

Docker project:

- Create a Docker hub public repository
- Containerize our Apache webserver
- Upload image to your docker hub
- Have a friend from your cluster to pull your image and build it.
- Share screenshot of app in browser, and image uploaded

1- Install docker on our cli

```
No packages marked for update
[ec2-user@ip-10-0-0-76 ~]$ docker --server
-bash: docker: command not found
[ec2-user@ip-10-0-0-76 ~]$ sudo amazon-linux-extras install docker
Installing docker
Loaded plugins: extras_suggestions, langpacks, priorities, update-notd
Cleaning repos: amzn2-core amzn2extra-docker amzn2extra-kernel-5.10
17 metadata files removed
6 sqlite files removed
0 metadata files removed
Loaded plugins: extras_suggestions, langpacks, priorities, update-notd
amzn2-core                                | 3.7 kB  00:00:00
amzn2extra-docker                         | 3.0 kB  00:00:00
amzn2extra-kernel-5.10                    | 3.0 kB  00:00:00
(1/7): amzn2-core/2/x86_64/group.gz      | 2.5 kB  00:00:00
(2/7): amzn2-core/2/x86_64/updateinfo    | 637 kB  00:00:00
(3/7): amzn2extra-docker/2/x86_64/updateinfo | 9.8 kB  00:00:00
(4/7): amzn2extra-docker/2/x86_64/primary.db | 106 kB  00:00:00
(5/7): amzn2extra-kernel-5.10/2/x86_64/updateinfo | 31 kB  00:00:00
(6/7): amzn2extra-kernel-5.10/2/x86_64/primary.db | 20 MB  00:00:00
(7/7): amzn2-core/2/x86_64/primary.db    | 74 MB  00:00:01
Resolving Dependencies
--> Running transaction check
--> Package docker.x86_64 0:20.10.23-1.amzn2.0.1 will be installed
--> Processing Dependency: runc >= 1.0.0 for package: docker-20.10.23-1.amzn2.0.1.x86_64
--> Processing Dependency: libcgrouper >= 0.40.rc1-5.15 for package: docker-20.10.23-1.amzn2.0.1.x86_64
--> Processing Dependency: containerd >= 1.3.2 for package: docker-20.10.23-1.amzn2.0.1.x86_64
--> Processing Dependency: pigz for package: docker-20.10.23-1.amzn2.0.1.x86_64
--> Running transaction check
--> Package containerd.x86_64 0:1.6.19-1.amzn2.0.1 will be installed
--> Package libcgrouper.x86_64 0:0.41-21.amzn2 will be installed
--> Package pigz.x86_64 0:2.3.4-1.amzn2.0.1 will be installed
--> Package runc.x86_64 0:1.1.7-1.amzn2 will be installed
--> Finished Dependency Resolution

Dependencies Resolved

=====
Package Arch Version Repository Size
Installing:
docker x86_64 20.10.23-1.amzn2.0.1 amzn2extra-docker 41 M
Installing for dependencies:
containerd x86_64 1.6.19-1.amzn2.0.1 amzn2extra-docker 27 M
```

