

Assignment 4

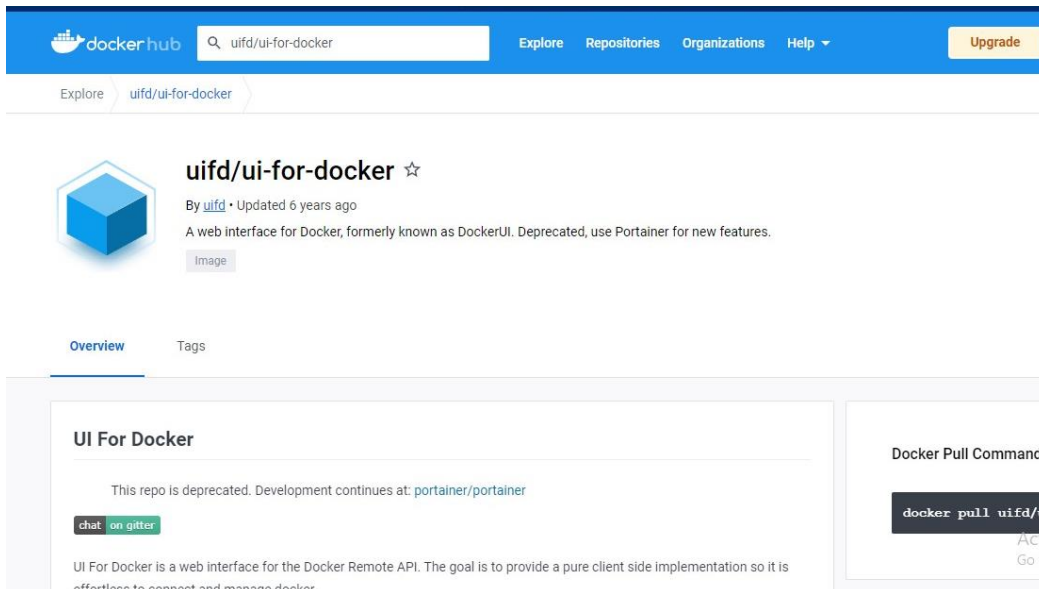
Question 1:

Pull an image from docker hub and run it on docker playground.

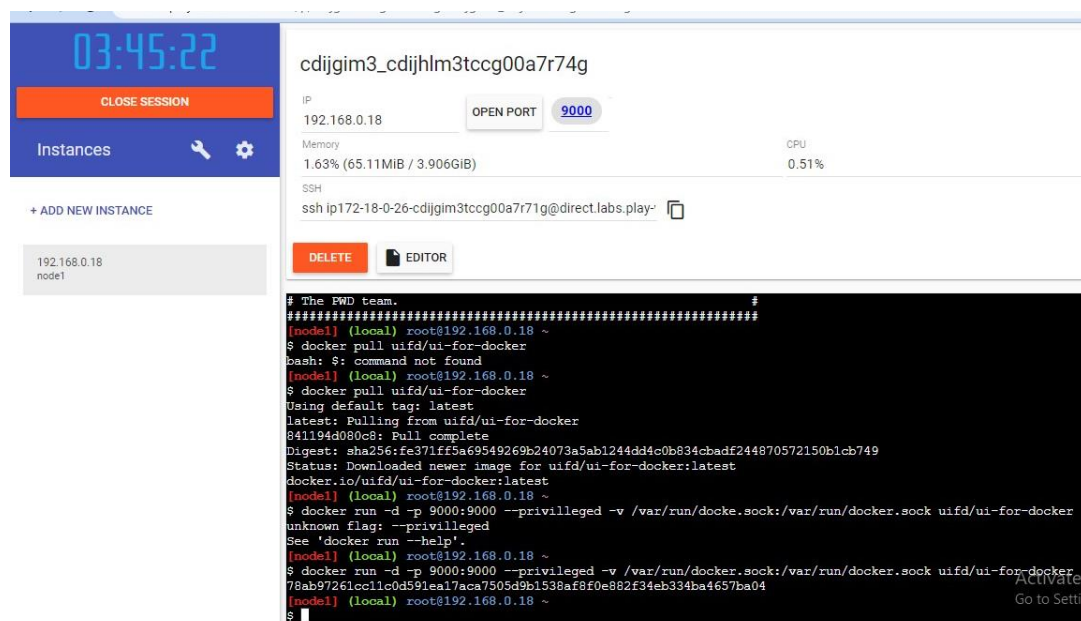
Solution 1:

```
docker pull uifd/ui-for-docker
```

