

# Setup

```
dhiuhu@DESKTOP-ATLGL31:~$ 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.
   (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/

dhiuhu@DESKTOP-ATLGL31:~$
```

## 1.0 Running your first container

```
dhiuhu@DESKTOP-ATLGL31:~$ docker pull alpine
Using default tag: latest
latest: Pulling from library/alpine
Digest: sha256:51b67269f354137895d43f3b3d810bfacd3945438e94dc5ac55fdac340352f48
Status: Image is up to date for alpine:latest
docker.io/library/alpine:latest
dhiuhu@DESKTOP-ATLGL31:~$ docker images
REPOSITORY          TAG             IMAGE ID        CREATED         SIZE
ubuntu              latest          174c8c134b2a    4 weeks ago    77.9MB
alpine              latest          f8c20f8bbcb6    4 weeks ago    7.38MB
hello-world         latest          d2c94e258dc6    8 months ago   13.3kB
dhiuhu@DESKTOP-ATLGL31:~$
```

## 1.1 Docker Run

```
dhiuhu@DESKTOP-ATLGL31: ~$ 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 10 02:32 dev
drwxr-xr-x  1 root    root      4096 Jan 10 02:32 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 315 root    root      0 Jan 10 02:32 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 10 02:32 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
dhiuhu@DESKTOP-ATLGL31: ~$
```

```
dhiuhu@DESKTOP-ATLGL31: ~$ docker run alpine echo "hello from alpine"
hello from alpine
dhiuhu@DESKTOP-ATLGL31: ~$
```

```
dhiihu@DESKTOP-ATLGL31: ~  
dhiihu@DESKTOP-ATLGL31:~$ docker ps  
CONTAINER ID   IMAGE     COMMAND   CREATED   STATUS    PORTS     NAMES  
dhiihu@DESKTOP-ATLGL31:~$ docker ps -a  
CONTAINER ID   IMAGE     COMMAND   CREATED          STATUS          PORTS  
be2cf9882eb5   alpine    "/bin/sh"   About a minute ago   Created  
ef659e47fa0d   alpine    "/bin/sh"   3 minutes ago       Created  
643ae33df7c2   alpine    "echo 'hello from al..." 20 hours ago       Exited (0) 20 hours ago  
_pascal  
42b9fae24428   alpine    "ls -l"     20 hours ago       Exited (0) 20 hours ago  
_tner  
633c107dbc50   alpine    "ls -l"     20 hours ago       Exited (0) 20 hours ago  
abfd876f491b   hello-world  "/hello"    20 hours ago       Exited (0) 20 hours ago  
_stel  
bee1f9738e4e   alpine    "echo 'hey david her..." 20 hours ago       Exited (0) 20 hours ago  
ding_montalcini  
1a1f4d8252a7   alpine    "/bin/sh"   20 hours ago       Exited (0) 20 hours ago  
_lande  
d132f6a0d82b   ubuntu    "/bin/bash" 20 hours ago       Exited (0) 20 hours ago  
_asteur  
3f3ce6a03f34   hello-world  "/hello"    20 hours ago       Exited (0) 20 hours ago  
_f22ce0d3d871   hello-world  "/hello"    20 hours ago       Exited (0) 20 hours ago  
_ymat  
dhiihu@DESKTOP-ATLGL31:~$
```

```
dhiihu@DESKTOP-ATLGL31: ~  
dhiihu@DESKTOP-ATLGL31:~$  
dhiihu@DESKTOP-ATLGL31:~$ $ docker run -it alpine /bin/sh  
bin      dev      etc      home     lib      linuxrc  media    mnt      proc     root     run      sbin     sys      tmp  
usr      var  
/ # uname -a  
Linux 97916e8cb5dc 4.4.27-moby #1 SMP Wed Oct 26 14:01:48 UTC 2016 x86_64 Linux$: command not found  
dhiihu@DESKTOP-ATLGL31:~$ / # ls  
-bash: /: Is a directory  
dhiihu@DESKTOP-ATLGL31:~$ bin      dev      etc      home     lib      linuxrc  media    mnt      proc     root     run  
sbin     sys      tmp      usr      var  
Command 'bin' not found, did you mean:  
  command 'bun' from snap bun-js (1.0.20)  
  command 'bip' from deb bip (0.9.3-1)  
  command 'tin' from deb tin (1:2.6.2~20220129-1)  
  command 'win' from deb wily (0.13.41-10)  
  command 'dbin' from deb dbmix (0.9.8-8)  
  command 'din' from deb din (51.1.1-2build1)  
  command 'bing' from deb bing (1.3.5-4)  
  command 'ben' from deb ben (0.9.2ubuntu5)  
See 'snap info <snapname>' for additional versions.  
dhiihu@DESKTOP-ATLGL31:~$ / # uname -a  
-bash: /: Is a directory  
dhiihu@DESKTOP-ATLGL31:~$ Linux 97916e8cb5dc 4.4.27-moby #1 SMP Wed Oct 26 14:01:48 UTC 2016 x86_64 Linux_
```

