

ASSIGNMENT 4

Kubernetes / Docker

Date	02.11.2022
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Marks	2 marks

QUESTIONS:

- 1.Pull an Image from docker hub and run it in docker playground.
- 2.Create a docker file for the job portal application and deploy it in Docker desktop application.
- 3.Create a IBM container registry and deploy helloworld app or jobportalapp.
- 4.Create a Kubernetes cluster in IBM cloud and deploy helloworld image or jobportal image and also expose the same app to run in nodeport.

SOLUTIONS: -

- 1.Pull an Image from docker hub and run it in docker playground.

IMAGE PULLED: PYTHON

app.py

```
from flask import Flask
app=Flask(__name__)
import os
@app.route("/")
def home():
    return "Hello"
```

```
if __name__=="__main__":  
    port=int(os.environ.get('PORT',5000))  
    app.run(host='0.0.0.0',port=port)
```

Dockerfile code

FROM python

WORKDIR /app

COPY . .

RUN pip install -r requirement.txt

CMD ["python","app.py"]

EXPOSE 5000

The screenshot shows the Docker Playground interface in a web browser. The browser tabs include 'python - Official image - Docker', 'Docker Playground', and 'Containerize an application | Docker'. The address bar shows the URL 'labs.play-with-docker.com/p/cdhl6tu3tccg00fmsr9g#cdhl6tu3_cdhm1q63tccg00fms4g'. On the left sidebar, there is a 'CLOSE SESSION' button, an 'Instances' section with a wrench and gear icon, and a '+ ADD NEW INSTANCE' button. Below this, a list of instances shows '192.168.0.8 node1'. The main panel displays details for the container 'cdhl6tu3_cdhm1q63tccg00fms4g', including its IP '192.168.0.8', an 'OPEN PORT' button, and 'Memory' and 'CPU' usage sections. An SSH command is provided: 'ssh ip172-18-0-45-cdhl6tu3tccg00fmsr9g@direct.labs.play-'. Below this are 'DELETE' and 'EDITOR' buttons. The bottom section shows a terminal output with the following text:

```
310052ee2200d8d43a47e7c9c52732ce9f  
Stored in directory: /root/.cache/pip/wheels/96/ee/62/407c247ad088bcb67b530ba3ac1479058c58a651bd6bf09a1f  
Successfully built MarkupSafe  
Installing collected packages: MarkupSafe, itsdangerous, click, Werkzeug, Jinja2, flask  
Successfully installed Jinja2-3.1.2 MarkupSafe-2.1.1 Werkzeug-2.2.2 click-8.1.3 flask-2.2.2 itsdangerous-2.1.2  
WARNING: Running pip as the 'root' user can result in broken permissions and conflicting behaviour with the system package manager. It  
is recommended to use a virtual environment instead: https://pip.pypa.io/warnings/venv  
Removing intermediate container bc9f4ce971ce  
--> 8d2dbbb62bef  
Step 5/6 : CMD ["python","app.py"]  
--> Running in 1167aebd4975  
Removing intermediate container 1167aebd4975  
--> 7456347b0a0c  
Step 6/6 : EXPOSE 5000  
--> Running in d0ac7236d328  
Removing intermediate container d0ac7236d328  
--> f3c8d00876b7  
Successfully built f3c8d00876b7  
Successfully tagged helloapp:latest  
[node1] (local) root@192.168.0.8 ~  
$
```

192.168.176.92:5000

python - Official image | Docker

Docker Playground

Containerize an application | Docker

labs.play-with-docker.com/p/cdhl6tu3tccg00fmsr9g#cdhl6tu3_cdhm1q63tccg00fmst4g

New TabTamil nadu Enginee...

02:58:36

CLOSE SESSION

Instances

+ ADD NEW INSTANCE

192.168.0.8
node1

cdhl6tu3_cdhm1q63tccg00fmst4g

IP
192.168.0.8

OPEN PORT

Memory

CPU

SSH
ssh ip172-18-0-45-cdhl6tu3tccg00fmsr9g@direct.labs.play-1

DELETE

EDITOR

```
[node1] (local) root@192.168.0.8 ~
$ docker image ls
REPOSITORY    TAG       IMAGE ID       CREATED        SIZE
helloapp      latest    f3c8d00876b7   About a minute ago  951MB
python        latest    00cd1fb8bdcc   8 days ago     932MB
[node1] (local) root@192.168.0.8 ~
$
```

