Working with sample docker image "hello-world"

# activate docker desktop

=> use desktop icon

# pull the docker image

$docker pull hello-world

# To list all the images

$ docker images

====

(ready made image)

# To create docker container by running the docker image $ docker run hello-world

# To list of active docker containers $ docker ps

# To list out all the docker containers $ docker ps -a

#To stop the docker container $ docker stop <container id>

# To start the docker container docker start <container id>

```
C:\Users\Nataraz>docker run hello-world

Unable to find image 'hello-world:latest' locally latest: Pulling from
library/hello-world

c1ec31eb5944: Pull complete

Digest: sha256:1408fec50309afee38f3535383f5b09419e6dc0925bc69891e79d84cc4cdcec6
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/
```

# To remove docker container

$ docker rm <container -id>

# To remove docker image

$ docker rmi <image-name>

--> like hello-world

note:: Docker image comes from docker hub to work folder only as one copy, but we create multiple docker containers from one docker image

```
C:\Users\Nataraz>docker ps -a CONTAINER ID IMAGE ale2d353b264 c26473e5b050
```

Linux VM

Docker Tool

```
hello-world hello-world
```

Linux/Windows Terminal

```
COMMAND "/hello" "/hello"
CREATED 7 seconds ago 8 minutes ago
```

STATUS

PORTS

```
NAMES
Exited (0) 6 seconds ago Exited (0) 46 seconds ago
vigilant
suspicio
```

(c?) search for image Totally

(b)

Docker Client

Docker Daemon thread

(a)

$ docker run hello-world

output

output

```
(g) $ ..
```

..

(output)

€1)Docker container is create from Docker image (e2) Docker container is executed

(d) (collects the image from docker registry)

..

Complete Docker Architecture

======

===========

Docker Registry (DockerHub.com)

hello-world (docker image)

note:: Docker client is a component in Docker Tool that recieves commands from docker terminal and executes the commands

note:: Docker Deamon Thread is another built in component in docker tool which actually performs all the activities

Docker

note: Docker run command can internally perform docker pull command to get image from docker hub if at all that image is locally not available

Client

Docker host

Registry

Docker build

Docker Daemon

Docker pull

Containers

Images

Ubuntu

Openstack

Ubuntu

Docker run

NGINX

Openstack

```
C:\Users\Nataraz>docker

system
```

prune -a

```
WARNING! This will remove:
```

Build Pull

Run

from harsha to every docker rm helllo-

```
all stopped containers

all networks not used by at least one container

all images without at least one container associated to them all build cache

Are you sure you want to continue? [y/N] y

Deleted Containers:

a1e2d353b2645ae4fec40869acf1ba29eb03dbf3ebac2142c0eec6c494bd1034
c26473e5b0500a409e17ed55e23d2290292186bcca11ecea0f2530db30055731
```

To: Everyone

Enter chat mes

```
Deleted Images:

untagged: hello-world:latest

untagged:
hello-world@sha256:1408fec50309afee38f3535383f5b09419e6dc0925bc69891e79d84cc4cdcec6
deleted: sha256:d2c94e258dcb3c5ac2798d32e1249e42ef01cba4841c2234249495f87264ac5a
deleted: sha256:ac28800ec8bb38d5c35b49d45a6ac4777544941199075dff8c4eb63e093aa81e Total
```

```
reclaimed space: 13.26kB

C:\Users\Nataraz>docker images REPOSITORY TAG

IMAGE ID CREATED SIZE

C:\Users\Nataraz>docker ps -a CONTAINER ID IMAGE

COMMAND CREATED STATUS

PORTS

NAMES
```

Procedure create Docker image /container representing code + env for java standalone App

=========

=====

step1) develop standalone java app and test it locally

Sample.java

```
public class Sample{

public static void main(String args[]){

System.out.println("welcome to Docker");

}

}
```

step2 Develop the docker file

Dockerfile

===========

```
FROM openjdk WORKDIR /app1 COPY. /app1

RUN javac Sample.java

CMD ["java","Sample"]
```

FROM gets the given docker image from docker repository (here open jdk) WORKDIR makes the given directory as working directory RUN commands execute during docker image creation CMD commands execute during the docker container creation

note:: if we place multiple RUN commands, all of them will execute if we place multiple CMD commands, only last command will execute

step3)

