

## 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 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 and an 'OPEN PORT' button. Below this, there are 'DELETE' and 'EDITOR' buttons. The bottom section shows a terminal window with 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\_cdhm1q63tccg00fmsr4g

IP  
192.168.0.8

OPEN PORT

Memory

CPU

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

DELETE

EDITOR

```

python latest 00cd1fb8bdcc 8 days ago 932MB
[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:fc80bada71c8b7cec7e2d2244bcb9fba31761897ba669f2aa16267db41e8910f
=> [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 sha256:075dc03a08e4471eaa225c1c611655809dc3c1a18db75be4a78ed0c7342cd4d3
=> => naming to docker.io/library/helloworldapp

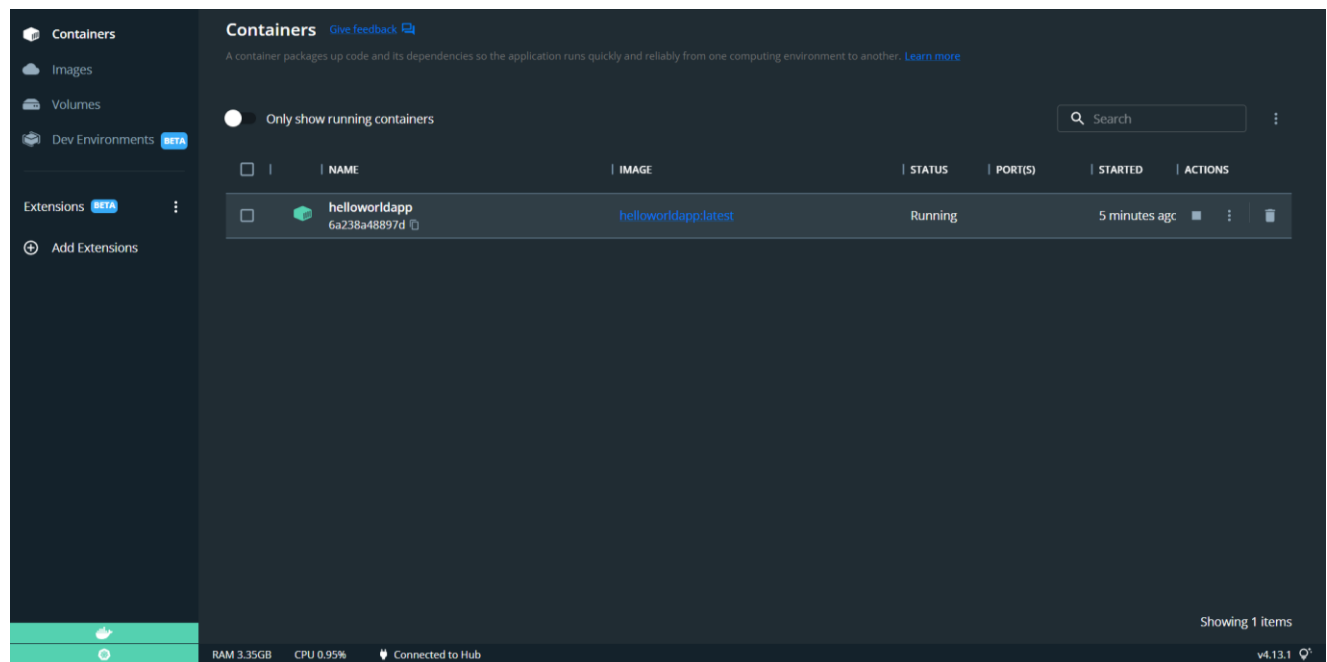
Use 'docker scan' to run Snyk tests against images to find vulnerabilities and learn how to fix them