192.168.176.92:5000

python - Official image | Docker

Docker Playground

Containerize an application | Docker

labs.play-with-docker.com/p/cdhl6tu3tccg00fmsr9g#cdhl6tu3_cdhm1q63tccg00fmst4g

New Tab

02:56:35

CLOSE SESSION

Instances

+ ADD NEW INSTANCE

192.168.0.8
node1

cdhl6tu3_cdhm1q63tccg00fmst4g

IP
192.168.0.8

OPEN PORT

Memory

CPU

SSH
ssh ip172-18-0-45-cdhl6tu3tccg00fmsr9g@direct.labs.play-1

DELETE

EDITOR

```
[node1] (local) root@192.168.0.8 ~
$ docker image ls
REPOSITORY    TAG       IMAGE ID       CREATED        SIZE
helloapp      latest    f3c8d00876b7   About a minute ago  951MB
python        latest    00cd1fb8bdcc   8 days ago     932MB
[node1] (local) root@192.168.0.8 ~
$ docker run -p 5000:5000 helloapp
* Serving Flask app 'app'
* 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
```

labs.play-with-docker.com/p/cdhl6tu3tccg00fmsr9g/cdhl6tu3_cdhm1q63tccg00fmsr4g

02:56:16

CLOSE SESSION

Instances

+ ADD NEW INSTANCE

192.168.0.8
node1

cdhl6tu3_cdhm1q63tccg00fmsr4g

IP
192.168.0.8

Memory

CPU

SSH
ssh ip172-18-0-45-cdhl6tu3tccg00fmsr9g@direct.labs.play-with-docker.com

DELETE EDITOR

```
[node1] (local) root@192.168.0.8 ~
$ docker image ls
REPOSITORY TAG IMAGE ID CREATED SIZE
helloapp latest f3c8d00876b7 About a minute ago 951MB
python latest 00cd1fb8bdcc 8 days ago 932MB
[node1] (local) root@192.168.0.8 ~
$ docker run -p 5000:5000 helloapp
* Serving Flask app 'app'
* 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
```

ip172-18-0-45-cdhl6tu3tccg00fmsr9g-5000.direct.labs.play-with-docker.com

Not secure

Hello

The screenshot shows the Docker Playground interface. On the left, there's a sidebar with a clock showing 02:54:14, a 'CLOSE SESSION' button, and a list of instances. The main area displays details for a container named 'cdhl6tu3_cdhm1q63tccg00fms4g'. It shows the IP address 192.168.0.8, memory usage, CPU usage, and an SSH command to connect. Below this, there's a terminal window showing the container's output. The output indicates that a Python Flask application is running on port 5000, serving 'helloapp'. It also shows several HTTP requests and responses, including GET requests for '/' and '/favicon.ico'.

