr-xr-x    7 root    root           4096 Dec  7 09:43 lib
drwxr-xr-x    5 root    root           4096 Dec  7 09:43 media
drwxr-xr-x    2 root    root           4096 Dec  7 09:43 mnt
drwxr-xr-x    2 root    root           4096 Dec  7 09:43 opt
dr-xr-xr-x  285 root    root            0 Jan 14 16:39 proc
drwx-----   2 root    root           4096 Dec  7 09:43 root
drwxr-xr-x    2 root    root           4096 Dec  7 09:43 run
drwxr-xr-x    2 root    root           4096 Dec  7 09:43 sbin
drwxr-xr-x    2 root    root           4096 Dec  7 09:43 srv
dr-xr-xr-x   11 root    root            0 Jan 14 16:39 sys
drwxrwxrwt    2 root    root           4096 Dec  7 09:43 tmp
drwxr-xr-x    7 root    root           4096 Dec  7 09:43 usr
drwxr-xr-x   12 root    root           4096 Dec  7 09:43 var
kjuserunix@wdevice50:~$ $ docker run alpine echo "hello from alpine"
hello from alpine
$: command not found
Command 'hello' not found, but can be installed with:
sudo apt install hello # version 2.10-2ubuntu4, or
sudo apt install hello-traditional # version 2.10-5
kjuserunix@wdevice50:~$ |

```

```
Welcome to Ubuntu 22.04.2 LTS (GNU/Linux 5.15.133.1-microsoft-standard-WSL2 x86_64)

* Documentation:  https://help.ubuntu.com
* Management:    https://landscape.canonical.com
* Support:       https://ubuntu.com/advantage

This message is shown once a day. To disable it please create the
/home/kjuserunix/.hushlogin file.
kjuserunix@Wdevice50:~$ docker ps
CONTAINER ID   IMAGE     COMMAND   CREATED   STATUS    PORTS     NAMES
kjuserunix@Wdevice50:~$ docker ps -a
CONTAINER ID   IMAGE     COMMAND   CREATED   STATUS    PORTS     NAMES
286fa1cb2452   alpine    "/bin/sh"   5 minutes ago   Exited (0) 5 minutes ago           busy_kowalevski
c07358a016c6   alpine    "ls -l"     12 minutes ago   Exited (0) 12 minutes ago           loving_bartik
96d1209b2552   hello-world  "/hello"    25 minutes ago   Exited (0) 25 minutes ago           laughing_liskov
kjuserunix@Wdevice50:~$ docker run -it alpine /bin/sh
/ # ls
bin      dev      etc      home     lib      media   mnt      opt      proc     root     run      sbin     srv      sys      tmp      usr      var
/ # |
```

Section 2.0 Webapps with Docker

```
kjuserunix@Wdevice50:~$ docker --version
Docker version 24.0.7, build afdd53b
kjuserunix@Wdevice50:~$ docker run -d dockersamples/static-site
Unable to find image 'dockersamples/static-site:latest' locally
latest: Pulling from dockersamples/static-site
fdd5d7827f33: Pull complete
a3ed95caeb02: Pull complete
716f7a5f3082: Pull complete
7b10f03a0309: Pull complete
aff3ab7e9c39: Pull complete
Digest: sha256:daa686c61d7d239b7977e72157997489db49f316b9b9af3909d9f10fd28b2dec
Status: Downloaded newer image for dockersamples/static-site:latest
cc456f9ea7d16c9f4d49f49ba7e8674513d7cffc94759bc0c7100fb7739b5d9f
kjuserunix@Wdevice50:~$ |
```

docker run -d dockersamples/static-site

```
kjuserunix@Wdevice50:~$ docker ps
CONTAINER ID   IMAGE                  COMMAND                  CREATED   STATUS    PORTS     NAMES
cc456f9ea7d1   dockersamples/static-site  "/bin/sh -c 'cd /usr..."  3 minutes ago   Up 3 minutes   80/tcp, 443/tcp   serene_cartwright
kjuserunix@Wdevice50:~$ docker stop cc456f9ea7d1
cc456f9ea7d1
kjuserunix@Wdevice50:~$ docker remove cc456f9ea7d1
cc456f9ea7d1
```

docker stop, docker rm