```

```

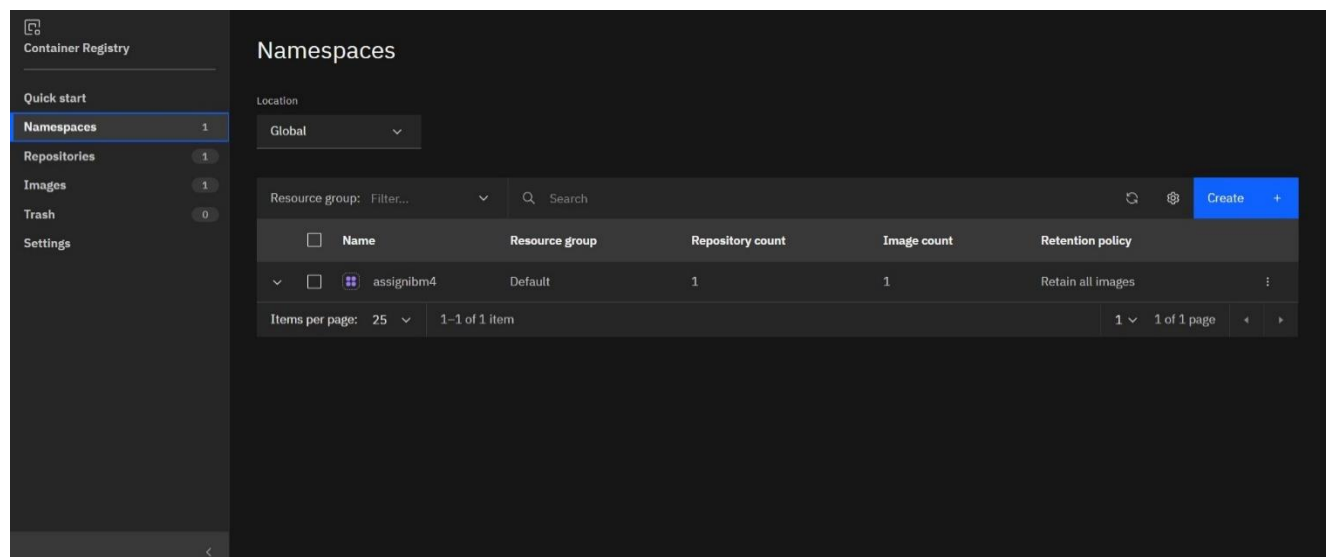
C:\Users\akash\OneDrive\Desktop\helloworldapp>docker images
REPOSITORY          TAG                 IMAGE ID            CREATED             SIZE
helloworldapp       latest             075dc03a08e4       2 days ago         951MB
hulprox.docker.internal:5000/docker/desktop-kubernetes  kubernetes-v1.25.2-cni-v1.1.1-critools-v1.24.2-cri-dockerd-v0.2.5-1-debian  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            