2. Create a docker file for the job portal application and deploy it in Docker desktop application.

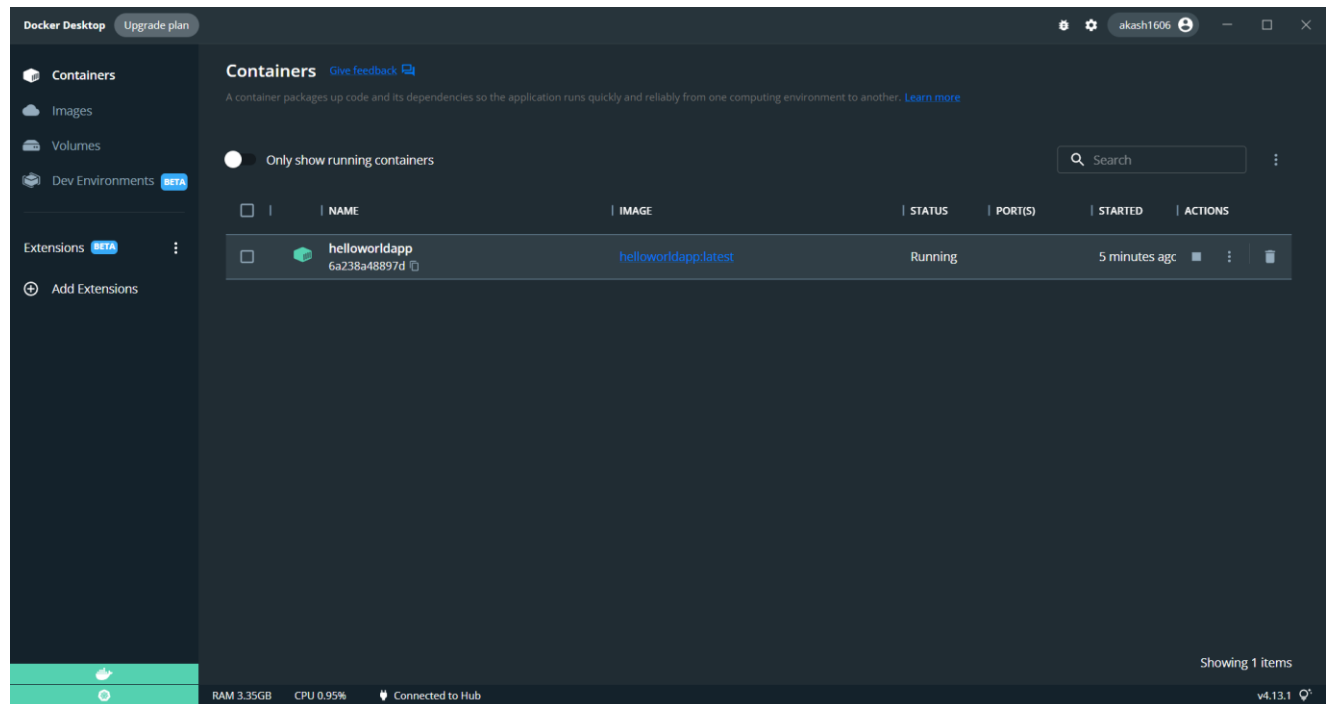
```

C:\Windows\System32\cmd.exe
Microsoft Windows [Version 10.0.22621.755]
(c) Microsoft Corporation. All rights reserved.

C:\Users\akash\OneDrive\Desktop\helloworldapp>docker build -t helloworldapp .
[*] Building 10.7s (10/10) FINISHED
-> [internal] load build definition from Dockerfile
-> => transferring dockerfile: 31B
-> [internal] load .dockerignore
-> => transferring context: 2B
-> [internal] load metadata for docker.io/library/python:latest
-> [auth] library/python:pull token for registry-1.docker.io
-> [1/4] FROM docker.io/library/python@sha256:fc809ada71c087ccc7e2d2244bcb9fba337638978a6d0f2aa6267db43e89fd
-> [internal] load build context
-> => transferring context: 118B
-> CACHED [2/4] WORKDIR /app
-> CACHED [3/4] COPY ...
-> CACHED [4/4] RUN pip install -r requirement.txt
-> exporting image
-> => exporting layers
-> => writing image sha256:075dc03a80e4471eaa225c1c611655808dc3c1a18db75be4a78ed0c7342cd4d3
-> => naming to docker.io/library/helloworldapp

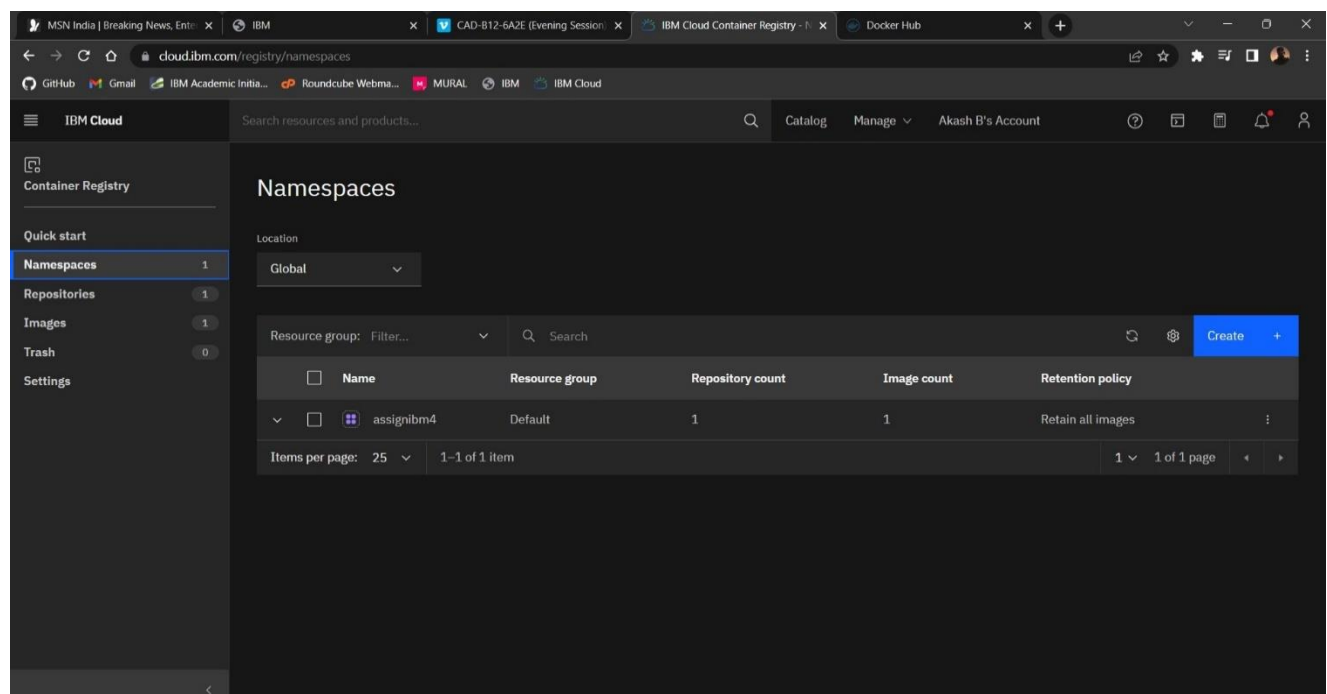
Use 'docker scan' to run Snyk tests against images to find vulnerabilities and learn how to fix them
  