```
kjuserunix@Wdevice50:~$ docker run --name static-site -e AUTHOR="Your Name" -d -P dockersamples/static-site
1f4fb2886878248d172c52215cadf280481c913e88de30c76d1dc4830fc86095
kjuserunix@Wdevice50:~$ docker ps

```

CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS	PORTS	NAMES
1f4fb2886878	dockersamples/static-site	"/bin/sh -c 'cd /usr..."	15 seconds ago	Up 14 seconds	0.0.0.0:32769->80/tcp, :::32769->80/tcp, 0.0.0.0:32768->443/tcp, :::32768->443/tcp	static-site

```

kjuserunix@Wdevice50:~$ docker port static-site
80/tcp -> 0.0.0.0:32769
80/tcp -> [::]:32769
443/tcp -> 0.0.0.0:32768
443/tcp -> [::]:32768

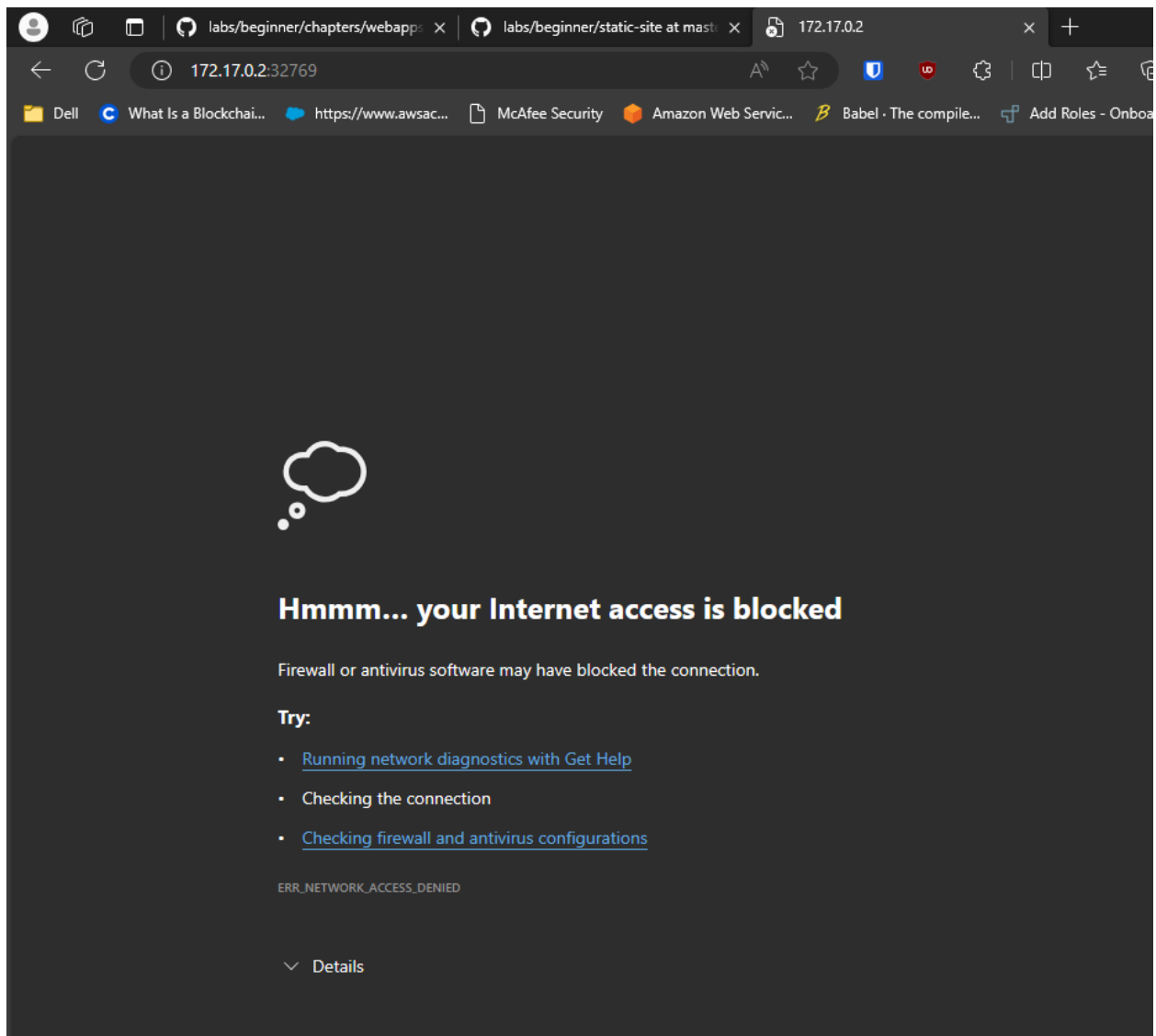
```

```

kjuserunix@Wdevice50:~$ docker port static-site
80/tcp -> 0.0.0.0:32769
80/tcp -> [::]:32769
443/tcp -> 0.0.0.0:32768
443/tcp -> [::]:32768
kjuserunix@Wdevice50:~$ docker-machine ip default
Command 'docker-machine' not found, but can be installed with:
sudo snap install docker
kjuserunix@Wdevice50:~$ docker-machine ip static-site
Command 'docker-machine' not found, but can be installed with:
sudo snap install docker
kjuserunix@Wdevice50:~$ docker inspect -f '{{range .NetworkSettings.Networks}}{{.IPAddress}}{{end}}' static-site
172.17.0.2
kjuserunix@Wdevice50:~$ sudo iptables -t nat -v --line-numbers -I OUTPUT

```

Container ip-address - 172.17.0.2



```
kjuserunix@Wdevice50:~$ docker --version
Docker version 24.0.7, build afdd53b
kjuserunix@Wdevice50:~$ docker stop static-site
static-site
kjuserunix@Wdevice50:~$ docker rm static-site
static-site
kjuserunix@Wdevice50:~$ |
```