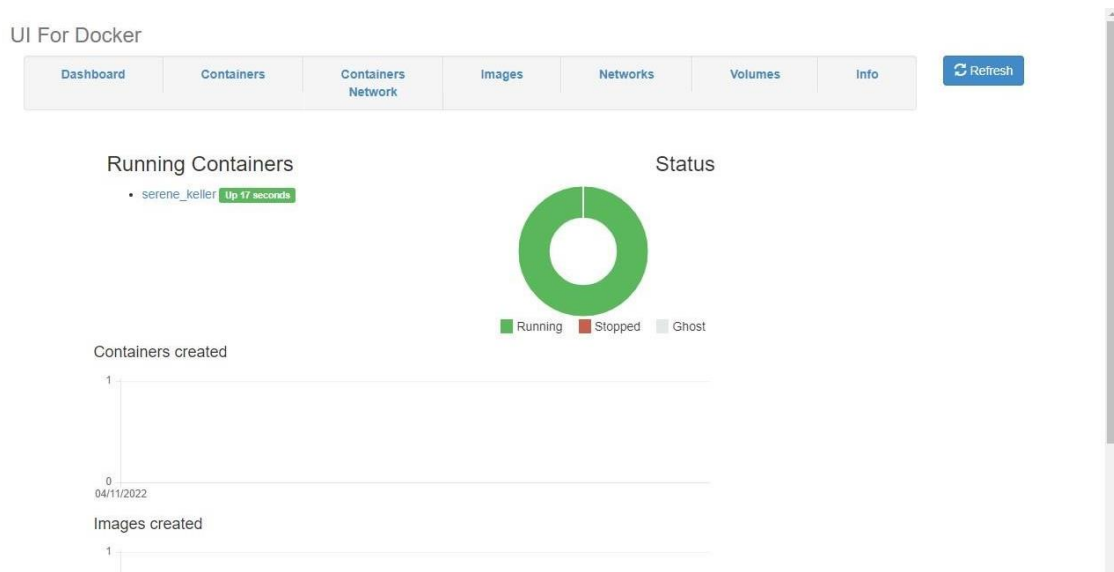
```
docker run -d -p 9000:9000 --privileged -v /var/run/docker.sock:/var/run/docker.sock uifd/ui-for-docker
```



Docker playground:



Docker UI:



Question 2:

Create a docker file for the job portal app or hello world app and deploy it in docker desktop app.

Solution 2:

DockerFile

Dockerfile - Notepad

File Edit Format View Help

```
FROM python:3.8
```

```
WORKDIR /app
```

```
ADD . /app
```

```
COPY requirements.txt /app
```

```
RUN python3 -m pip install -r requirements.txt
```

```
EXPOSE 5000
```

