

Docker for Beginner

Setup

```
[aratrika@Aratrikas-MacBook-Air ~ % docker run hello-world
Unable to find image 'hello-world:latest' locally
latest: Pulling from library/hello-world
478afc919002: Pull complete
Digest: sha256:ac69084025c660510933cca701f615283cdbb3aa0963188770b54c31c8962493
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.
(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/>

1.0 Running your first container

```
[aratrika@Aratrikas-MacBook-Air ~ % 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?

View a summary of image vulnerabilities and recommendations → [docker scout quickview alpine](#)

```
aratrika@Aratrikas-MacBook-Air ~ % 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
```

1.1 Docker Run

```
aratrika@Aratrikas-MacBook-Air ~ % 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 00:40 dev
drwxr-xr-x  1 root    root    4096 Jan 10 00:40 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 227 root    root      0 Jan 10 00:40 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 00:40 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
```

```
aratrika@Aratrikas-MacBook-Air ~ % docker run alpine echo "hello from alpine"
hello from alpine
aratrika@Aratrikas-MacBook-Air ~ % docker run alpine /bin/sh
aratrika@Aratrikas-MacBook-Air ~ % docker ps -a
```

CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS	PORTS	NAMES
b7f1b207d520	alpine	"/bin/sh"	17 seconds ago	Exited (0) 16 seconds ago		elated_kilby
7740094f93bf	alpine	"echo 'hello from al..."	About a minute ago	Exited (0) About a minute ago		silly_murdock
a73036b2a094	alpine	"ls -l"	19 minutes ago	Exited (0) 19 minutes ago		cool_leavitt
e9a11220c6ec	hello-world	"/hello"	26 minutes ago	Exited (0) 26 minutes ago		ecstatic_noyce

2.0 Web Apps with Docker

2.1 Run a static website in a container

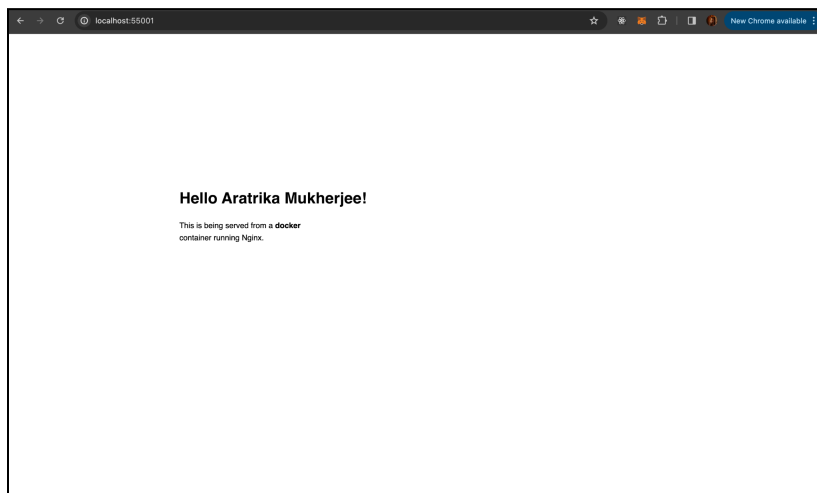
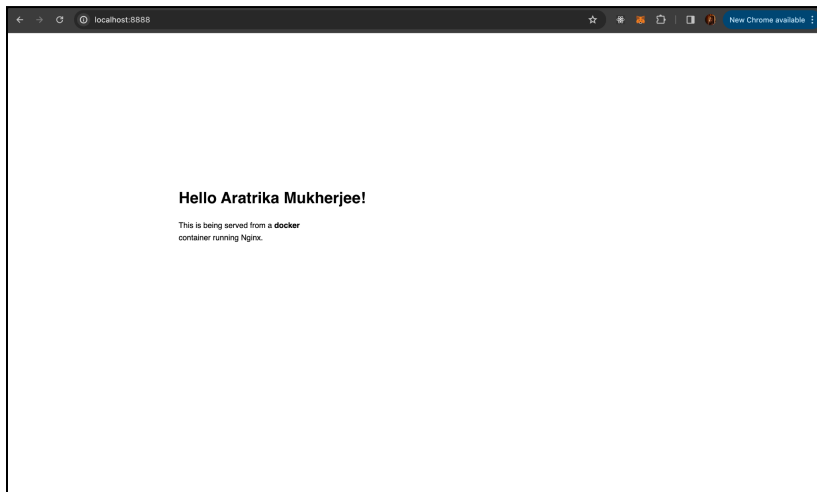
```
aratrika@Aratrikas-MacBook-Air ~ % docker run -d dockersamples/static-site
Unable to find image 'dockersamples/static-site:latest' locally
latest: Pulling from dockersamples/static-site
fdd5d7827f33: Pull complete
a3ed95cae02: Pull complete
716f7a5f3082: Pull complete
7b10f03a0309: Pull complete
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
3669ceb5bb5eaa52d8e3e3a5838bbe2826776a15aba3430b52b2d903a848f2d
aratrika@Aratrikas-MacBook-Air ~ % docker ps
```

CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS	PORTS	NAMES
3669ceb5bb5e	dockersamples/static-site	"/bin/sh -c 'cd /usr-"	47 seconds ago	Up 46 seconds	80/tcp, 443/tcp	elated_ptolemy
b3391ba00100	alpine	"/bin/sh"	46 hours ago	Up 46 hours		cool_black

```
aratrika@Aratrikas-MacBook-Air ~ % docker stop 3669ceb5bb5e
3669ceb5bb5e
aratrika@Aratrikas-MacBook-Air ~ % docker rm 3669ceb5bb5e
3669ceb5bb5e
aratrika@Aratrikas-MacBook-Air ~ % docker run --name static-site -e AUTHOR="Aratrika Mukherjee" -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
104bbf1eb1011738d65ebd434cb5a088189733680025661c9600ba78ea94e7cb
aratrika@Aratrikas-MacBook-Air ~ % docker port static-site
80/tcp -> 0.0.0.0:55001
443/tcp -> 0.0.0.0:55000
```

```
aratrika@Aratrikas-MacBook-Air ~ % docker run --name static-site-2 -e AUTHOR="Aratrika Mukherjee" -d -p 8888:80 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
ae114cf1ace4b448f45b785d3b1fbd62d2f452f090b0b39e9338d5e6cd86367
aratrika@Aratrikas-MacBook-Air ~ % docker stop static-site
static-site
aratrika@Aratrikas-MacBook-Air ~ % docker rm static-site
static-site
aratrika@Aratrikas-MacBook-Air ~ % docker rm -f static-site-2
static-site-2
aratrika@Aratrikas-MacBook-Air ~ % docker ps
CONTAINER ID   IMAGE     COMMAND   CREATED   STATUS    PORTS     NAMES
b3391ba00100   alpine    "/bin/sh" 47 hours ago Up 47 hours      cool_black
aratrika@Aratrikas-MacBook-Air ~ % 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
aratrika@Aratrikas-MacBook-Air ~ % 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

What's Next?
View a summary of image vulnerabilities and recommendations → docker scout quickview ubuntu:12.04
```



2.2 Docker Images

```
aratrika@Aratrikas-MacBook-Air ~ % docker images
```

REPOSITORY	TAG	IMAGE ID	CREATED	SIZE
schadokar/eth-server	1.0.0	7bab3b6c02bc	6 hours ago	386MB
schadokar/eth-react	1.0.0	74e0a1d822d3	6 hours ago	22.8MB
<none>	<none>	db5d58ec48bc	6 hours ago	386MB
schadokar/eth-ganache	1.0.0	dc34f17f294d	6 hours ago	147MB
aratrika1996/myfirstapp	latest	4329b8b8f013	7 hours ago	97MB
redis	<none>	0be8a78a8b83	3 days ago	46.5MB
postgres	<none>	440ffd278784	3 weeks ago	247MB
alpine	latest	1dc785547989	5 weeks ago	7.73MB
gcr.io/k8s-minikube/kicbase	v0.0.42	62753ecb37c4	2 months ago	1.11GB
dockersamples/examplevotingapp_vote	<none>	855124cd10ab	2 months ago	179MB
dockersamples/examplevotingapp_result	<none>	470e250f51b8	2 months ago	291MB
dockersamples/examplevotingapp_worker	<none>	c6b89c469067	2 months ago	195MB
hello-world	latest	ee301c921b8a	8 months ago	9.14kB
ubuntu	12.04	5b117edd0b76	6 years ago	104MB
dockersamples/static-site	latest	f589ccde7957	7 years ago	191MB