build the docker image using Dockerfile

```
AG

E:\classcontent\dockerApps1>docker build

[+] Building 54.9s (10/10) FINISHED

=>

-t java-app-img1.

[internal] load build definition from Dockerfile

=> => transferring dockerfile: 133B

=> [internal] load metadata for docker.io/library/openjdk:latest
=> [auth] library/openjdk: pull token for registry-1.docker.io

=> [internal] load .dockerignore

docker: desktop-linux

0.0s

0.0s

2.6s

0.0s

0.0s

=> => transferring context: 2B

0.0s

=>

=>

=> [1/4] FROM
docker.io/library/openjdk:latest@sha256:9b448de897d211c9e0ec635a485650aed6e28d4eca1efb
c34940560a4 => resolve
docker.io/library/openjdk:latest@sha256:9b448de897d211c9e0ec635a485650aed6e28d4eca1efb
c34940560a48 =>
sha256:fe05457a5e9b9403f8e72eeba507ae80a4237d2d2d3f219fa62ceb128482a9ee 954B / 954B

50.6s

0.0s

0.0s

=>

=>

=>

=>

=>

=>

=>

=>

=> [3/4] COPY

/app1

=> exporting layers

=>

=> sha256:71260f256d19f4ae5c762601e5301418d2516ca591103b1376f063be0b7ba056 4.46kB /
4.46kB => sha256:197c1adcd755131915cd019bdd58658d44445b3638f65449932c18ee39b6047c
44.56MB / 44.56MB =>
sha256:57b698b7af4b18900b53c768746b1dfb603dfb9aec1eea328fdac86d37001e2a 12.26MB /
12.26MB => sha256:95a27dbe0150755fca4304b4afd0d7d6dd6a40ede6fdb30da8568e9e8cdf23a9
188.74MB / 188.74MB
sha256:9b448de897d211c9e0ec635a485650aed6e28d4eca1efbc34940560a480b3f1f 1.04kB /
```

```
1.04kB

=> extracting sha256:197c1adcd755131915cd019bdd58658d44445b3638f65449932c18ee39b6047c
=> extracting sha256:57b698b7af4b18900b53c768746b1dfb603dfb9aec1eea328fdac86d37001e2a
=> extracting sha256:95a27dbe0150755fca4304b4afd0d7d6dd6a40ede6fdb30da8568e9e8cdf23a9
[internal] load build context

=> => transferring context: 764B

[2/4] WORKDIR /appl

[4/4] RUN javac Sample.java

=> exporting to image

=> writing image sha256:fe29871cf4e64703c0794b6dcab3596102fadbf27564a7779d224e4cd0b6f642
```

step5) Run the image to create the docker container and execute the App

```
0.0s

10.4s

9.5s

47.4s

0.0s

3.3s

0.8s

3.0s

0.0s

0.0s

0.4s

0.1s

1.0s

0.1s
```

Activate Winedos

```
0.Qs

E:\classcontent\dockerApps1>docker

welcome to Docker
```

run

```
java-app-img1
```

Keeping Docker image in the Docker repository (Dockerhub,com)

natarazdocker/fs903repo

Last pushed 1 minute ago

=======

Add a description

INCOMPLETE

# create repository in docker hub

-->sign in to docker.com --> launch docker hub -->create repository --> name : fs904 repo ---> create.

# Connect to docker hub

```
$docker login -u natarazdocker
```

Add a category

i) INCOMPLETE

```
-p docker@1234
```

Tags

# Create tag name for docker image (optional)

image name

dock repo name

# docker push

```
$ docker tag java-app-img nataraz/fs904repo:app1-tag
```

# push the docker image to docker repository

natara2/903repo:app1-tag

<username>/<repo name>:<tagname>

In any other machine get docker image and run the image

This repository contains 1 tag(s).

username

tag name

Tag

OS

Type

Pulled

Pushed

□ app1-tag

Image

2 minutes ago

2 minutes ago

See all

==========

# pull the docker image from docker registry

```
$docker pull nataraz/fsrepo903:app1-tag
```

# Run the docker image to get docker container and to execute the app

```
$ docker run
nataraz/fsrepo903:app1-tag
```

```
D:\DockerApps\FS-Tools903\Demo2>docker system prune -a

D:\DockerApps\FS-Tools903\Demo2>docker images
```

```
REPOSITORY TAG

IMAGE ID CREATED SIZE

D:\DockerApps\FS-Tools903\Demo2>docker pull nataraz/fs903repo: app1-tag appl-tag:
Pulling from natarazdocker/fs903repo

197c1adcd755: Pull complete

57b698b7af4b: Pull complete

95a27dbe0150: Pull complete

06f131b211a5: Pull complete

fa595a83d780: Pull complete

Enter chat

287c282c9d77: Pull complete

Digest: sha256:6180c03061266f557a88a20c1c406b95d6094be1be8037b85f7d7563cef421df
Status: Downloaded newer image for natarazdocker/fs903repo:app1-tag

docker.io/natarazdocker/fs903repo: app1-tag

D:\DockerApps\FS-Tools903\Demo2>docker images

REPOSITORY

TAG

IMAGE ID

CREATED

SIZE

nataraze/fs903repo

app1-tag 1331b0c92a16 8 minutes ago

470MB

D:\DockerApps\FS-Tools903\Demo2>docker run

1331b0c92a16

Welcome to Docker

Sum

is::30

D:\DockerApps\FS-Tools903\Demo2>docker run

nataraz/fs903repo: app1-tag

Welcome to Docker

Sum

is::30
```