

ASSIGNMENT 4

Kubernetes / Docker

Date	02.11.2022
Student Name	Barathkumar P
Student roll no	621319106008
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 displays a cloud management interface. On the left, a sidebar shows a timer at 03:00:11, a 'CLOSE SESSION' button, and a list of instances with one instance named 'node1' at IP 192.168.0.8. The main panel shows details for instance 'cdhl6tu3_cdhm1q63tccg00fmst4g' with IP 192.168.0.8. It includes buttons for 'OPEN PORT', 'DELETE', and 'EDITOR'. Below these, a terminal window shows the following output:

```
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 ~
$
```

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 ~
$
```

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
```

New Tab

02:56:16

CLOSE SESSION

Instances

+ ADD NEW INSTANCE

192.168.0.8
node1

cdhl6tu3_cdhm1q6

IP
192.168.0.8

Memory

CPU

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

DELETE

EDITOR

labs.play-with-docker.com says
What port would you like to open?
5000
OK Cancel

```
[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
```

Hello

02:54:14

CLOSE SESSION

Instances

+ ADD NEW INSTANCE

192.168.0.8
node1

cdhl6tu3_cdhm1q63tccg00fms4g

IP
192.168.0.8

OPEN PORT

Memory

CPU

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

DELETE

EDITOR

```

python latest 00cd1fb0bdcc 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
172.18.0.1 - - [03/Nov/2022 06:41:07] "GET / HTTP/1.1" 200 -
172.18.0.1 - - [03/Nov/2022 06:41:08] "GET /favicon.ico HTTP/1.1" 404 -
172.18.0.1 - - [03/Nov/2022 06:41:53] "GET / HTTP/1.1" 200 -
172.18.0.1 - - [03/Nov/2022 06:42:04] "GET / HTTP/1.1" 200 -
172.18.0.1 - - [03/Nov/2022 06:42:06] "GET /favicon.ico HTTP/1.1" 404 -
172.18.0.1 - - [03/Nov/2022 06:42:16] "GET / HTTP/1.1" 200 -
172.18.0.1 - - [03/Nov/2022 06:42:20] "GET / HTTP/1.1" 200 -
172.18.0.1 - - [03/Nov/2022 06:42:21] "GET /favicon.ico HTTP/1.1" 404 -
172.18.0.1 - - [03/Nov/2022 06:42:29] "GET / HTTP/1.1" 200 -
172.18.0.1 - - [03/Nov/2022 06:42:29] "GET / HTTP/1.1" 200 -

```

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:fc80bada71c087cec7e2d2244bcb9fba31761897ba609f2aa16267db41e0910f
=> [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 to image
=> => writing image sha256:075dc03a00e4471eaa225c1c611655009dc3c1a18db75be4a78ed0c7342cd4d3
=> => naming to docker.io/library/helloworldapp

