

Set up

```
chingheilo@Chinghei ~ % docker run hello-world

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.
   (arm64v8)
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/

chingheilo@Chinghei ~ %
```

1.0 Running your first container

```
chingheilo@Chinghei ~ % docker pull alpine
Using default tag: latest
latest: Pulling from library/alpine
c30352492317: Pull complete
Digest: sha256:51b67269f354137895d43f3b3d810bfacd3945438e94dc5ac55fdac340352f48
Status: Downloaded newer image for alpine:latest
docker.io/library/alpine:latest

What's Next?
1. Sign in to your Docker account → docker login
2. View a summary of image vulnerabilities and recommendations → docker scout quickview alpine
chingheilo@Chinghei ~ %
```

```
chingheilo@Chinghei ~ % docker images
REPOSITORY    TAG       IMAGE ID       CREATED        SIZE
alpine        latest    1dc785547989   4 weeks ago    7.73MB
hello-world   latest    ee301c921b8a   8 months ago    9.14kB
chingheilo@Chinghei ~ %
```

```
chingheilo@Chinghei ~ % docker run alpine ls -l
total 56
drwxr-xr-x    2 root    root          4096 Dec  7 09:45 bin
drwxr-xr-x    5 root    root          340 Jan 10 22:56 dev
drwxr-xr-x    1 root    root          4096 Jan 10 22:56 etc
drwxr-xr-x    2 root    root          4096 Dec  7 09:45 home
drwxr-xr-x    7 root    root          4096 Dec  7 09:45 lib
drwxr-xr-x    5 root    root          4096 Dec  7 09:45 media
drwxr-xr-x    2 root    root          4096 Dec  7 09:45 mnt
drwxr-xr-x    2 root    root          4096 Dec  7 09:45 opt
dr-xr-xr-x  233 root    root           0 Jan 10 22:56 proc
drwx-----   2 root    root          4096 Dec  7 09:45 root
drwxr-xr-x    2 root    root          4096 Dec  7 09:45 run
drwxr-xr-x    2 root    root          4096 Dec  7 09:45 sbin
drwxr-xr-x    2 root    root          4096 Dec  7 09:45 srv
dr-xr-xr-x   12 root    root           0 Jan 10 22:56 sys
drwxrwxrwt    2 root    root          4096 Dec  7 09:45 tmp
drwxr-xr-x    7 root    root          4096 Dec  7 09:45 usr
drwxr-xr-x   12 root    root          4096 Dec  7 09:45 var
chingheilo@Chinghei ~ %
```

```
chingheilo@Chinghei ~ % docker ps
CONTAINER ID   IMAGE                COMMAND                  CREATED        STATUS        PORTS                NAMES
af3d64a68e7f   dockersamples/static-site  "/bin/sh -c 'cd /usr..."  7 minutes ago   Up 7 minutes   80/tcp, 443/tcp      sleepy_jones
chingheilo@Chinghei ~ %
```

```
chingheilo@Chinghei ~ % docker run alpine echo "hello from alpine"
hello from alpine
chingheilo@Chinghei ~ %
```

```
chingheilo@Chinghei ~ % docker ps -a
CONTAINER ID   IMAGE                COMMAND                  CREATED        STATUS              PORTS                NAMES
3b65b6183e7a   alpine              "/bin/sh"               37 seconds ago   Exited (127) 12 seconds ago                elegant_lovelace
6157116975f3   alpine              "/bin/sh"               About a minute ago   Exited (0) About a minute ago                nostalgic_blackburn
0b1b33e0b496   alpine              "echo 'hello from al..."  2 minutes ago     Exited (0) 2 minutes ago                optimistic_varahamihira
7131e1f2e825   alpine              "ls -l"                 4 minutes ago     Exited (0) 4 minutes ago                serene_mendeleev
f84ddb421f54   hello-world         "/hello"                 8 minutes ago     Exited (0) 8 minutes ago                lucid_cohen
17b2ca51d58d   hello-world         "/hello"                 21 hours ago      Exited (0) 21 hours ago                hopeful_albattani
chingheilo@Chinghei ~ %
```