Stop remove static-site

```
kjuserunix@Wdevice50:~$ docker pull ubuntu:12.04
12.04: Pulling from library/ubuntu
d8868e50ac4c: Pull complete
83251ac64627: Pull complete
589bba2f1b36: Pull complete
d62ecaceda39: Pull complete
6d93b41cfc6b: Pull complete
Digest: sha256:18305429afa14ea462f810146ba44d4363ae76e4c8dfc38288cf73aa07485005
Status: Downloaded newer image for ubuntu:12.04
docker.io/library/ubuntu:12.04
kjuserunix@Wdevice50:~$ docker pull ubuntu
Using default tag: latest
latest: Pulling from library/ubuntu
a48641193673: Pull complete
Digest: sha256:6042500cf4b44023ea1894effe7890666b0c5c7871ed83a97c36c76ae560bb9b
Status: Downloaded newer image for ubuntu:latest
docker.io/library/ubuntu:latest
kjuserunix@Wdevice50:~$ |
```

Docker pull ubuntu

```
kjuserunix@Wdevice50:~$ mkdir flask-app
kjuserunix@Wdevice50:~$ cd flask-app
kjuserunix@Wdevice50:~/flask-app$ ls
kjuserunix@Wdevice50:~/flask-app$ nano app.py
kjuserunix@Wdevice50:~/flask-app$ ls
app.py
kjuserunix@Wdevice50:~/flask-app$ nano requirements.txt
kjuserunix@Wdevice50:~/flask-app$ ls
app.py  requirements.txt
kjuserunix@Wdevice50:~/flask-app$ mkdir templates
kjuserunix@Wdevice50:~/flask-app$ cd templates
kjuserunix@Wdevice50:~/flask-app/templates$ ls
kjuserunix@Wdevice50:~/flask-app/templates$ nano templates/index.html
kjuserunix@Wdevice50:~/flask-app/templates$ ls
kjuserunix@Wdevice50:~/flask-app/templates$ nano index.html
kjuserunix@Wdevice50:~/flask-app/templates$ ls
index.html
kjuserunix@Wdevice50:~/flask-app/templates$
```

Flask-app, app.py, requirements.txt and index.html