ca0ba1e3c4fd       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
k8s.gcr.io/assignmentlib/helloworldapplication  v1                feb5d9fede65       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

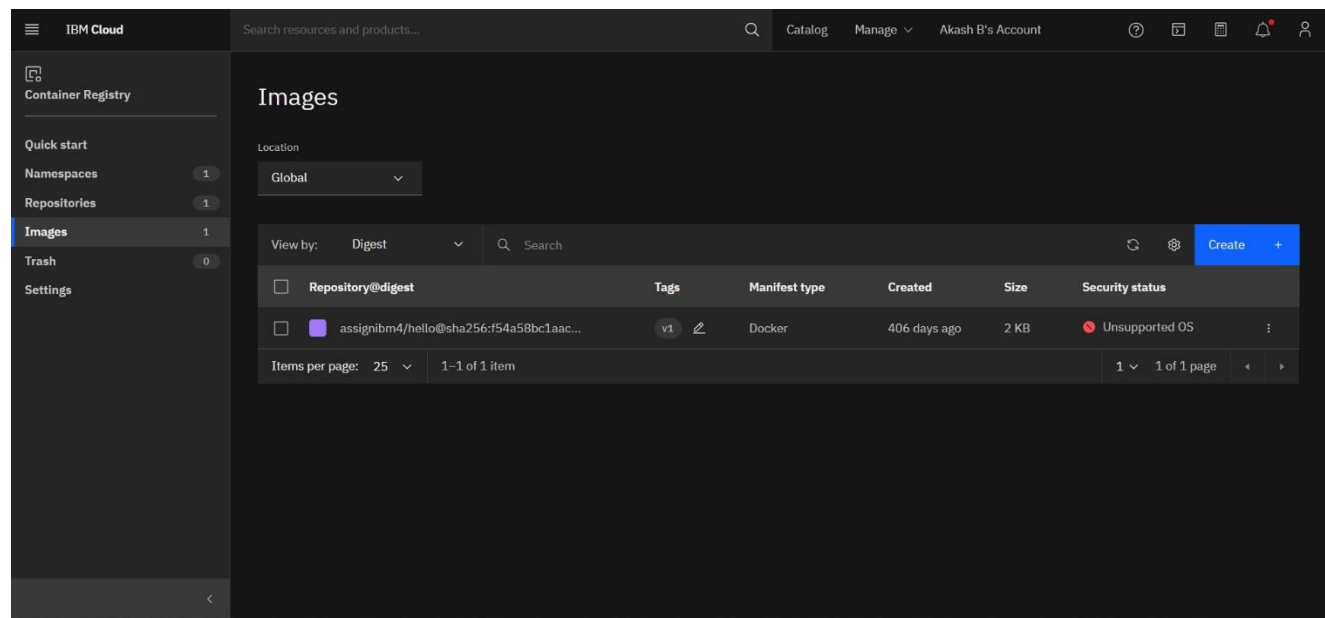
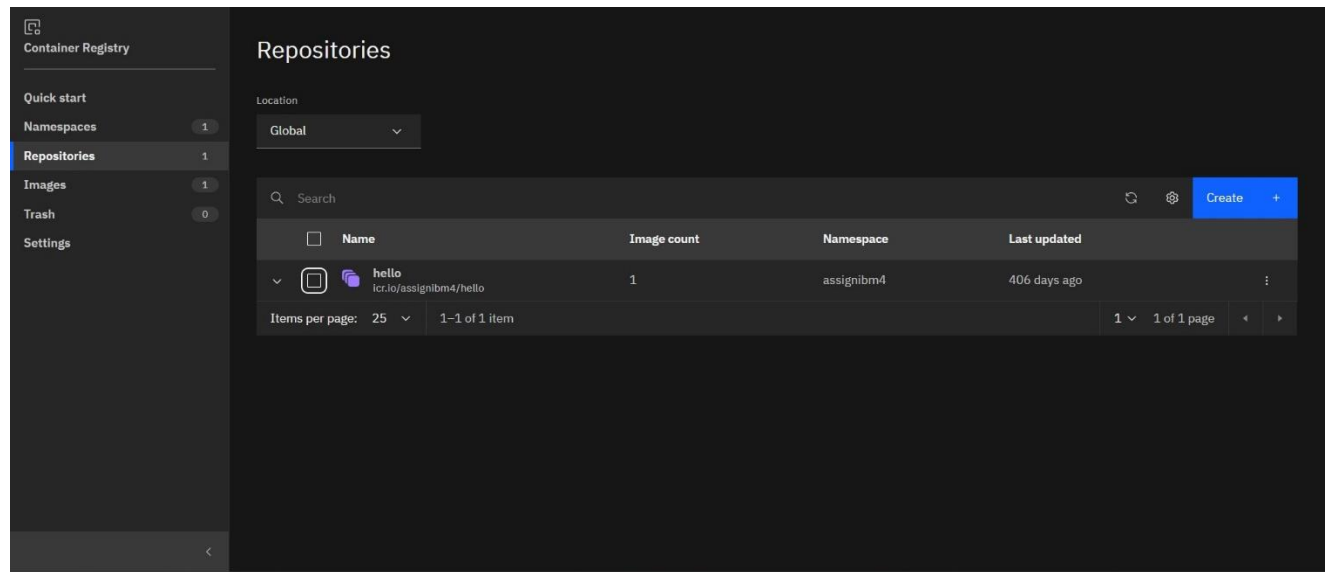
```




### 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 ↑
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