## 1.2 Terminology

### *Images*

```
dhiuhu@DESKTOP-ATLGL31:~  
dhiuhu@DESKTOP-ATLGL31:~$ docker inspect alpine  
[  
  {  
    "Id": "sha256:f8c20f8bbcb684055b4fea470fdd169c86e87786940b3262335b12ec3adef418",  
    "RepoTags": [  
      "alpine:latest"  
    ],  
    "RepoDigests": [  
      "alpine@sha256:51b67269f354137895d43f3b3d810bfacd3945438e94dc5ac55fdac340352f48"  
    ],  
    "Parent": "",  
    "Comment": "",  
    "Created": "2023-12-08T01:20:49.650406179Z",  
    "Container": "f2f93a8109b6034cb27137e7cb0a77417b4d7529cde89524d455964455c0d23a",  
    "ContainerConfig": {  
      "Hostname": "f2f93a8109b6",  
      "Domainname": "",  
      "User": "",  
      "AttachStdin": false,  
      "AttachStdout": false,  
      "AttachStderr": false,  
      "Tty": false,  
      "OpenStdin": false,  
      "StdinOnce": false,  
      "Env": [  
        "PATH=/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/sbin:/bin"  
      ],  
      "Cmd": [  
        "/bin/sh",  
        "-c",  
        "#(nop)",  
        "CMD [\"/bin/sh\"]"  
      ],  
      "Image": "sha256:c060232ea3eea78e6800063b9b599c95911729d5c8dd2a2b737684998eefb10a",  
      "Volumes": null,  
      "WorkingDir": "",  
      "Entrypoint": null,  
      "OnBuild": null,  
      "Labels": {}  
    },  
  ],  
]
```