```
kjuserunix@Wdevice50: ~/fla: X + v
GNU nano 6.2
# our base image
FROM alpine:3.5

# Install python and pip
RUN apk add --update py2-pip

# install Python modules needed by the Python app
COPY requirements.txt /usr/src/app/
RUN pip install --no-cache-dir -r /usr/src/app/requirements.txt

# copy files required for the app to run
COPY app.py /usr/src/app/
COPY templates/index.html /usr/src/app/templates/

# tell the port number the container should expose
EXPOSE 5000

# run the application
CMD ["python", "/usr/src/app/app.py"]
```

Nano docker file


```

kuserunix@Wdevice50: ~/fla X + v
kuserunix@Wdevice50:~/flask-app$ nano dockerfile
kuserunix@Wdevice50:~/flask-app$ docker build -t kjagg23/myfirstapp .
failed to fetch metadata: fork/exec /usr/local/lib/docker/cli-plugins/docker-buildx: no such file or directory

DEPRECATED: The legacy builder is deprecated and will be removed in a future release.
            Install the buildx component to build images with BuildKit:
            https://docs.docker.com/go/buildx/

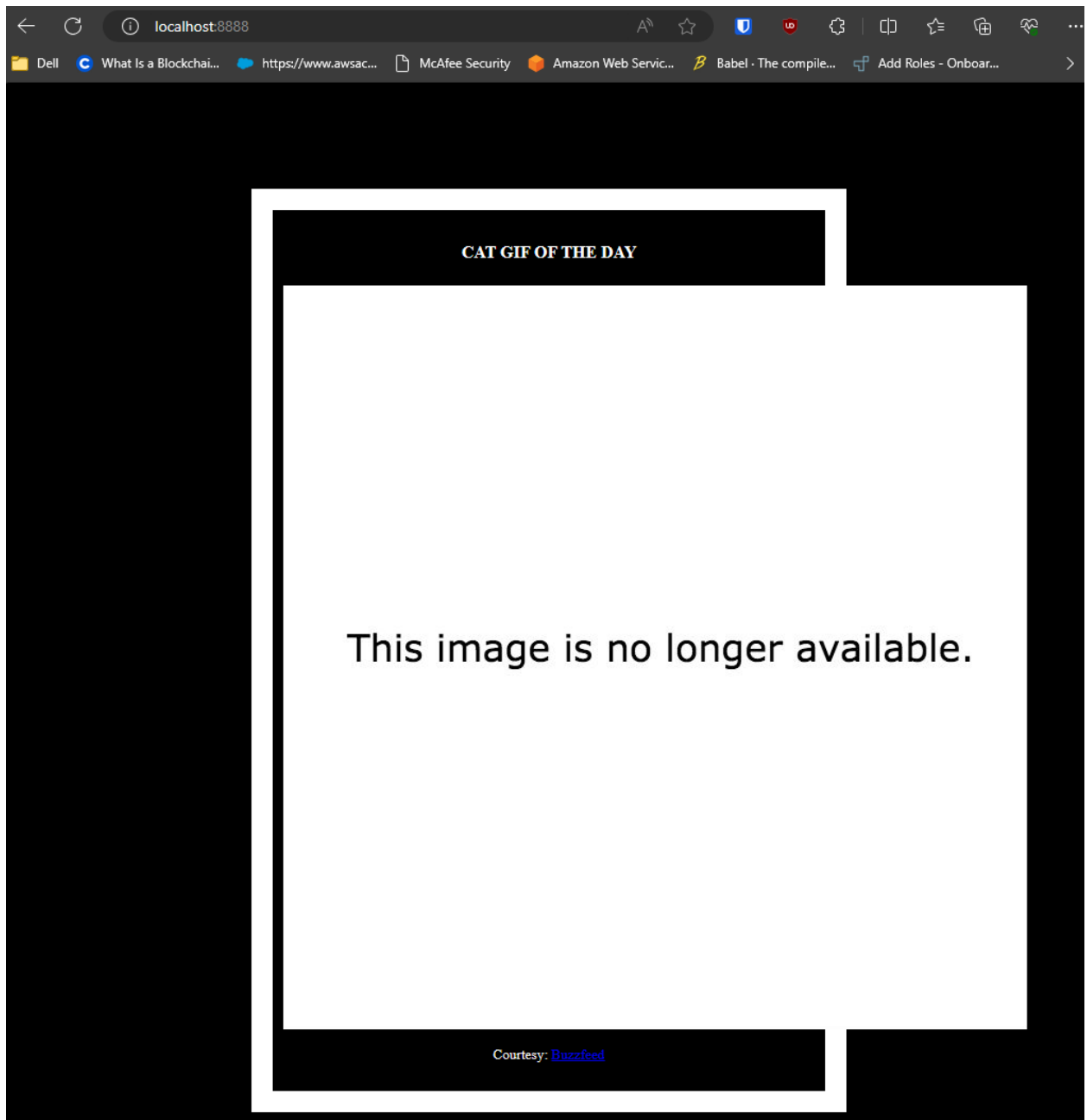
Sending build context to Docker daemon   7.68kB
Step 1/8 : FROM alpine:3.5
3.5: Pulling from library/alpine
8cae0e1ac61c: Pull complete
Digest: sha256:66952b313e51c3bd1987d7c4ddfd5dba9bc0fb6e524eed2448fa660246b3e76ec
Status: Downloaded newer image for alpine:3.5
----> f80194ae2e0c
Step 2/8 : RUN apk add --update py2-pip
----> Running in f833ecfd687d
fetch http://dl-cdn.alpinelinux.org/alpine/v3.5/main/x86_64/APKINDEX.tar.gz
fetch http://dl-cdn.alpinelinux.org/alpine/v3.5/community/x86_64/APKINDEX.tar.gz
(1/12) Installing libbz2 (1.0.6-r5)
(2/12) Installing expat (2.2.0-r1)
(3/12) Installing libffi (3.2.1-r2)
(4/12) Installing gdbm (1.12-r0)
(5/12) Installing ncurses-terminfo-base (6.0_p20171125-r1)
(6/12) Installing ncurses-terminfo (6.0_p20171125-r1)
(7/12) Installing ncurses-libs (6.0_p20171125-r1)
(8/12) Installing readline (6.3.008-r4)
(9/12) Installing sqlite-libs (3.15.2-r2)
(10/12) Installing python2 (2.7.15-r0)
(11/12) Installing py-setuptools (29.0.1-r0)
(12/12) Installing py2-pip (9.0.0-r1)
