Assignment

NOTE: Do not forget to see manual page using "--help" option in command when searching for options/commands for a particular task.

1. Install Docker, either on your native OS or on a VM. Make sure it runs. Type "docker -v" to check if it's installed.

If you can't install or configure Docker, you can use the online docker setup to do the assignment.

Step1 Goto:- https://www.katacoda.com/courses/kubernetes/playground

Step2 Click on "continue" button on the left panel

Step3 Click on "launch.sh" button on the left panel

Step4 From the right panel use the top console to execute below command:-

docker -v

Try below commands for help

docker --help ---> This command shows all available options and commands to work with images and containers

docker image --help ---> This command shows all the avaialble options and commands to work with docker images

docker container --help ---> This command shows all the avaialble options and commands to work with docker containers

NOTE:- DO NOT TRY TO USE INTERNET TO SOLVE ASSIGNMENT, BETTER USE THE ABOVE --help OPTION TO SEE THE MANUAL OF ANY PARTICULAR COMMAND AND FIGURE OUT THE SOLUTIONS ON YOUR OWN.

2. Find a image from dockerhub of your choice(recommeded: nginx), don't use browser, pull the official image from dockerhub

Ans. docker pull nginx

3. List all the available images in your machine/vm, make sure you see recently pulled image in the list.

Ans. docker images

4. Find out the "Full" ImageId of the image that you pulled and write it below.

Ans. 6084105296a952523c36eea261af38885f41e9d1d0001b4916fa426e45377ffe

5. Create a container of your image

Ans. docker run –name Neeraj nginx

6. List all the running containers

Ans.

ff02ad4749c3

nginx

"/docker-entrypoint.…"

27 seconds ago

Up 26 seconds

0.0.0.0:8082->80/tcp

some-nginx

39afa6a79087

nginx

"/docker-entrypoint.…"

2 minutes ago

Up 2 minutes

0.0.0.0:8080->80/tcp

Neeraj

7. List all the running and stopped containers

CONTAINER ID IMAGE COMMAND CREATED STATUS PORTS NAMES

ff02ad4749c3 nginx "/docker-entrypoint.…" 6 minutes ago Up 6 minutes 0.0.0.0:8082->80/tcp some-nginx

39afa6a79087 nginx "/docker-entrypoint.…" 8 minutes ago Exited (0) 10 seconds ago Neeraj

fd34494fdddc nginx "/docker-entrypoint.…" 27 minutes ago Exited (0) 13 minutes ago beautiful\_davinci

ce064f682339 test-docker\_web "python -u main.py" 5 months ago Exited (0) 5 months ago test-docker\_web\_1

56d3d3f1083b mongo:latest "docker-entrypoint.s…" 5 months ago Exited (14) 5 months ago test-docker\_datastore\_1

84f3c3327cac mongo "docker-entrypoint.s…" 5 months ago Exited (100) 5 months ago mongodb1

803424c26d76 mongo "docker-entrypoint.s…" 5 months ago Exited (255) 5 months ago 27017/tcp magical\_merkle

6a0be4b91a1f a62eb958cb49 "python3" 5 months ago Exited (0) 5 months ago quirky\_morse

52154b410233 mongo:latest "docker-entrypoint.s…" 5 months ago Exited (255) 5 months ago 27017/tcp test-docker\_db\_1

b43c33c17a90 a24bb4013296 "/bin/sh -c 'apk add…" 5 months ago Exited (127) 5 months ago elegant\_vaughan

99dc1c8b73b3 a24bb4013296 "/bin/sh -c 'apk add…" 5 months ago Exited (1) 5 months ago epic\_sanderson

8. Find out the "Full" containerId of the container and write it below.

Ans. docker inspect ff02ad4749c38f

ff02ad4749c38f89924528bf49560ba02fb0195f059d86ad87f8989ba24ac760

9. Find out how many image layers are used to build this image.

Ans docker inspect nginx

"sha256:14a1ca976738392ffa2ae4e54934ba28ab9cb756e924ad9297a4795a4adbfdf6"

"sha256:2230366c7c6c06d21500c020c2499d9d1b9c0325f281b26adecbe8ae577c94f9"

"sha256:fc621d08b12b3b75dcdf4faea17c6f720e4e527e43d33234c3290b19faafd158"

"sha256:7278048f2330b4b861a58dbfc7925be05f85e3f93db63ba45d2138182d600a01"

"sha256:2f2780a1a18d51aa77e07754af53d5f0e94dc639cce2da8bb8dbe076e87cce96"

"sha256:6b93c0e56d01376d9eb1061958dce3ed2881edea9f3a8705b8581e59594daf7c"

10. Get the Apache Tomcat 7 server image from the docker hub.

Ans. docker pull tomcat:7

11. Run the Apache Tomcat 7, I mean create a container of Apache Tomcat.

Ans. docker run –name tomcat1 -p 8080:8080 tomcat:7

12. Find out what is the IP Address of the Apache Tomcat Container that it is running on

Ans. docker tomcat1 inspect

13. Which Port it is using?

Ans. 8080

14. Try to access the Tomcat's home page from your machine/vm.

Ans. localhost:8080/

15. What is the disk size of Apache Tomcat image?

16. Find out list of all environment variables that is configured for tomcat image, can you see JAVA\_HOME and CATALINA\_HOME? What did you notice about it?