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

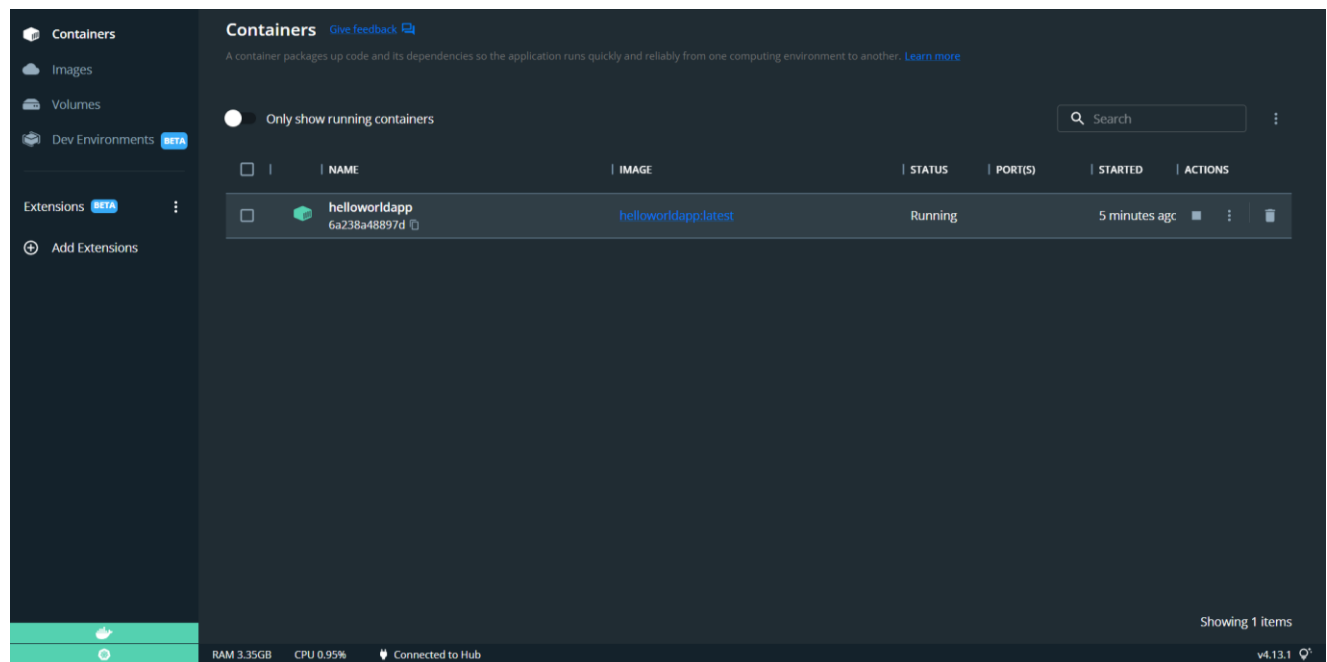
```

```

C:\Users\akash\OneDrive\Desktop\helloworldapp>docker images

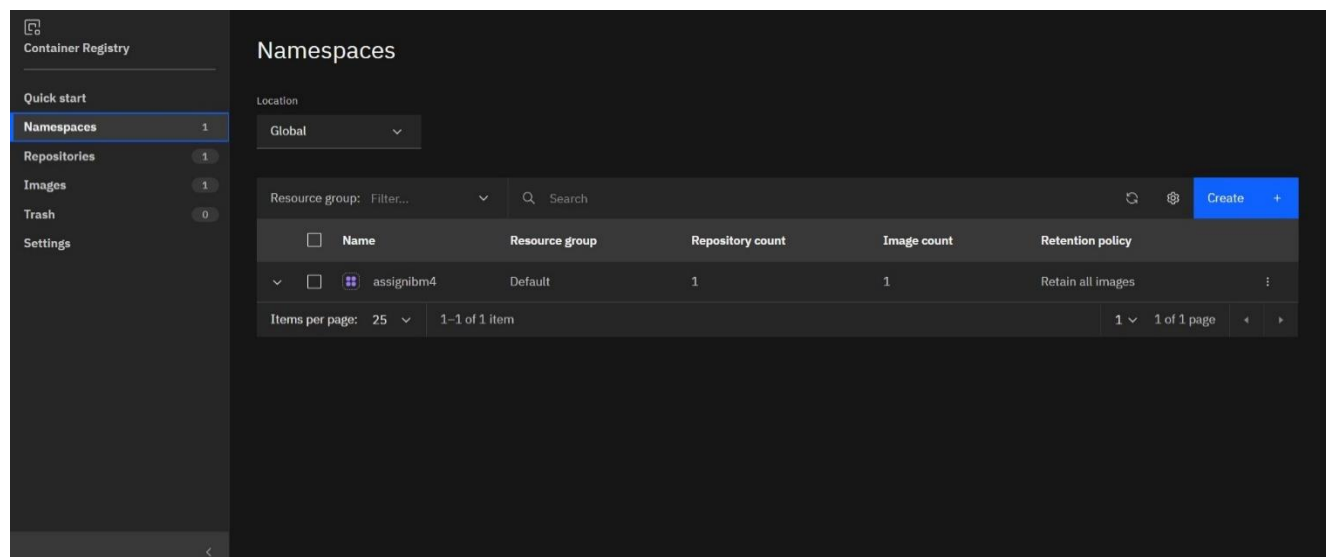
```

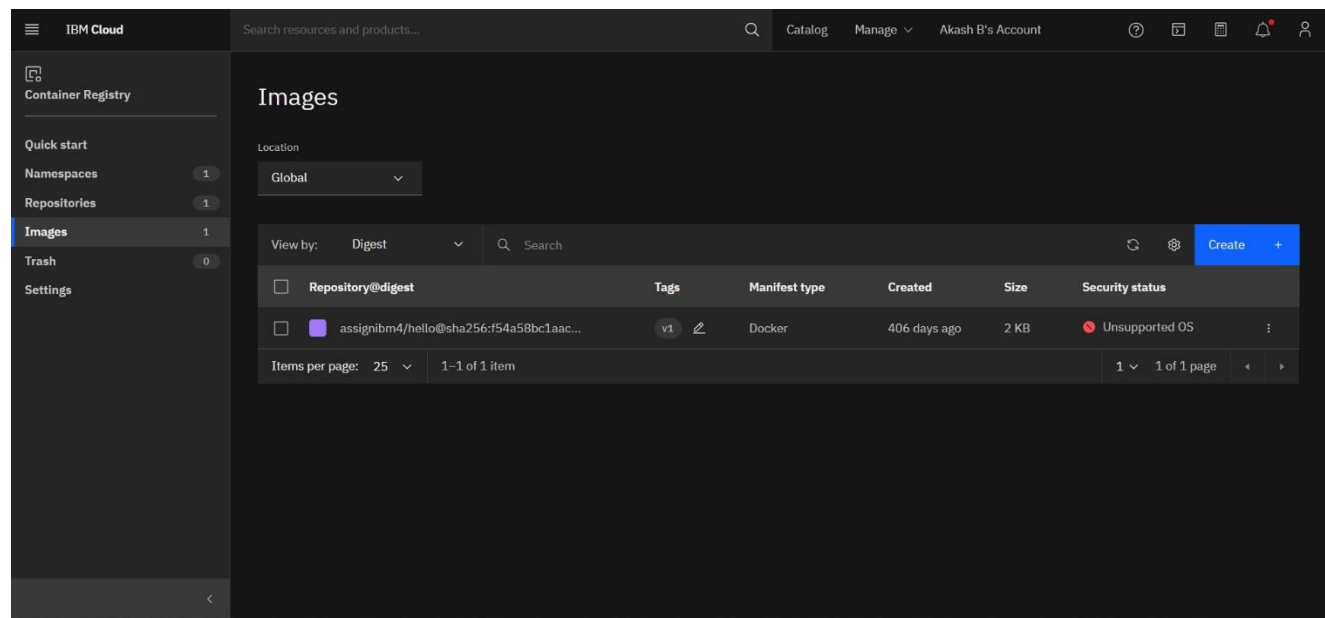
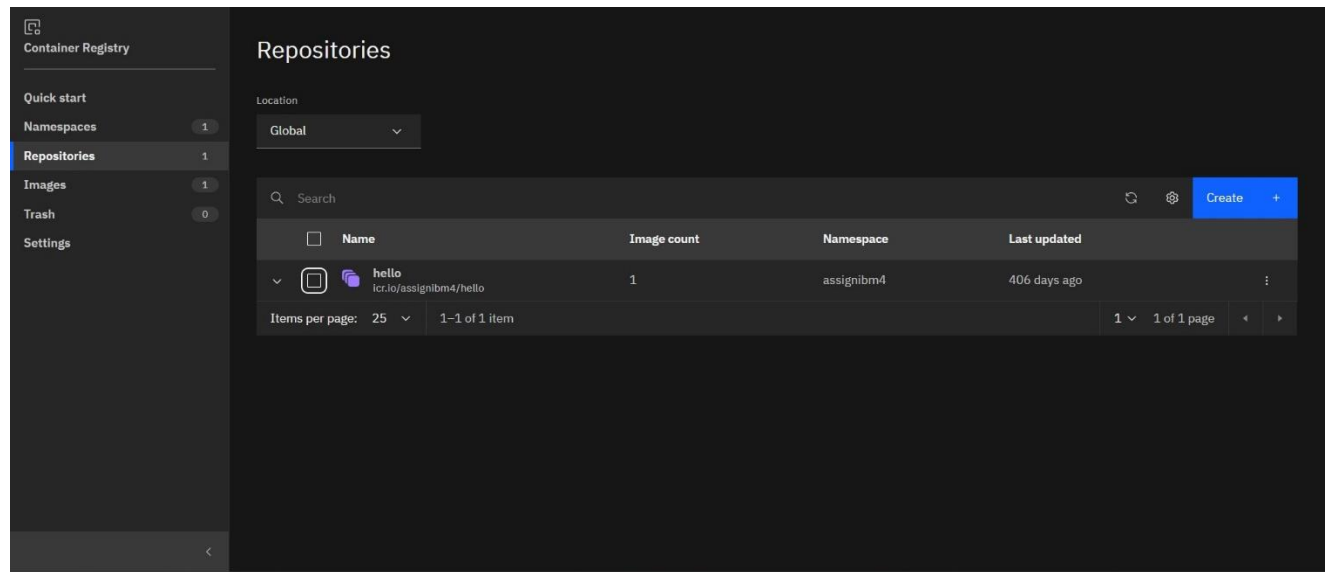
REPOSITORY	TAG	IMAGE ID	CREATED	SIZE
helloworldapp	latest	075dc03a00e4	2 days ago	951MB
hulprox.docker.internal:5000/docker/desktop-kubernetes	kubernetes-v1.25.2-cni-v1.1.1-critools-v1.24.2-cri-dockerd-v0.2.5-1-debian	09d7e1dbc2c4	6 weeks ago	363MB
k8s.gcr.io/kube-apiserver	v1.25.2	97801f839490	6 weeks ago	128MB
k8s.gcr.io/kube-scheduler	v1.25.2	ca0ba1e3cfd	6 weeks ago	50.6MB
k8s.gcr.io/kube-controller-manager	v1.25.2	dbfcb93c69b	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	300MB
k8s.gcr.io/coredns	v1.9.3	5185b96f0bec	5 months ago	48.8MB
docker/getting-started	latest	cb90f98fd791	6 months ago	28.8MB
cr.io/assignmentlib4/helloworldapplication	v1	feb509fede65	13 months ago	13.3kB
docker/desktop-upknit-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.

kubernetes

default

 Search



Workloads

Workloads

Cron Jobs

Daemon Sets

Deployments

Jobs

Pods

Replica Sets

Replication Controllers

Stateful Sets

Service

Ingresses

Ingress Classes

Services

Config and Storage

Config Maps

Persistent Volume Claims

Workload Status

Running: 1

Deployments

Running: 1

Pods

Running: 1

Replica Sets

Deployments

Items: 1

Pods

Name	Images	Labels	Node	Status	Restarts	CPU Usage (cores)	Memory Usage (bytes)	Created ↑
------	--------	--------	------	--------	----------	-------------------	----------------------	-----------