Executing busybox-1.25.1-r2.trigger
OK: 62 MiB in 23 packages
Removing intermediate container f833ecfd687d
----> 755fb33592fa
Step 3/8 : COPY requirements.txt /usr/src/app/
----> f55b58132be2
Step 4/8 : RUN pip install --no-cache-dir -r /usr/src/app/requirements.txt
----> Running in e5e33a407253
Collecting Flask==0.10.1 (from -r /usr/src/app/requirements.txt (line 1))
  Downloading https://files.pythonhosted.org/packages/db/9c/149ba60c47d107f85fe52564133348458f093dd5e6b57a5b60ab9ac517bb/Flask-0.10.1.tar.gz (544kB)
Collecting Werkzeug==0.7 (from Flask==0.10.1->-r /usr/src/app/requirements.txt (line 1))
  Downloading https://files.pythonhosted.org/packages/cc/94/5f7079a0e0b0d6863ef8f1da638721e9da21e5bace597595b318f71d62e/Werkzeug-1.0.1-py2.py3-none-any.whl (298kB)
Collecting Jinja2>=2.4 (from Flask==0.10.1->-r /usr/src/app/requirements.txt (line 1))
  Downloading https://files.pythonhosted.org/packages/7e/c2/1eece8c95db9c9b1aeb64f5783a9e07a286de42191b7204d67b7496ddf35/Jinja2-2.11.3-py2.py3-none-any.whl (125kB)
Collecting itsdangerous==0.21 (from Flask==0.10.1->-r /usr/src/app/requirements.txt (line 1))
  Downloading https://files.pythonhosted.org/packages/76/ae/44b03b253d6fade317f32c24d100b3b35c2239807046a4c953c7b89fa49e/itsdangerous-1.1.0-py2.py3-none-any.whl
Collecting MarkupSafe==0.23 (from Jinja2>=2.4->Flask==0.10.1->-r /usr/src/app/requirements.txt (line 1))
  Downloading https://files.pythonhosted.org/packages/b9/2e/64db92e53b86efccfaea71321f597fa2e1b2bd3853d8ce658568f7a13094/MarkupSafe-1.1.1.tar.gz
Installing collected packages: Werkzeug, MarkupSafe, Jinja2, itsdangerous, Flask
Running setup.py install for MarkupSafe: started
Step 4/8 : RUN pip install --no-cache-dir -r /usr/src/app/requirements.txt
----> Running in e5e33a407253
Collecting Flask==0.10.1 (from -r /usr/src/app/requirements.txt (line 1))
  Downloading https://files.pythonhosted.org/packages/db/9c/149ba60c47d107f85fe52564133348458f093dd5e6b57a5b60ab9ac517bb/Flask-0.10.1.tar.gz (544kB)
Collecting Werkzeug==0.7 (from Flask==0.10.1->-r /usr/src/app/requirements.txt (line 1))