Since docker is installed, check status and start it

```
[ec2-user@ip-10-0-0-76 ~]$ sudo service docker status
sudo: service: command not found
[ec2-user@ip-10-0-0-76 ~]$ sudo service docker status
sudo: service: command not found
[ec2-user@ip-10-0-0-76 ~]$ sudo service docker status
Redirecting to /bin/systemctl status docker.service
● docker.service - Docker Application Container Engine
   Loaded: loaded (/usr/lib/systemd/system/docker.service; disabled; vendor preset: disabled)
   Active: inactive (dead)
     Docs: https://docs.docker.com
[ec2-user@ip-10-0-0-76 ~]$ sudo service docker start
Redirecting to /bin/systemctl start docker.service
[ec2-user@ip-10-0-0-76 ~]$ sudo service docker status
Redirecting to /bin/systemctl status docker.service
● docker.service - Docker Application Container Engine
   Loaded: loaded (/usr/lib/systemd/system/docker.service; disabled; vendor preset: disabled)
   Active: active (running) since Sat 2023-07-08 23:45:38 UTC; 2min 26s ago
     Docs: https://docs.docker.com
   Process: 3599 ExecStartPre=/usr/libexec/docker/docker-setup-runtimes.sh (code=exited, status=0/SUCCESS)
   Process: 3598 ExecStartPre=/bin/mkdir -p /run/docker (code=exited, status=0/SUCCESS)
   Main PID: 3602 (dockerd)
      Tasks: 7
     Memory: 21.1M
    CGroup: /system.slice/docker.service
            └─3602 /usr/bin/dockerd -H fd:// --containerd=/run/containerd/containerd.sock --default-ulimit nfile=32768:65536

Jul 08 23:45:37 ip-10-0-0-76.ec2.internal dockerd[3602]: time="2023-07-08T23:45:37.729623244Z" level=info msg="ClientConn switch...=grpc
Jul 08 23:45:37 ip-10-0-0-76.ec2.internal dockerd[3602]: time="2023-07-08T23:45:37.768233899Z" level=warning msg="Your kernel do...ight"
Jul 08 23:45:37 ip-10-0-0-76.ec2.internal dockerd[3602]: time="2023-07-08T23:45:37.768698981Z" level=warning msg="Your kernel do...vice"
Jul 08 23:45:37 ip-10-0-0-76.ec2.internal dockerd[3602]: time="2023-07-08T23:45:37.769234496Z" level=info msg="Loading container...art."
Jul 08 23:45:38 ip-10-0-0-76.ec2.internal dockerd[3602]: time="2023-07-08T23:45:38.018670646Z" level=info msg="Default bridge (d...ress"
Jul 08 23:45:38 ip-10-0-0-76.ec2.internal dockerd[3602]: time="2023-07-08T23:45:38.078249865Z" level=info msg="Loading container...one."
Jul 08 23:45:38 ip-10-0-0-76.ec2.internal dockerd[3602]: time="2023-07-08T23:45:38.099729555Z" level=info msg="Docker daemon" co...10.23
Jul 08 23:45:38 ip-10-0-0-76.ec2.internal dockerd[3602]: time="2023-07-08T23:45:38.100236266Z" level=info msg="Daemon has comple...tion"
Jul 08 23:45:38 ip-10-0-0-76.ec2.internal systemd[1]: Started Docker Application Container Engine.
Jul 08 23:45:38 ip-10-0-0-76.ec2.internal dockerd[3602]: time="2023-07-08T23:45:38.128682113Z" level=info msg="API listen on /ru...sock"
Hint: Some lines were ellipsized, use -l to show in full.
[ec2-user@ip-10-0-0-76 ~]$
```

## Built Dockerfile and index.html file

```
[ec2-user@ip-10-0-0-76 ~]$ vim Dockerfile
[ec2-user@ip-10-0-0-76 ~]$ cat Dockerfile
# specify a base image
From amazonlinux:2

# description
LABEL description="containinerize apache webapp"

LABEL maintainer="infrastructure as code best way to do it"

# run yum update
RUN yum -y update

# cpy index file from our computer to inside the container
COPY index.html /var/www/html

Expose 80

#install apache
RUN yum -y install httpd

# run httpd service when the container starts
ENTRYPOINT [ /usr/sbin/httpd ]
#can override cmd in the background
CMD [ "-D" , "FOREGROUND" ]
[ec2-user@ip-10-0-0-76 ~]$
```