## 2.0 Webapps with Docker

### 2.1 Run a static website in a container

```
dhiuhu@DESKTOP-ATLGL31: ~  
dhiuhu@DESKTOP-ATLGL31:~$ docker ps  
CONTAINER ID   IMAGE          COMMAND                  CREATED        STATUS        PORTS        NAMES  
dhiuhu@DESKTOP-ATLGL31:~$ $ docker run -d dockersamples/static-site  
$: command not found  
dhiuhu@DESKTOP-ATLGL31:~$ docker run -d dockersamples/static-site  
Unable to find image 'dockersamples/static-site:latest' locally  
latest: Pulling from dockersamples/static-site  
fdd5d7827f33: Extracting [=====] 48.76MB/51.37MB  
a3ed95caeb02: Download complete  
716f7a5f3082: Download complete  
7b10f03a0309: Download complete  
aff3ab7e9c39: Download complete
```

```
dhiuhu@DESKTOP-ATLGL31: ~  
dhiuhu@DESKTOP-ATLGL31:~$ docker ps -a  
CONTAINER ID   IMAGE          COMMAND                  CREATED        STATUS        PORTS        NAMES  
54025d258d7d   dockersamples/static-site  "/bin/sh -c 'cd /usr..."  37 seconds ago    Created  
424eb798d032   dockersamples/static-site  "/bin/sh -c 'cd /usr..."  About a minute ago    Created  
ec34a2401dc4   dockersamples/static-site  "/bin/sh -c 'cd /usr..."  4 minutes ago     Created  
7fd34f808eea   dockersamples/static-site  "/bin/sh -c 'cd /usr..."  20 minutes ago    Created  
735da6b94986   dockersamples/static-site  "/bin/sh -c 'cd /usr..."  30 minutes ago    Created  
1ef6db66b1ff   dockersamples/static-site  "/bin/sh -c 'cd /usr..."  35 minutes ago    Created  
be2cf9882eb5   alpine         "/bin/sh"               49 minutes ago    Created  
ef659e47fa0d   alpine         "/bin/sh"               51 minutes ago    Created  
643ae33df7c2   alpine         "echo 'hello from al..."  21 hours ago      Exited (0) 21 hours ago  
42b9fae24428   alpine         "ls -l"                 21 hours ago      Exited (0) 21 hours ago  
635c107dbc50   alpine         "ls -l"                 21 hours ago      Exited (0) 21 hours ago  
abfd876f491b   hello-world    "/hello"                 21 hours ago      Exited (0) 21 hours ago  
bee1f9738e4e   alpine         "echo 'hey david her..."  21 hours ago      Exited (0) 21 hours ago  
dhiuhu@DESKTOP-ATLGL31:~$  
musing_lalande  
d132f6a0d82b   ubuntu        "/bin/bash"              21 hours ago      Exited (0) 21 hours ago  
3f3ce6a03f34   hello-world    "/hello"                 21 hours ago      Exited (0) 21 hours ago  
dhiuhu@DESKTOP-ATLGL31:~$  
dhiuhu@DESKTOP-ATLGL31:~$
```

```
dhiuhu@DESKTOP-ATLGL31: ~  
dhiuhu@DESKTOP-ATLGL31:~$ docker ps -a  
CONTAINER ID   IMAGE                                COMMAND                  CREATED        STATUS        PORTS                NAMES  
a09409fd2cba   dockersamples/static-site          "/bin/sh -c 'cd /usr.." 15 minutes ago Up 15 minutes    80/tcp, 443/tcp     practical_herschel  
ba5c62152708   dockersamples/examplevotingapp_vote:latest "unicorn app:app -b.." 21 minutes ago Up 20 minutes    80/tcp              vote_vote.2.v1hz5ieen1g1fltm7za2rw91  
cd9a07a27758   redis:alpine                       "docker-entrypoint.s.." 21 minutes ago Up 20 minutes    6379/tcp           vote_redis.1.k00wajm1xsuhr4kdgxdtnalvp  
a86ecf9b00f4   dockersamples/examplevotingapp_vote:latest "unicorn app:app -b.." 21 minutes ago Up 20 minutes    80/tcp              vote_vote.1.xeb8il585schelahwdvt0jyytb  
899eec2733f    dockersamples/examplevotingapp_worker:latest "dotnet Worker.dll"    21 minutes ago Up 20 minutes      vote_worker.1.waxo1pn7w4a2ztuvv7he4tu53  
0041df2b2664   dockersamples/examplevotingapp_worker:latest "dotnet Worker.dll"    21 minutes ago Up 20 minutes      vote_worker.2.lwqbxi1plkircf9o1uer8t01h  
b70873aee519   dockersamples/examplevotingapp_result:latest "/usr/bin/tini -- no.." 21 minutes ago Up 20 minutes    80/tcp              vote_result.1.spm46ithqndxj59yr9h84nqx8  
0685fd6dc8dc   postgres:15-alpine                "docker-entrypoint.s.." 21 minutes ago Up 20 minutes    5432/tcp           vote_db.1.17yrbjbs0d4525ujzfj6sld32  
dhiuhu@DESKTOP-ATLGL31:~$
```

localhost:32769

Hello DAVID HIUHU!