  Downloading https://files.pythonhosted.org/packages/cc/94/5f7079a0e0b0d6863ef8f1da638721e9da21e5bace597595b318f71d62e/Werkzeug-1.0.1-py2.py3-none-any.whl (298kB)
Collecting Jinja2>=2.4 (from Flask==0.10.1->-r /usr/src/app/requirements.txt (line 1))
  Downloading https://files.pythonhosted.org/packages/7e/c2/1eece8c95db9c9b1aeb64f5783a9e07a286de42191b7204d67b7496ddf35/Jinja2-2.11.3-py2.py3-none-any.whl (125kB)
Collecting itsdangerous==0.21 (from Flask==0.10.1->-r /usr/src/app/requirements.txt (line 1))
  Downloading https://files.pythonhosted.org/packages/76/ae/44b03b253d6fade317f32c24d100b3b35c2239807046a4c953c7b89fa49e/itsdangerous-1.1.0-py2.py3-none-any.whl
Collecting MarkupSafe==0.23 (from Jinja2>=2.4->Flask==0.10.1->-r /usr/src/app/requirements.txt (line 1))
  Downloading https://files.pythonhosted.org/packages/b9/2e/64db92e53b86efccfaea71321f597fa2e1b2bd3853d8ce658568f7a13094/MarkupSafe-1.1.1.tar.gz
Installing collected packages: Werkzeug, MarkupSafe, Jinja2, itsdangerous, Flask
Running setup.py install for MarkupSafe: started
Running setup.py install for MarkupSafe: finished with status 'done'
Running setup.py install for Flask: started
Running setup.py install for Flask: finished with status 'done'
Successfully installed Flask-0.10.1 Jinja2-2.11.3 MarkupSafe-1.1.1 Werkzeug-1.0.1 itsdangerous-1.1.0
You are using pip version 9.0.0, however version 23.3.2 is available.
You should consider upgrading via the 'pip install --upgrade pip' command.
Removing intermediate container e5e33a407253
----> 39d8737e0617
Step 5/8 : COPY app.py /usr/src/app/
----> 57170e51e3de
Step 6/8 : COPY templates/index.html /usr/src/app/templates/
----> 96657cc9719f
Step 7/8 : EXPOSE 5000
----> Running in 85db2f6f8f28
Removing intermediate container 85db2f6f8f28
----> 183324093abc
Step 8/8 : CMD ["python", "/usr/src/app/app.py"]
----> Running in 1cf61c02cd66
Removing intermediate container 1cf61c02cd66
----> c78626765782
Successfully built c78626765782
Successfully tagged kjagg23/myfirstapp:latest
kuserunix@Wdevice50:~/flask-app$ nano dockerfile
kuserunix@Wdevice50:~/flask-app$

```

docker build -t kjagg23/myfirstapp .