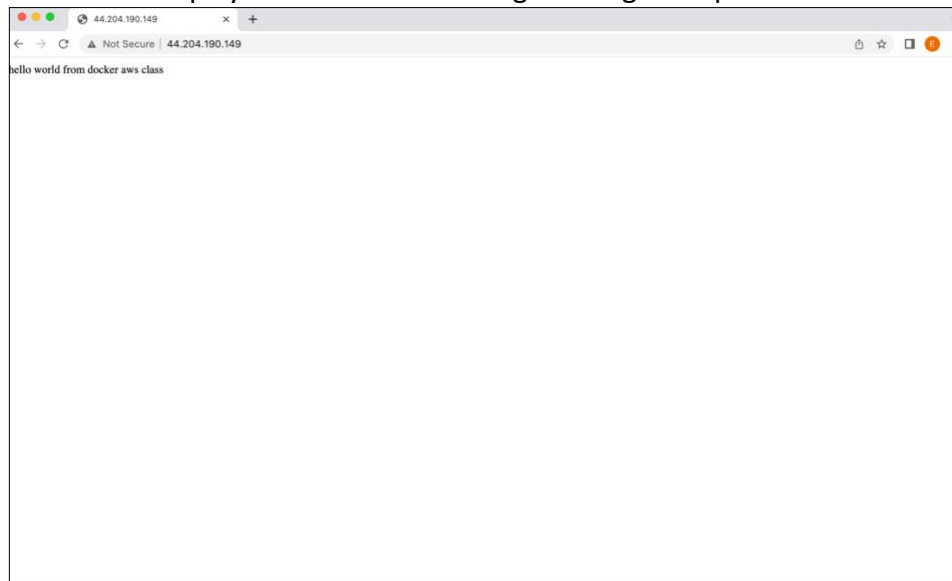
## Build and run docker image

```
ubuntu@ip-10-0-0-142:~$ docker build -t myfirst_image:v1
ERROR: "docker buildx build" requires exactly 1 argument.
See 'docker buildx build --help'.

Usage:  docker buildx build [OPTIONS] PATH | URL | -

Start a build
ubuntu@ip-10-0-0-142:~$ docker build -t myfirst_image:v1 .
[+] Building 20.3s (8/8) FINISHED
=> [internal] load build definition from Dockerfile
=> => transferring dockerfile: 539B
=> [internal] load .dockerignore
=> => transferring context: 2B
=> [internal] load metadata for docker.io/library/ubuntu:latest
=> [1/3] FROM docker.io/library/ubuntu:latest@sha256:0bcd47fffa3361afa981854fcabcd4577cd43cebbb808cea2b1f33a3dd7f508
=> => resolve docker.io/library/ubuntu:latest@sha256:0bcd47fffa3361afa981854fcabcd4577cd43cebbb808cea2b1f33a3dd7f508
=> [internal] load build context
=> => transferring context: 31B
=> [2/3] RUN apt-get update && apt-get install -y apache2
=> [3/3] COPY index.html /var/www/html
=> exporting to image
=> => exporting layers
=> => writing image sha256:82682eebef02ebe7ce4d2e52cc68896aa24c9df2024257362be9964c212082e4
=> => naming to docker.io/library/myfirst_image:v1
ubuntu@ip-10-0-0-142:~$ docker images
REPOSITORY          TAG                 IMAGE ID            CREATED             SIZE
myfirst_image        v1                 82682eebef02       31 seconds ago     227MB
<none>               <none>             5a81c4b8502e       10 days ago        77.8MB
hello-world          latest             9c7a54a9a43c       2 months ago       13.3kB
ubuntu@ip-10-0-0-142:~$ docker ps
CONTAINER ID        IMAGE               COMMAND             CREATED             STATUS              PORTS              NAMES
b8c93d5bd02c       5a81c4b8502e       "bash"             24 minutes ago     Up 24 minutes                        priceless_pare
ubuntu@ip-10-0-0-142:~$ docker run -d -p myfirst_image 80:80 myfirst_image:v1
docker: Invalid containerPort: myfirst_image.
See 'docker run --help'.
ubuntu@ip-10-0-0-142:~$ docker run -d -p 80:80 myfirst_image:v1
a58b313f56ce5eaab8ef2d17c8f886e76e218bce7fc06b61dee8df4c88ded9a5
ubuntu@ip-10-0-0-142:~$ docker ps
CONTAINER ID        IMAGE               COMMAND             CREATED             STATUS              PORTS              NAMES
a58b313f56ce       myfirst_image:v1    "/usr/sbin/apache2t..." 7 seconds ago       Up 7 seconds        0.0.0.0:80->80/tcp, :::80->80/tcp  recursin
g_nightingale
b8c93d5bd02c       5a81c4b8502e       "bash"             29 minutes ago     Up 29 minutes                        priceless
s_pare
ubuntu@ip-10-0-0-142:~$
```

## Display the container message through ec2 public IP



Store our image on registry using our dockerhub account

Logging into the image using our dockerhub credential

```
ubuntu@ip-10-0-0-142:~$ 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: emireine
Password:
WARNING! Your password will be stored unencrypted in /home/ubuntu/.docker/config.json.
Configure a credential helper to remove this warning. See
https://docs.docker.com/engine/reference/commandline/login/#credentials-store

Login Succeeded
ubuntu@ip-10-0-0-142:~$
```

Since we logging into our dockerhub account via ec2 cli, lets tag and push the image

```
Aliases:
  docker image tag, docker tag
ubuntu@ip-10-0-0-142:~$ docker tag 82682eebef02 emireine/myfirst_image:v1
ubuntu@ip-10-0-0-142:~$ docker images
REPOSITORY          TAG          IMAGE ID      CREATED       SIZE
emireine/myfirst_image v1          82682eebef02  39 minutes ago 227MB
myfirst_image        v1          82682eebef02  39 minutes ago 227MB
<none>               <none>      5a81c4b8502e  10 days ago  77.8MB
hello-world         latest      9c7a54a9a43c  2 months ago  13.3kB
ubuntu@ip-10-0-0-142:~$ docker push emireine/myfirst_image:v1
The push refers to repository [docker.io/emireine/myfirst_image]
e729f73cf306: Pushed
7a34e4b9b1a0: Pushed
59c56aeelfb4: Mounted from library/ubuntu
v1: digest: sha256:c32ad4c6666a5a7d898ecdcl19feb78dd201688519aaa8a25f001ba9589c5ed8 size: 948
ubuntu@ip-10-0-0-142:~$
```

Our dockerhub repository

Instance...Connect...AWS Sys...Novemb...Part 1Part 2Installing...Reposito...[ec2-us...44.204.1...

Search Docker Hub

ExploreRepositoriesOrganizationsHelp

Upgrade emireine

emireine

Search by repository name

All Content

Create repository

emireine / myfirst\_image

Contains: Image | Last pushed: a minute ago

Inactive

0

0

Public

emireine / task1-repos

Contains: No content | Last pushed: 6 days ago

Inactive

0

0

Public