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

```
Select dhiuhu@DESKTOP-ATLGL31: ~  
CONTAINER ID   IMAGE                                COMMAND                  CREATED        STATUS        PORTS                NAMES  
a09409fd2cba   dockersamples/static-site          "/bin/sh -c 'cd /usr.." 15 minutes ago Up 15 minutes    80/tcp, 443/tcp     practical_herschel  
ba5c62152708   dockersamples/examplevotingapp_vote:latest "unicorn app:app -b.." 21 minutes ago Up 20 minutes    80/tcp              vote_vote.2.v1hz5ieen1g1fltm7za2rw91  
cd9a07a27758   redis:alpine                       "docker-entrypoint.s.." 21 minutes ago Up 20 minutes    6379/tcp           vote_redis.1.k00wajm1xsuhr4kdgxdtnalvp  
a86ecf9b00f4   dockersamples/examplevotingapp_vote:latest "unicorn app:app -b.." 21 minutes ago Up 20 minutes    80/tcp              vote_vote.1.xeb8il585schelahwdvt0jyytb  
899eec2733f    dockersamples/examplevotingapp_worker:latest "dotnet Worker.dll"    21 minutes ago Up 20 minutes      vote_worker.1.waxo1pn7w4a2ztuvv7he4tu53  
0041df2b2664   dockersamples/examplevotingapp_worker:latest "dotnet Worker.dll"    21 minutes ago Up 20 minutes      vote_worker.2.lwqbxi1plkircf9o1uer8t01h  
b70873aee519   dockersamples/examplevotingapp_result:latest "/usr/bin/tini -- no.." 21 minutes ago Up 20 minutes    80/tcp              vote_result.1.spm46ithqndxj59yr9h84nqx8  
0685fd6dc8dc   postgres:15-alpine                "docker-entrypoint.s.." 21 minutes ago Up 20 minutes    5432/tcp           vote_db.1.17yrbjbs0d4525ujzfj6sld32  
dhiuhu@DESKTOP-ATLGL31:~$ docker run --name static-site -e AUTHOR="DAVID HIUHU" -d -P dockersamples/static-site  
1b9417804cfd2841a4e0382746b8c80bf8e90a81a140a3e75f2f8bbe19ef6236  
dhiuhu@DESKTOP-ATLGL31:~$ docker port static-site  
80/tcp -> 0.0.0.0:32769  
80/tcp -> [::]:32769  
443/tcp -> 0.0.0.0:32768  
443/tcp -> [::]:32768  
dhiuhu@DESKTOP-ATLGL31:~$
```

localhost:8888

Hello DAVID HIUHU SITE 2!!

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

```
dhiuhu@DESKTOP-ATLGL31: ~  
CONTAINER ID   STATUS    PORTS                NAMES  
a09409fd2cba   Up 15 minutes    80/tcp, 443/tcp     practical_herschel  
ba5c62152708   Up 20 minutes    80/tcp              vote_vote.2.v1hz5ieen1g1fltm7za2rw91  
cd9a07a27758   Up 20 minutes    6379/tcp           vote_redis.1.k00wajm1xsuhr4kdgxdtnalvp  
a86ecf9b00f4   Up 20 minutes    80/tcp              vote_vote.1.xeb8il585schelahwdvt0jyytb  
899eec2733f    Up 20 minutes      vote_worker.1.waxo1pn7w4a2ztuvv7he4tu53  
0041df2b2664   Up 20 minutes      vote_worker.2.lwqbxi1plkircf9o1uer8t01h  
b70873aee519   Up 20 minutes    vote_result.1.spm46ithqndxj59yr9h84nqx8  
0685fd6dc8dc   Up 20 minutes    vote_db.1.17yrbjbs0d4525ujzfj6sld32  
dhiuhu@DESKTOP-ATLGL31:~$ docker run --name static-site -e AUTHOR="DAVID HIUHU" -d -P dockersamples/static-site  
1b9417804cfd2841a4e0382746b8c80bf8e90a81a140a3e75f2f8bbe19ef6236  
dhiuhu@DESKTOP-ATLGL31:~$ docker port static-site  
80/tcp -> 0.0.0.0:32769  
80/tcp -> [::]:32769  
443/tcp -> 0.0.0.0:32768  
443/tcp -> [::]:32768  
dhiuhu@DESKTOP-ATLGL31:~$ docker run --name static-site-2 -e AUTHOR="DAVID HIUHU SITE 2!" -p 8888:80 dockersamples/static-site  
b1b151eaa6df417ad5db6d11439b16bbeb2fb49ed77c782439c8f43e7d2dabb5  
dhiuhu@DESKTOP-ATLGL31:~$
```