2.0 Webapps with Docker

```
chingheilo@Chinghei ~ % 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
WARNING: The requested image's platform (linux/amd64) does not match the detected host platform (linux/arm64/v8) and no specific platform was requested
af3d64a68e7f570eabffdb56d3cf2e69adc55528652003ae4caf4c322e54de0
chingheilo@Chinghei ~ %
```

```
chingheilo@Chinghei ~ % docker ps
CONTAINER ID   IMAGE                      COMMAND                  CREATED        STATUS        PORTS                    NAMES
af3d64a68e7f   dockersamples/static-site "/bin/sh -c 'cd /usr..." 7 minutes ago  Up 7 minutes  80/tcp, 443/tcp         sleepy_jones
chingheilo@Chinghei ~ %
```

```
chingheilo@Chinghei ~ % docker run --name static-site -e AUTHOR="Kevin" -d -P dockersamples/static-site
WARNING: The requested image's platform (linux/amd64) does not match the detected host platform (linux/arm64/v8) and no specific platform was requested
3d65d3f02ca0d1129249d095e4daac9a235648b092e6ff2b98e11023a19732e6
chingheilo@Chinghei ~ %
```

```
chingheilo@Chinghei ~ % docker port static-site
80/tcp -> 0.0.0.0:55001
443/tcp -> 0.0.0.0:55000
chingheilo@Chinghei ~ %
```

Hello Kevin!

This is being served from a **docker** container running Nginx.

```
chingheilo@Chinghei ~ % docker rm static-site
static-site
chingheilo@Chinghei ~ % docker rm -f static-site-2
Error response from daemon: No such container: static-site-2
chingheilo@Chinghei ~ % docker images
REPOSITORY          TAG         IMAGE ID      CREATED        SIZE
alpine               latest      1dc785547989  4 weeks ago   7.73MB
hello-world          latest      ee301c921b8a  8 months ago  9.14kB
dockersamples/static-site latest      f589ccde7957  7 years ago   191MB
chingheilo@Chinghei ~ %
```

```

● chingheilo@Chinghei example-voting-app % docker images
REPOSITORY          TAG                 IMAGE ID            CREATED             SIZE
example-voting-app-vote    latest             d01ac9ecc0b4       About an hour ago  181MB
example-voting-app-worker  latest             c61d13105352       About an hour ago  195MB
example-voting-app-result  latest             e29a1aa70186       About an hour ago  246MB
kevinlo90/myfirstapp      latest             02197e0a7617       21 hours ago      64.8MB
<none>                   <none>             70021054af42       21 hours ago      64.8MB
kevinlo90/myfirstapp      <none>             32cbbc85cc42       21 hours ago      64.8MB
<none>                   <none>             905589dae875       22 hours ago      87.2MB
redis                    alpine             0be8a78a8b83       3 days ago        46.5MB
postgres                15-alpine         440ffd278784       3 weeks ago       247MB
ubuntu                   latest             da935f064913       4 weeks ago       69.3MB
alpine                   latest             f8c20f8bbcb6       5 weeks ago       7.38MB
dockersamples/examplevotingapp_vote    after             855124cd10ab       2 months ago      179MB
dockersamples/examplevotingapp_result  <none>            470e250f51b8       2 months ago      291MB
dockersamples/examplevotingapp_worker  <none>            c6b89c469067       2 months ago      195MB
postgres                <none>            897a27671908       3 years ago       241MB
ubuntu                   12.04             5b117edd0b76       6 years ago       104MB
○ chingheilo@Chinghei example-voting-app %

```

```

● chingheilo@Chinghei flask-app % docker build -t kevinlo90/myfirstapp .
[+] Building 19.6s (12/12) FINISHED
=> [internal] load .dockerignore                                docker:default 0.0s
=> => transferring context: 2B                                  0.0s
=> [internal] load build definition from Dockerfile              0.0s
=> => transferring dockerfile: 558B                             0.0s
=> [internal] load metadata for docker.io/library/alpine:3.11   1.5s
=> [auth] library/alpine:pull token for registry-1.docker.io    0.0s
=> [1/6] FROM docker.io/library/alpine:3.11@sha256:bcae378eacedab83da66079d9366c8f5df542d7ed9ab23bf487e3e1a8481375d 0.8s
=> => resolve docker.io/library/alpine:3.11@sha256:bcae378eacedab83da66079d9366c8f5df542d7ed9ab23bf487e3e1a8481375d 0.0s
=> => sha256:bcae378eacedab83da66079d9366c8f5df542d7ed9ab23bf487e3e1a8481375d 1.64kB / 1.64kB 0.0s
=> => sha256:65d32c8f6e45a68def0d167c5751476a07710eede8d3247c968a26daa676f266 528B / 528B 0.0s
=> => sha256:1fd5850ccf13c153697413d51bb0665c03202aad5314c38ca7bf14a8250f6463 1.49kB / 1.49kB 0.0s
=> => sha256:b48a9fe99aba73065302163e59c82a1b0054810c7b9ef85ee6f1b495b162461 2.73MB / 2.73MB 0.6s
=> => extracting sha256:b48a9fe99aba73065302163e59c82a1b0054810c7b9ef85ee6f1b495b162461 0.1s
=> [internal] load build context                                0.0s
=> => transferring context: 280B                                  0.0s
=> [2/6] RUN apk add --update py2-pip                          14.7s
=> [3/6] COPY requirements.txt /usr/src/app/                    0.0s
=> [4/6] RUN pip install --no-cache-dir -r /usr/src/app/requirements.txt 2.4s
=> [5/6] COPY app.py /usr/src/app/                              0.0s
=> [6/6] COPY templates/index.html /usr/src/app/templates/      0.0s
=> exporting to image                                           0.2s
=> => exporting layers                                           0.2s
=> => writing image sha256:32cbbc85cc4255c24dcd2890bfcee28e1318bb0053abdf21e1b7cca3ceb83b37 0.0s
=> => naming to docker.io/kevinlo90/myfirstapp                  0.0s

What's Next?
View a summary of image vulnerabilities and recommendations -> docker scout quickview