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

Build Docker image

```
E:\Study materials\Sem 7\IBM\Exercise\Assignment4>docker build -t hello-world .
[*] Building 160.45 (10/10) FINISHED
-> [internal] load build definition from Dockerfile
=> transferring dockerfile: 194B 0.0s
-> [internal] load .dockerignore
=> transferring context: 2B 0.0s
=> [internal] load metadata for docker.io/library/python:3.8 5.8s
=> [1/5] FROM docker.io/library/python:3.8@sha256:089d750211770a2dd03ecc4b10a8d851f6f77ef3f1e3f3620d8519190b8ae1d5 149.9s
=> resolve docker.io/library/python:3.8@sha256:089d750211770a2dd03ecc4b10a8d851f6f77ef3f1e3f3620d8519190b8ae1d5 0.0s
=> sha256:9809722f6ec0bc17c25211573681851f092c094f57cc07eb4393701a4711a480 8.50MB / 8.50MB 0.0s
=> sha256:17c9e6141f0b2387e5e1c07d4f96a0e5ac1498e6029fa3e55470d4504f7770 55.05MB / 55.05MB 65.2s
=> sha256:4adced858766c18412817019074f5e8a80ede4e2fc09d06af13d3f80d78a70d 18.80MB / 18.80MB 8.7s
=> sha256:089d750211770a2dd03ecc4b10a8d851f6f77ef3f1e3f3620d8519190b8ae1d5 1.06kB / 1.06kB 0.0s
=> sha256:254101fcf737ef80a912ce9ad7488081a01e0a35bffc5e7d6bb06d0b6e1c3f 2.22kB / 2.22kB 0.0s
=> sha256:de4a4c6cae8801bb0b7377e10220a914da403bc93fa79663cbf2dcf1000b6f1 5.16MB / 5.16MB 18.3s
=> sha256:a7969cfff0f46e6a91291fd70b19ecbe93c03ea4ded0d14842aebc4c0c4211a43 54.59MB / 54.59MB 47.5s
=> sha256:74fbfde6af91271f0b8f0a1716224dccc5c0beead3609943792a9cbb4d6d3d 196.87MB / 196.87MB 133.3s
=> sha256:1dfe518e4089f36017fa2b0c01a622b2eb0c3622a92a13df14578825eb37 6.29MB / 6.29MB 53.8s
=> sha256:2b979a731384cf50dac8f4255d381b7003d067b09b45c1a2b6c3ea18b02636d4 17.39MB / 17.39MB 68.0s
=> sha256:aa3c4359fda3380660ae8ba70b2ebb713221ef3a3eca977f93590508f1506de1 234B / 234B 67.3s
=> extracting sha256:17c9e6141f0b2387e5e1c07d4f96a0e5ac1498e6029fa3e55470d4504f7770 10.8s
=> sha256:58700fbcfa0c82e5d24a9f76ba7748a194c4fd7312a397860b4637f72ce91b6 2.89MB / 2.89MB 70.7s
=> extracting sha256:de4a4c6cae8801bb0b7377e10220a914da403bc93fa79663cbf2dcf1000b6f1 1.3s
=> sha256:4adced858766c18412817019074f5e8a80ede4e2fc09d06af13d3f80d78a70d 1.0s
=> extracting sha256:a7969cfff0f46e6a91291fd70b19ecbe93c03ea4ded0d14842aebc4c0c4211a43 13.1s
=> sha256:74fbfde6af91271f0b8f0a1716224dccc5c0beead3609943792a9cbb4d6d3d 13.6s
=> extracting sha256:1dfe518e4089f36017fa2b0c01a622b2eb0c3622a92a13df14578825eb37 0.4s
=> extracting sha256:2b979a731384cf50dac8f4255d381b7003d067b09b45c1a2b6c3ea18b02636d4 1.1s
=> extracting sha256:aa3c4359fda3380660ae8ba70b2ebb713221ef3a3eca977f93590508f1506de1 0.0s
=> extracting sha256:58700fbcfa0c82e5d24a9f76ba7748a194c4fd7312a397860b4637f72ce91b6 0.4s
-> [internal] load build context
=> transferring context: 1.15KB 0.0s
=> [2/5] WORKDIR /app 0.4s
=> [3/5] ADD . /app 0.1s
=> [4/5] COPY requirements.txt /app 0.0s
=> [5/5] RUN python3 -m pip install -r requirements.txt 3.8s
=> exporting to image 0.2s
=> exporting layers 0.2s
=> writing image sha256:f68fcdce5bb665f0e8f47bc4d137a4f7e0533348402c5bfdad71121d7d43f63 0.0s
=> naming to docker.io/library/hello-world 0.0s
```

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

Deploy it on Docker hub

Containers

Images

Volumes

Dev Environments BETA

Extensions BETA

Add Extensions

Images on disk

Last refresh: Never 1 Images Refresh to see disk usage Clean up

Images Give feedback

LOCAL REMOTE REPOSITORIES

☐ In use only

NAME	TAG	IMAGE ID	CREATED	SIZE
hello-world	latest	f68fcdce5bb6	less than a minute ago	919.36 MB

RAM 3.66GB CPU 0.08%

Connected to Hub

v4.13.1

```
C:\Windows\System32\cmd.exe
Use 'docker scan' to run Snyk tests against images to find vulnerabilities and learn how to fix them

E:\Study materials\Sem 7\IBM\Exercise\Assignment4>docker images
REPOSITORY          TAG                 IMAGE ID            CREATED             SIZE
hello-world          latest              f68fcdce5bb6       5 minutes ago      919MB

E:\Study materials\Sem 7\IBM\Exercise\Assignment4>docker login
Authenticating with existing credentials...
Login Succeeded

logging in with your password grants your terminal complete access to your account.
For better security, log in with a limited-privilege personal access token. Learn more at https://docs.docker.com/go/access-tokens/

E:\Study materials\Sem 7\IBM\Exercise\Assignment4>docker tag hello-world itsmona14/hello-world

E:\Study materials\Sem 7\IBM\Exercise\Assignment4>docker push itsmona14/hello-world
Using default tag: latest
The push refers to repository [docker.io/itsmona14/hello-world]
373eb5cf4ceb: Pushed
1e505dc1de5e: Pushed
090c85cb75c5: Pushed
ded8299b8f1a: Pushed
1fe0699af9f7: Mounted from library/python
156568a71809: Mounted from library/python
5fca8a94d542: Mounted from library/python
6b183c62e3d7: Mounted from library/python
882fd36bfd35: Mounted from library/python
d1dec9917839: Mounted from library/python
d38adf39e1dd: Mounted from library/python
4ed121b04368: Mounted from library/python
d9d07d703dd5: Mounted from library/python
latest: digest: sha256:46ff91edc98aaa5d7fff51ba708b6498af3c4f64612d9a990bf437497555fd82 size: 3049

E:\Study materials\Sem 7\IBM\Exercise\Assignment4>
```