2.3 Create your first image

```
(venv) aratrika@Aratrikas-MacBook-Air Flask App % docker build -t aratrika1996/myfirstapp .
```

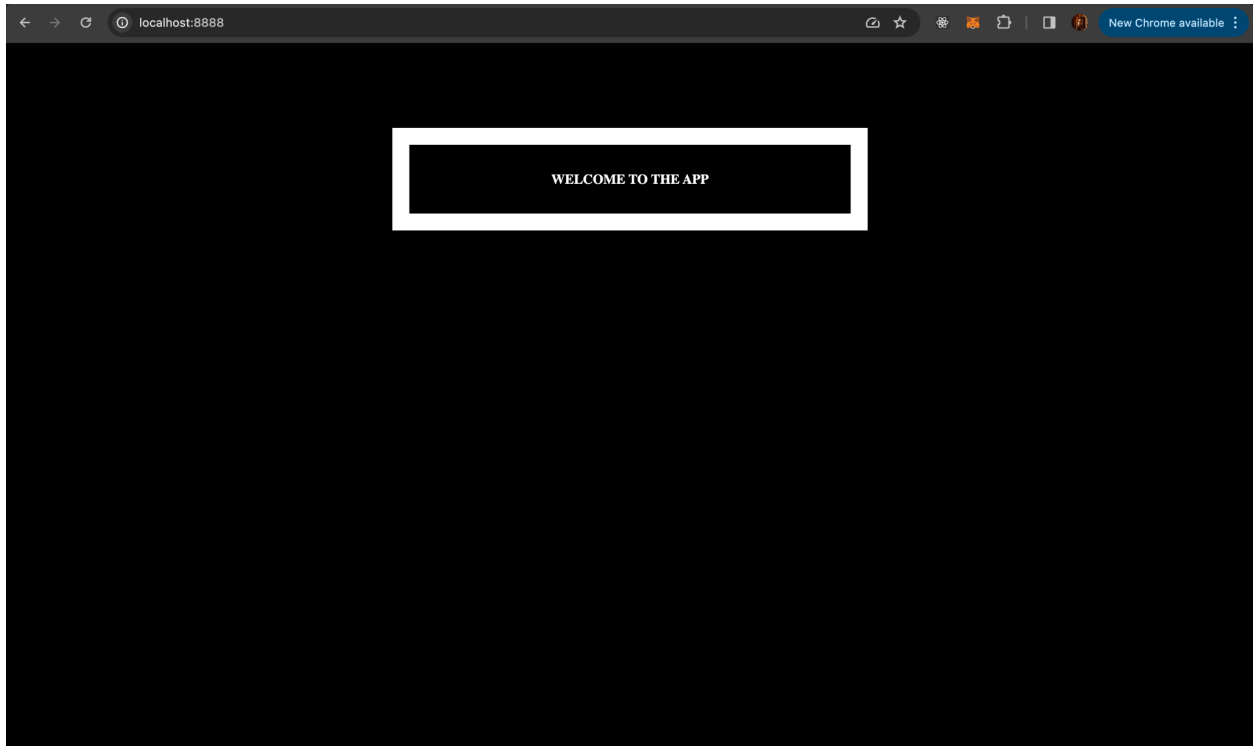
```
[+] Building 1.8s (11/11) FINISHED
=> [internal] load .dockerignore                                docker:desktop-linux 0.0s
=> => transferring context: 2B                                   0.0s
=> [internal] load build definition from Dockerfile              0.0s
=> => transferring dockerfile: 376B                               0.0s
=> [internal] load metadata for docker.io/library/python:3-alpine 1.7s
=> [auth] library/python:pull token for registry-1.docker.io    0.0s
=> [1/5] FROM docker.io/library/python:3-alpine@sha256:c793b92fd9e0e2a0b611756788a033d569ca864b733461c8fb30cfd14847dbcf 0.0s
=> [internal] load build context                                0.1s
=> => transferring context: 271.03kB                              0.1s
=> CACHED [2/5] WORKDIR /app                                    0.0s
=> CACHED [3/5] COPY requirements.txt ./                          0.0s
=> CACHED [4/5] RUN pip install -r requirements.txt              0.0s
=> CACHED [5/5] COPY . .                                         0.0s
=> exporting to image                                           0.0s
=> => exporting layers                                           0.0s
=> => writing image sha256:4329b8b8f0132797caf1fc2a7ec2df1e14fd72068c09cbcaad3aa31b689f1bb 0.0s
=> => naming to docker.io/aratrika1996/myfirstapp                0.0s
```