```

```

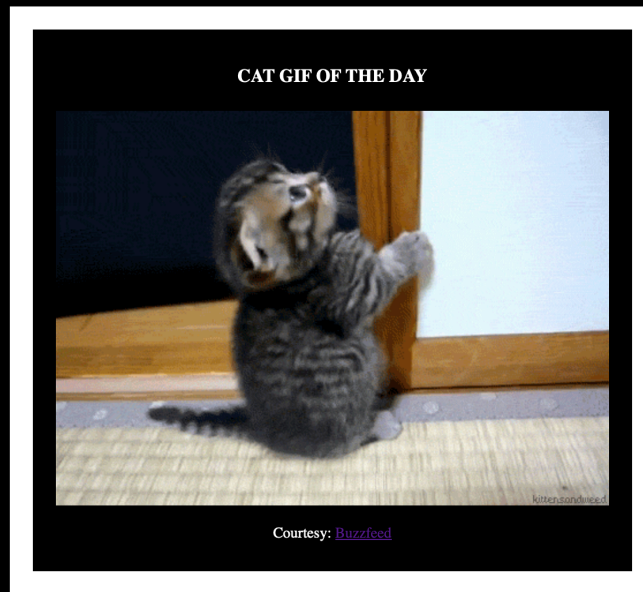
● chingheilo@Chinghei flask-app % docker run -p 8888:5000 --name myfirstapp kevinlo90/myfirstapp
* Running on http://0.0.0.0:5000/ (Press CTRL+C to quit)
192.168.65.1 - - [12/Jan/2024 01:41:12] "GET / HTTP/1.1" 200 -
192.168.65.1 - - [12/Jan/2024 01:41:12] "GET /tree/Applications HTTP/1.1" 404 -
^C
Traceback (most recent call last):
  File "/usr/lib/python2.7/SocketServer.py", line 293, in _handle_request_noblock
    self.process_request(request, client_address)
  File "/usr/lib/python2.7/SocketServer.py", line 321, in process_request
    self.finish_request(request, client_address)
  File "/usr/lib/python2.7/SocketServer.py", line 334, in finish_request
    self.RequestHandlerClass(request, client_address, self)
  File "/usr/lib/python2.7/SocketServer.py", line 655, in __init__
    self.handle()
  File "/usr/lib/python2.7/site-packages/werkzeug/serving.py", line 345, in handle
    BaseHTTPRequestHandler.handle(self)
  File "/usr/lib/python2.7/BaseHTTPServer.py", line 340, in handle
    self.handle_one_request()
  File "/usr/lib/python2.7/site-packages/werkzeug/serving.py", line 375, in handle_one_request
    self.raw_requestline = self.rfile.readline()
  File "/usr/lib/python2.7/socket.py", line 451, in readline
    data = self._sock.recv(self._rbufsize)
KeyboardInterrupt
Exception happened during processing of request from ('192.168.65.1', 35002)

```

```

● chingheilo@Chinghei flask-app % docker ps -a
CONTAINER ID   IMAGE          COMMAND                  CREATED          STATUS          PORTS          NAMES
b22c1f015c40   kevinlo90/myfirstapp   "python /usr/src/app..." 3 minutes ago    Exited (0) 2 minutes ago          myfirstapp

```

```
● chingheilo@Chinghei flask-app % docker login
  Authenticating with existing credentials...
  Login Succeeded
● chingheilo@Chinghei flask-app % docker push kevinlo90/myfirstapp
  Using default tag: latest
  The push refers to repository [docker.io/kevinlo90/myfirstapp]
  9568a31d937a: Pushed
  f719fe32b3cb: Pushed
  86d267f6ba52: Pushed
  1a7def48028d: Pushed
  09a6cef1ce98: Pushed
  1ecc925d1390: Mounted from library/alpine
  latest: digest: sha256:793227165db21ea691dc3a01a24e91b56849913a60e8754c3645cfab1e33dadb size: 1572
```