## 2.2 Docker Images

dhiuhu@DESKTOP-ATLGL31: ~

dhiuhu@DESKTOP-ATLGL31:~\$ docker images

| REPOSITORY                            | TAG     | IMAGE ID     | CREATED      | SIZE   |
|---------------------------------------|---------|--------------|--------------|--------|
| redis                                 | <none>  | 20658529aaf6 | 5 days ago   | 46.1MB |
| postgres                              | <none>  | d492c6ccb0d1 | 3 weeks ago  | 240MB  |
| ubuntu                                | latest  | 174c8c134b2a | 4 weeks ago  | 77.9MB |
| alpine                                | latest  | f8c20f8bbcb6 | 5 weeks ago  | 7.38MB |
| gcr.io/k8s-minikube/kicbase           | v0.0.42 | dbc648475405 | 2 months ago | 1.2GB  |
| dockersamples/examplevotingapp_vote   | <none>  | a79da240427f | 2 months ago | 153MB  |
| dockersamples/examplevotingapp_result | <none>  | 79a8264f906f | 2 months ago | 269MB  |
| dockersamples/examplevotingapp_worker | <none>  | b9ae9391d5db | 2 months ago | 194MB  |
| hello-world                           | latest  | d2c94e258dcb | 8 months ago | 13.3kB |
| centos                                | latest  | 5d0da3dc9764 | 2 years ago  | 231MB  |
| jenkins                               | 2.60.3  | cd14cecfdb3a | 5 years ago  | 696MB  |
| dockersamples/static-site             | latest  | f589ccde7957 | 7 years ago  | 191MB  |

dhiuhu@DESKTOP-ATLGL31:~\$

dhiuhu@DESKTOP-ATLGL31: ~

dhiuhu@DESKTOP-ATLGL31:~\$ docker images

| REPOSITORY                            | TAG     | IMAGE ID     | CREATED      | SIZE   |
|---------------------------------------|---------|--------------|--------------|--------|
| redis                                 | <none>  | 20658529aaf6 | 5 days ago   | 46.1MB |
| postgres                              | <none>  | d492c6ccb0d1 | 3 weeks ago  | 240MB  |
| ubuntu                                | latest  | 174c8c134b2a | 4 weeks ago  | 77.9MB |
| alpine                                | latest  | f8c20f8bbcb6 | 5 weeks ago  | 7.38MB |
| gcr.io/k8s-minikube/kicbase           | v0.0.42 | dbc648475405 | 2 months ago | 1.2GB  |
| dockersamples/examplevotingapp_vote   | <none>  | a79da240427f | 2 months ago | 153MB  |
| dockersamples/examplevotingapp_result | <none>  | 79a8264f906f | 2 months ago | 269MB  |
| dockersamples/examplevotingapp_worker | <none>  | b9ae9391d5db | 2 months ago | 194MB  |
| hello-world                           | latest  | d2c94e258dcb | 8 months ago | 13.3kB |
| centos                                | latest  | 5d0da3dc9764 | 2 years ago  | 231MB  |
| jenkins                               | 2.60.3  | cd14cecfdb3a | 5 years ago  | 696MB  |
| dockersamples/static-site             | latest  | f589ccde7957 | 7 years ago  | 191MB  |

dhiuhu@DESKTOP-ATLGL31:~\$ 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

dhiuhu@DESKTOP-ATLGL31:~\$ docker pull ubuntu

Using default tag: latest

latest: Pulling from library/ubuntu

Digest: sha256:6042500cf4b44023ea1894effe7890666b0c5c7871ed83a97c36c76ae560bb9b

Status: Image is up to date for ubuntu:latest

docker.io/library/ubuntu:latest

dhiuhu@DESKTOP-ATLGL31:~\$