View build details: [docker-desktop:///dashboard/build/desktop-linux/desktop-linux/rvaqte11ti3pfunwmc1q0b3bh](https://dashboard.docker.com/build/desktop-linux/desktop-linux/rvaqte11ti3pfunwmc1q0b3bh)

What's Next?
View a summary of image vulnerabilities and recommendations → [docker scout quickview](#)

```
aratrika@Aratrikas-MacBook-Air ~ % docker run -p 8888:5000 --name myfirstapp aratrika1996/myfirstapp
```

```
* Debug mode: off
WARNING: This is a development server. Do not use it in a production deployment. Use a production WSGI server instead.
* Running on all addresses (0.0.0.0)
* Running on http://127.0.0.1:5000
* Running on http://172.17.0.2:5000
Press CTRL+C to quit
192.168.65.1 - - [12/Jan/2024 22:28:12] "GET / HTTP/1.1" 200 -
```



```
aratrika@Aratrikas-MacBook-Air ~ % docker push aratrika1996/myfirstapp
Using default tag: latest
The push refers to repository [docker.io/aratrika1996/myfirstapp]
d238df32dec0: Pushed
5ce3f39479f1: Pushed
2292faed1f7c: Pushed
f7270f9fdda3: Pushed
3c4a1066f5f7: Mounted from library/python
c70d4c219fc4: Mounted from library/python
c14af8edd492: Mounted from library/python
f94bd46a158c: Mounted from library/python
3ce819cc4970: Mounted from library/python
latest: digest: sha256:25350de42ec9a4a6075147b31158063e08edc204327425fad480d0fd882082b6 size: 2203
```

```
[aratrika@Aratrikas-MacBook-Air ~ % docker stop myfirstapp
myfirstapp
[aratrika@Aratrikas-MacBook-Air ~ % docker rm myfirstapp
myfirstapp
```

3.0 Deploying an app to Swarm

```
aratrika@Aratrikas-MacBook-Air example-voting-app % docker swarm init
Swarm initialized: current node (5a9sq7dclq8lrirL5oacqxhgk) is now a manager.

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

    docker swarm join --token SWMTKN-1-2jyeyarcimkm69dtkteyhespoa6jpntmn15e9t9bi1zxtyx2z-7kns1f2fwa8sff6b18w859gcd 192.168.65.3:2377

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

```
● aratrika@Aratrikas-MacBook-Air example-voting-app % docker stack deploy --compose-file docker-stack.yml vote
Creating network vote_frontend
Creating network vote_backend
Creating service vote_redis
Creating service vote_db
Creating service vote_vote
Creating service vote_result
Creating service vote_worker
```

```
● aratrika@Aratrikas-MacBook-Air example-voting-app % docker stack services vote
```

ID	NAME	MODE	REPLICAS	IMAGE	PORTS
n5ktjesv6rzx	vote_db	replicated	1/1	postgres:15-alpine	
z4sjwfcwiw4k	vote_redis	replicated	1/1	redis:alpine	
88yqg7rdy5yv	vote_result	replicated	1/1	dockersamples/examplevotingapp_result:after	*:5001->80/tcp
0r3p8quqseso	vote_vote	replicated	2/2	dockersamples/examplevotingapp_vote:after	*:5000->80/tcp
vf5sj6j79tnj	vote_worker	replicated	2/2	dockersamples/examplevotingapp_worker:latest	

← → ↻ 127.0.0.1:5000

☆ ⚙ 🗑 📄 📱 🔍 New Chrome available

Cats vs Dogs!

CATS

DOGS

(Tip: you can change your vote)

Processed by container ID
b77c34131293