3.0 Deploying an app to a Swarm

```

● chingheilo@Chinghei example-voting-app % docker swarm init
Swarm initialized: current node (v1bgnv88o8xun0zyve4w4iol3) is now a manager.

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

    docker swarm join --token SWMTKN-1-1rdqzonlvlxoq9ywoy7zoll64e37bjrtzo8csokisrp13iwmck-3tkbvrsf0qb12bod6rccn2z6 192.1
68.65.3:2377

To add a manager to this swarm, run 'docker swarm join-token manager' and follow the instructions.

● chingheilo@Chinghei example-voting-app % docker stack deploy --compose-file docker-stack.yml vote
Creating network vote_frontend
Creating network vote_backend
Creating service vote_result
Creating service vote_worker
Creating service vote_redis
Creating service vote_db
Creating service vote_vote
○ chingheilo@Chinghei example-voting-app %

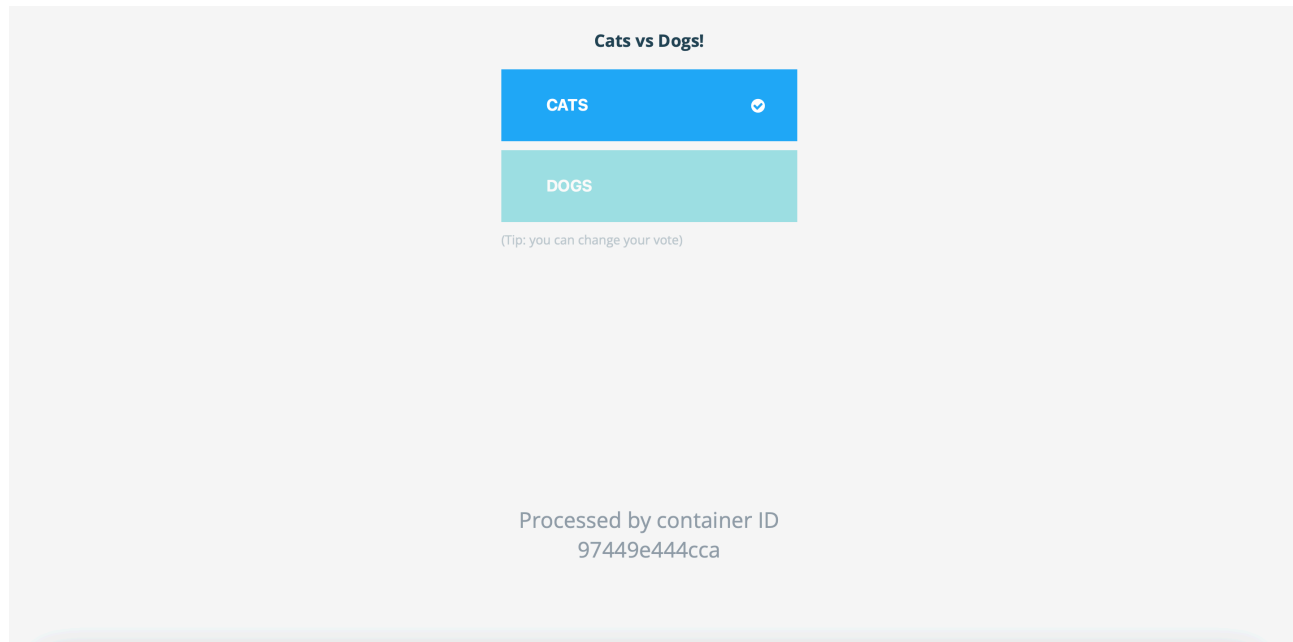
```

```

● chingheilo@Chinghei example-voting-app % docker stack services vote
ID            NAME      MODE     REPLICAS  IMAGE                                  PORTS
cfff8xy5qnc  vote_db   replicated 1/1        postgres:15-alpine
qkualyxwfeed vote_redis replicated 1/1        redis:alpine
946aheebh0q7 vote_result replicated 1/1        dockersamples/examplevotingapp_result:latest *:5001->80/tcp
sakx1t8gruej vote_vote  replicated 2/2        dockersamples/examplevotingapp_vote:latest  *:5002->80/tcp
qtq3t2ffp1ex vote_worker replicated 2/2        dockersamples/examplevotingapp_worker:latest
○ chingheilo@Chinghei example-voting-app %

```

Port for IMAGE vote_vote was modified to 5002, as port 5000 occupied with system uses.



CATS
100.0%

DOGS
0.0%

1 vote

```
● chingheilo@Chinghei example-voting-app % docker stack deploy --compose-file docker-stack.yml vote
Creating network vote_backend
Creating network vote_frontend
Creating service vote_db
Creating service vote_vote
Creating service vote_result
Creating service vote_worker
Creating service vote_redis
● chingheilo@Chinghei 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_backend
Removing network vote_frontend
○ chingheilo@Chinghei example-voting-app %
```