```

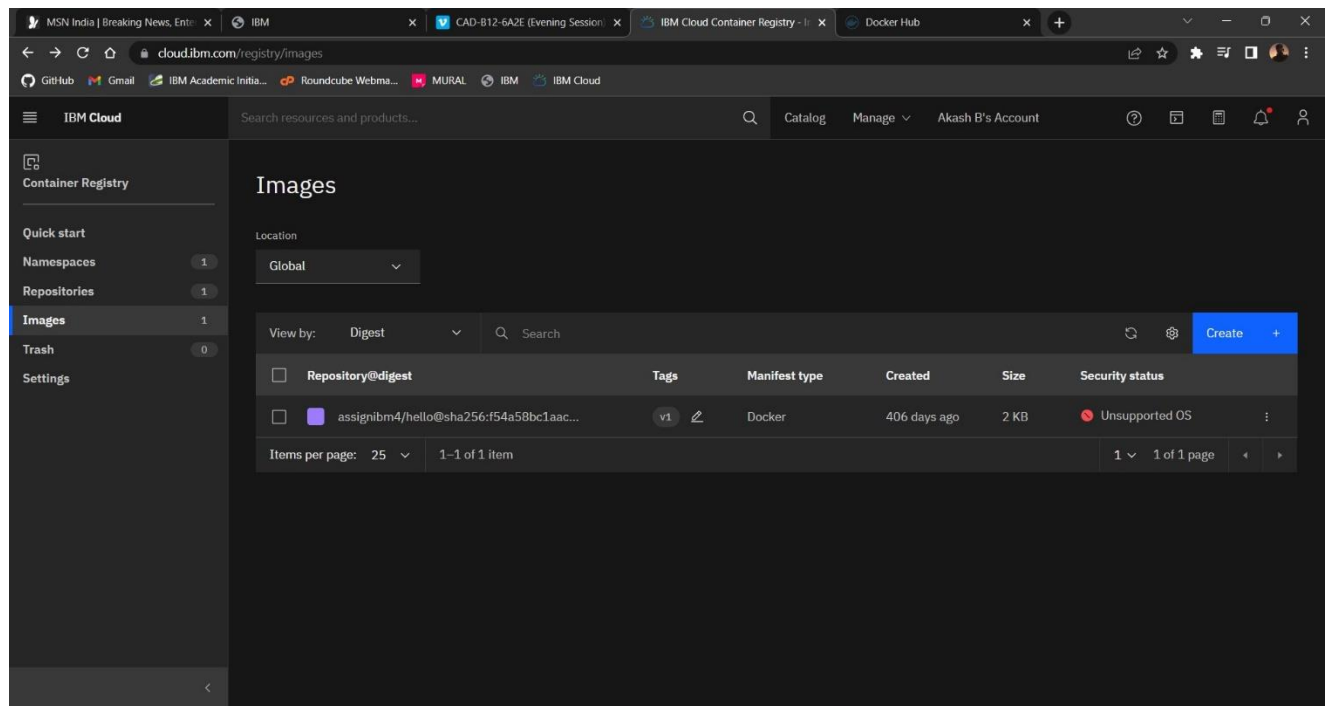
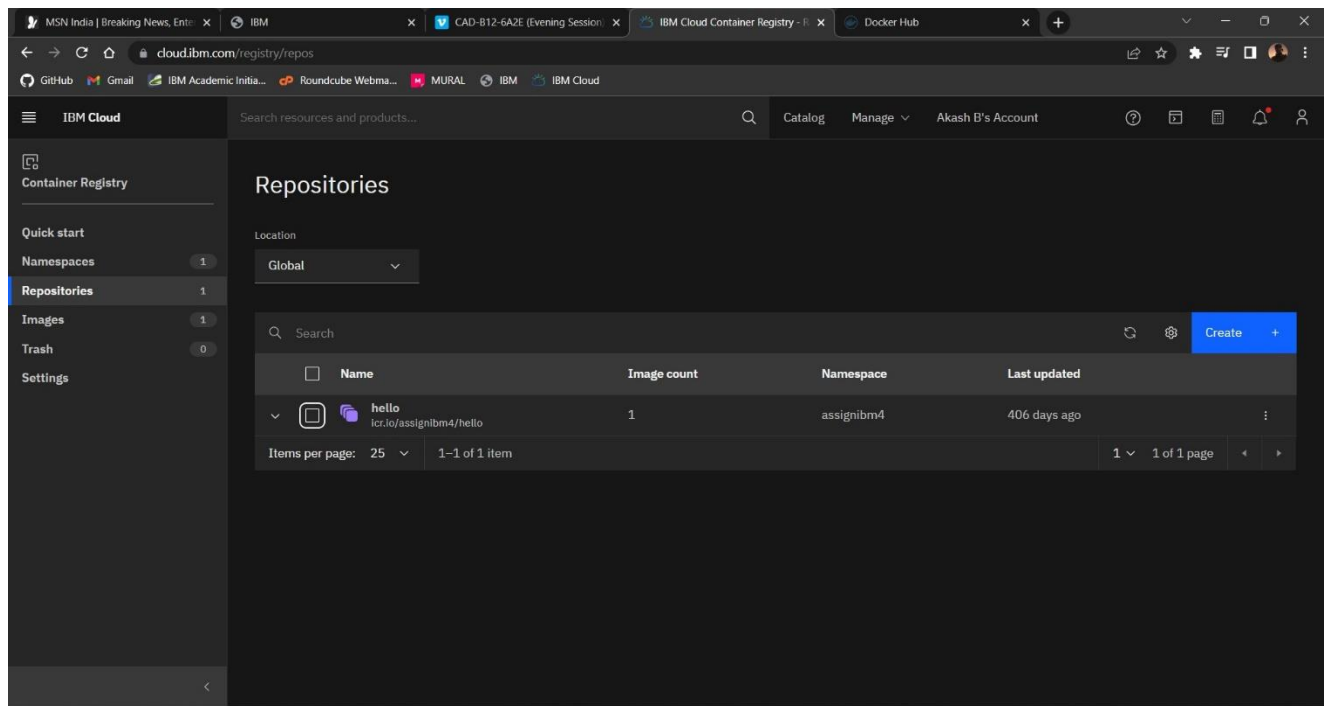
REPOSITORY	TAG	IMAGE ID	CREATED	SIZE
helloworldapp	latest	075dc03a80e4	2 days ago	951MB
mluproy/docker-internal:5000/docker/desktop-kubernetes	kubernetes-v1.25.2-cni-v1.1.1-critools-v1.24.2-cri-dockerd-v0.2.5-1-debian	09d741db0c2d4	6 weeks ago	363MB
k8s.gcr.io/kube-apiserver	v1.25.2	97801f83949d	6 weeks ago	128MB
k8s.gcr.io/kube-scheduler	v1.25.2	ca0ea1ee3cfd	6 weeks ago	50.6MB
k8s.gcr.io/kube-controller-manager	v1.25.2	dbfceb93c69b	6 weeks ago	117MB
k8s.gcr.io/kube-proxy	v1.25.2	1c7d8c51823b	6 weeks ago	61.7MB
k8s.gcr.io/pause	3.8	4873874c08ef	4 months ago	711kB
k8s.gcr.io/etcd	3.5.4-0	a8a176a5d5d6	5 months ago	380MB
k8s.gcr.io/coredns	v1.9.3	5183b96f0bec	5 months ago	48.0MB
docker/getting-started	latest	cb90f98fd791	6 months ago	28.8MB
icr.io/assignment1b4/helloworldapplication	v1	feb5d9fe6a5	13 months ago	13.3kB
docker/desktop-vpnkit-controller	v2.0	8c2c38aa676e	18 months ago	21MB
docker/desktop-storage-provisioner	v2.0	99f89471f470	18 months ago	41.9MB



3.Create a IBM container registry and deploy helloworld app or jobportalapp

Deployed: helloworldapp





4. Create a Kubernetes cluster in IBM cloud and deploy helloworld image or jobportal image and also expose the same app to run in nodeport.