```
kjuserunix@Wdevice50:~/flask-app$ docker images
REPOSITORY          TAG          IMAGE ID      CREATED        SIZE
kjagg23/myfirstapp   latest       c78626765782  3 minutes ago  56.8MB
ubuntu              latest       174c8c134b2a  4 weeks ago   77.9MB
alpine              latest       f8c20f8bbcb6  5 weeks ago   7.38MB
hello-world         latest       d2c94e258dcb  8 months ago  13.3kB
alpine              3.5         f80194ae2e0c  4 years ago   4MB
ubuntu              12.04       5b117edd0b76  6 years ago   104MB
dockersamples/static-site latest       f589ccde7957  7 years ago   191MB
kjuserunix@Wdevice50:~/flask-app$ |
```

docker images



```
kjuserunix@Wdevice50:~/flask-app$ docker login
Log in with your Docker ID or email address to push and pull images
You can log in with your password or a Personal Access Token (PAT)
-tokens/

Username: kjagg23
Password:
Login Succeeded
kjuserunix@Wdevice50:~/flask-app$ |
```

docker login

```
kjuserunix@Wdevice50:~/flask-app$ docker push kjagg23/myfirstapp
Using default tag: latest
The push refers to repository [docker.io/kjagg23/myfirstapp]
8f4c87a4fa2e: Pushed
106f8a699446: Pushed
535e78438562: Pushed
f71b7fe5084e: Pushed
9f9819b5720b: Pushed
f566c57e6f2d: Mounted from library/alpine
latest: digest: sha256:6f5321060e77e35393d0f992f6cf0f9abc095f52b60504dd5f4c120c0a7fafa5 size: 1571
kjuserunix@Wdevice50:~/flask-app$ |
```

docker push kjagg23/myfirstapp

```
kjuserunix@Wdevice50:~/flask-app$ docker rm -f myfirstapp
myfirstapp
kjuserunix@Wdevice50:~/flask-app$ |
```

3.0 DEPLOYING AN APP TO SWARM

```
kjuserunix@Wdevice50:~$ git clone https://github.com/docker/example-voting-app.git
Cloning into 'example-voting-app'...
remote: Enumerating objects: 1132, done.
remote: Total 1132 (delta 0), reused 0 (delta 0), pack-reused 1132
Receiving objects: 100% (1132/1132), 1.17 MiB | 13.20 MiB/s, done.
Resolving deltas: 100% (435/435), done.
kjuserunix@Wdevice50:~$ cd example-voting-app
kjuserunix@Wdevice50:~/example-voting-app$ |
```

git clone <https://github.com/docker/example-voting-app.git>

```
kjuserunix@Wdevice50:~/example-voting-app$ docker swarm init
Swarm initialized: current node (xv9ty76d5t5ck052jnbdiiyw) is now a manager.

To add a worker to this swarm, run the following command:

    docker swarm join --token SWMTKN-1-0hq7prazd76fdhhrn9rypre4bft7v4cqe64f04mtz63kdk3pgs-9w99f3v8342qdiqztkn0i7tm 172.21.106.210:2377

To add a manager to this swarm, run 'docker swarm join-token manager' and follow the instructions.
kjuserunix@Wdevice50:~/example-voting-app$ |
```

docker swarm init

```
kjuserunix@Wdevice50:~/example-voting-app$ ls
LICENSE  MAINTAINERS  README.md  architecture.excalidraw.png  docker-compose.images.yml  docker-compose.yml  docker-stack.yml  dockercompose  healthchecks  k8s-specifications  result  seed-data  vote  worker
```

```
kjuserunix@Wdevice50: ~/exi X + v
GNU nano 6.2
version: "3"
services:

  redis:
    image: redis:alpine
    ports:
      - "6379"
    networks:
      - frontend
    deploy:
      replicas: 2
      update_config:
        parallelism: 2
        delay: 10s
      restart_policy:
        condition: on-failure
  db:
    image: postgres:9.4
    volumes:
      - db-data:/var/lib/postgresql/data
    networks:
      - backend
    deploy:
      placement:
        constraints: [node.role == manager]
  vote:
    image: dockersamples/examplevotingapp_vote:before
    ports:
      - 5000:80
    networks:
      - frontend
    depends_on:
      - redis
    deploy:
      replicas: 2
      update_config:
        parallelism: 2
      restart_policy:
        condition: on-failure
  result:
    image: dockersamples/examplevotingapp_result:before
    ports:
      - 5001:80
    networks:
      - backend
    depends_on:
      - db