Tested it using Docker playground

03:09:45

CLOSE SESSION

Instances

+ ADD NEW INSTANCE

192.168.0.13
node1

cdi0ji60_cdi18b63tccg00fmtsog

IP
192.168.0.13

OPEN PORT
5000

Memory
27.73% (1.083GiB / 3.906GiB)

CPU
0.16%

SSH
ssh ip172-18-0-40-cdi0ji60qau0008f9u80@direct.labs.play-v

DELETE

EDITOR

```
1bd231713cc1: Full complete
59ebc78c27fb: Full complete
72f61f026f6a: Full complete
b8ba20eaa152: Full complete
Digest: sha256:0036fe1456627bba779e865ba4793212e8332e6835b48c6b5814784adb70c46f
Status: Downloaded newer image for itsmona14/hello-world:latest
docker.io/itsmona14/hello-world:latest
(node1) (local) root@192.168.0.13 ~
$ docker run -p 5000:5000 itsmona14/hello-world
 * 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 19:24:35] "GET / HTTP/1.1" 200 -
```

Question 3:

Create an IBM container registry and deploy helloworld app or job portal app.

Solution 3:

My image link: au.icr.io/hello-world-app/hello-world

```
Command Prompt - docker push au.icr.io/hello-world-app/helloworldapp

C:\Users\Monashree>ibmcloud plugin install container-registry
Looking up 'container-registry' from repository 'IBM Cloud'...
Plug-in 'container-registry[cr] 1.0.2' found in repository 'IBM Cloud'
Attempting to download the binary file...
11.90 MiB / 11.90 MiB [=====] 100.00% 5s
12476416 bytes downloaded
Installing binary...
OK
Plug-in 'container-registry 1.0.2' was successfully installed into C:\Users\Monashree\bluemix\plugins\container-registry. Use 'ibmcloud plugin show container-registry'
to show its details.

C:\Users\Monashree>ibmcloud login -a https://cloud.ibm.com
API endpoint: https://cloud.ibm.com

Email> 2019115055@smartinternz.com

Password>
Authenticating...
OK

Targeted account Monashree K's Account (302198646cc145ea8bc880cfb0a0d15d)

select a region (or press enter to skip):
1. au-syd
2. in-che
3. jp-osa
4. jp-tok
5. kr-seo
6. eu-de
7. eu-gb
8. ca-tor
9. us-south
10. us-east
11. br-sao
Enter a number> 9
882fd36bfd35: Pushing [=====] 110.5MB/529MB
d1dec9917839: Pushing [=====] 79.9MB/152MB

API endpoint: https://cloud.ibm.com
d9d07d703dd5: Pushing [=====] 67.45MB/124.1MB
d1dec9917839: Pushing [=====] 69.67MB/152MB

C:\Windows\System32\cmd.exe - docker run -p 5000:5000 au.icr.io/hello-world-app/hello-world

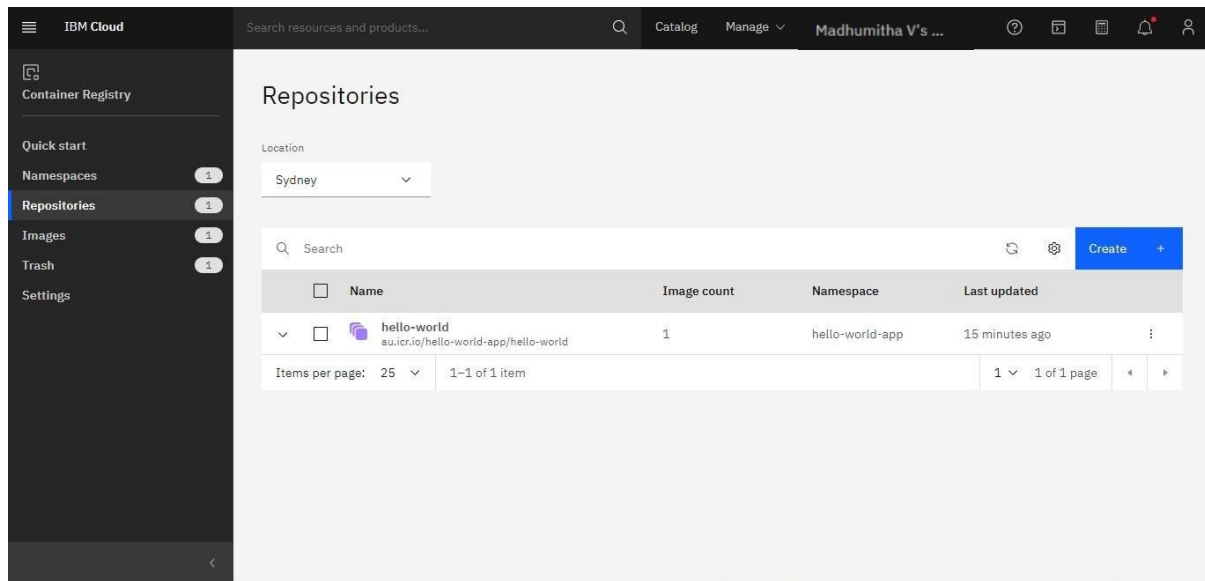
E:\Study materials\Sem 7\IBM\Exercise\Assignment4>docker tag hello-world au.icr.io/hello-world-app/hello-world
E:\Study materials\Sem 7\IBM\Exercise\Assignment4>docker push au.icr.io/hello-world-app/hello-world
Using default tag: latest
The push refers to repository [au.icr.io/hello-world-app/hello-world]
492bcd5cc069: Pushed
006e0930f35e: Pushed