Ans. docker tomcat1 inspect

17. Find out which port is exposed for tomcat?

Ans. docker tomcat1 inspect

18. Run multiple conntainers of tomcat on different port and access it's home page.

Ans. docker run –name tomcat2 -p 8081:8080 tomcat:7

docker run –name tomcat3 -p 8082:8080 tomcat:7

19. Pull ubuntu os from dockerhub, try to pull 2 images of ubuntu, Except the latest one.

Ans. docker pull ubuntu:20.04

docker pull ubuntu:18.04

20. Run the container of ubuntu in attached mode.

Ans. docker run -it ubuntu:20.04

21. Run the container of another ubuntu in detached mode.

Ans. docker run -d ubuntu:18.04

22. Check how many ubuntu containers are running and stopped

Ans. docker ps

81522a99853c ubuntu:18.04 "/bin/bash" 4 seconds ago Up 3 seconds charming\_elbakyan

5929bad18fef ubuntu:20.04 "/bin/bash" 4 minutes ago Up 4 minutes frosty\_liskov

23. Is the tomcat container running? If no, start one.

Ans. No

docker run –name mytomcat1 -p 8080:8080 tomcat:7

24. Check the logs, generated by tomcat container(don't forget to make request to tomcat's home page to see the log).

Ans. docker logs mytomcat1

25. Check if ubuntu conatiner is running? If no, start one in attached mode to the terminal.

Ans. docker run -it ubuntu:20.04

26. Login as root user in ubuntu container

Ans. docker run -it ubuntu:20.04

27. Create a file with any name in root directory

Ans. touch abc.txt

28. Install software of your choice in ubuntu container using "apt-get install"

Ans. apt-get install vlc

29. Now exit the ubuntu shell, are you back to your host machine, if not, come back to the host machine.

Ans. exit

30. Check if the ubuntu container is running.

Ans. yes

31. Create a new ubuntu container out of the same image as that previous container in attached mode.

Ans. docker run -it –name ubuntu2 ubuntu:20.04

32. Login as a root user

33. Check if you can see the file created in previous container, you will not see the file as well as software that you installed in the previous container. Now kill this Container.

Ans. docker kill ubuntu2

34. Do you have the previous ubuntu container where you created the file and installed the software? If no reapeat step 25 to 29.

35. Create an Image out of the existing container.

Ans. docker commit lucid\_bohr new\_ubuntu

Lucid\_bohr – container name

New\_ubuntu – new image name

36. Now Create a Container out of this image and login into it to see if you can see the file and software installed by you in the previous container.

Ans. docker run -it –name new\_ubuntu\_img new\_ubuntu

Yes the file and software is there.

37. Do you have running tomcat container? If yes, Stop it and kill all tomcat container.

Ans. docker kill mytomcat1

38. Create an index.html file with following code in it:-

<h1>This is Tomcat Container</h1>

Now, Start a tomcat container in such a way that on hitting its URL for home page it should show the above html page.

39. type below command:-

docker images --help

Now, try to run command that proves the concept of following three options:-

1. -a

2. -f

3. -q

1. docker images -a

A picture containing text, screenshot, monitor, computer

Description automatically generated

2. docker images -f “dangling=true”

Graphical user interface, text, application

Description automatically generated

1. docker images -q

Graphical user interface, application

Description automatically generated

write atleast 1 command using each option above and prove their concepts as described in the --help.

40. type below command:-

docker ps --help

Now, try to run command that proves the concept of following six options:-

1. -a

List all the container

Graphical user interface, application

Description automatically generated

2. -f

Filter output based on conditions provided

Cmd: docker ps -f "before=mytomcat1"

Graphical user interface, application

Description automatically generated

3. -q

Only display numeric IDs

Graphical user interface, application

Description automatically generated

4. -n

Show n last created containers (includes all

states) (default -1)

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Description automatically generated

5. -l

Show the latest created container (includes all

states)

Graphical user interface, text, application

Description automatically generated

6. -s

Display total file sizes

A picture containing text, screenshot, monitor

Description automatically generated