^G Help      ^O Write Out  ^W Where Is   ^K Cut        ^T Execute
^X Exit      ^R Read File  ^\ Replace    ^U Paste      ^J Justify
```

dockercompose file

```

kjuserunix@Wdevice50:~/example-voting-app$ docker stack deploy --compose-file docker-stack.yml vote
Creating network vote_frontend
Creating network vote_backend
Creating service vote_vote
Creating service vote_result
Creating service vote_worker
Creating service vote_redis
Creating service vote_db
kjuserunix@Wdevice50:~/example-voting-app$ |

```

docker stack deploy --compose-file docker-stack.yml vote

```

kjuserunix@Wdevice50:~/example-voting-app$ docker stack services vote

```

ID	NAME	MODE	REPLICAS	IMAGE	PORTS
i3wqtaconchk	vote_db	replicated	1/1	postgres:15-alpine	
ao0mjulk9tf	vote_redis	replicated	1/1	redis:alpine	
lvcipeiuxniv	vote_result	replicated	1/1	dockersamples/examplevotingapp_result:latest	*:5001->80/tcp
7fdviku09t6i	vote_vote	replicated	2/2	dockersamples/examplevotingapp_vote:latest	*:5000->80/tcp
q1g48eoz5w9r	vote_worker	replicated	2/2	dockersamples/examplevotingapp_worker:latest	

```

kjuserunix@Wdevice50:~/example-voting-app$ |

```

docker stack services vote

```
kjuserunix@Wdevice50: ~/exi X + v
GNU nano 6.2
db:
  image: postgres:15-alpine
  environment:
    POSTGRES_USER: "postgres"
    POSTGRES_PASSWORD: "postgres"
  volumes:
    - db-data:/var/lib/postgresql/data
  networks:
    - backend

vote:
  image: dockersamples/examplevotingapp_vote:after
  ports:
    - 5000:80
  networks:
    - frontend
  depends_on:
    - redis
  deploy:
    replicas: 2
    update_config:
      parallelism: 2
    restart_policy:
      condition: on-failure

result:
  image: dockersamples/examplevotingapp_result:after
  ports:
    - 5001:80
  networks:
    - backend
  depends_on:
    - db
  deploy:
    replicas: 2
    update_config:
      parallelism: 2
      delay: 10s
    restart_policy:
      condition: on-failure

worker:
  image: dockersamples/examplevotingapp_worker
  networks:
    - frontend
    - backend
  deploy:
```

^G Help	^O Write Out	^W Where Is	^K Cut	^T Exe
^X Exit	^R Read File	^N Replace	^U Paste	^J Jus

Change images to use after tags


```
kjuserunix@wdevice50:~/example-voting-app$ docker stack deploy --compose-file docker-stack.yml vote
Updating service vote_db (id: i3wqtaconchk1rag2si2o8dwg)
Updating service vote_vote (id: 7fdviku09t6i5u1qinhv24meo)
Updating service vote_result (id: lvcipeiuxnivusgukw3kd6hmq)
Updating service vote_worker (id: q1g48eoz5w9r9fp15azd4gr0p)
Updating service vote_redis (id: ao0mjjuulk9tfr0pqbvwv0ios)
kjuserunix@wdevice50:~/example-voting-app$ |
```

Redeployment

```
kjuserunix@wdevice50:~/example-voting-app$ docker stack rm vote
Removing service vote_db
Removing service vote_redis
Removing service vote_result
Removing service vote_vote
Removing service vote_worker
Removing network vote_frontend
Removing network vote_backend
kjuserunix@wdevice50:~/example-voting-app$ |
```

Remove the swarm