4bb20ce8724f: Pushed
402dea3c8533: Pushed
f5d161bba139: Pushed
1569e0d95ce6: Pushed
d9e08da15d0c: Pushed
6b183c62e3d7: Mounted from hello-world-app/helloworldapp
882fd36bfd35: Mounted from hello-world-app/helloworldapp
d1dec9917839: Mounted from hello-world-app/helloworldapp
d38adf39e1dd: Mounted from hello-world-app/helloworldapp
4ed121b04368: Mounted from hello-world-app/helloworldapp
d9d07d703dd5: Mounted from hello-world-app/helloworldapp
latest: digest: sha256:0036fe1456627bba779e865ba4793212e8332e6835b48c6b5814784adb70c46f size: 3049

E:\Study materials\Sem 7\IBM\Exercise\Assignment4>ibmcloud cr image-list
Listing images...

Repository          Tag      Digest      Namespace      Created      Size      Security status
au.icr.io/hello-world-app/hello-world  latest  0036fe145662  hello-world-app  12 minutes ago  356 MB  -

OK

E:\Study materials\Sem 7\IBM\Exercise\Assignment4>docker run -p 5000:5000 au.icr.io/hello-world-app/hello-world
* 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
172.17.0.1 - - [03/Nov/2022 19:35:58] "GET / HTTP/1.1" 200 -
```



Question 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.

Solution 4:

```
apiVersion: v1 kind: Service
metadata: name: hello-world-
deployment
spec: ports:
  - port: 5000
    targetPort: 5000
  selector:
    app: hello-world
--- apiVersion: apps/v1 kind:
Deployment metadata: name:
hello-world-deployment
spec:
  replicas: 1 selector:
    matchLabels:
      app: hello-world
  template:
    metadata:
      labels: app:
        hello-world
    spec: containers:
      - name: hello-world image:
        au.icr.io/hello-world-app/hello-
        world imagePullPolicy: Always
        ports:
          - containerPort: 5000
```

IBM Cloud

Search resources and products...

Catalog

Manage

Madhumitha V's ...

?

Clusters /

mycluster-free

Normal

Expires in 29 days

Add tags

Help

Kubernetes dashboard

Actions...

Overview

Worker nodes

Worker pools

DevOps New

Expires in 29 days:

Be sure to back up your data, your cluster will be deleted in 29 days. To access the full capabilities of the service, try out a [standard cluster](#).

Node status

1 of 1

Normal

Details

Add-on status

0 of 0

Normal

Details

Master status

Normal

Docs

Ingress status

Unknown

Docs

Details

Cluster ID

cd11j33f9a6mchav8k1g

Version

1.24.7_1542

Infrastructure

Classic

Zones

Milan 01

Created

04/11/2022, 01:12

Resource group

Default

Image security enforcement

Enable

kubernetes

default

Search

+

Workloads > Deployments

Workloads

Cron Jobs

Daemon Sets

Deployments

Jobs

Pods

Replica Sets

Replication Controllers

Stateful Sets

Service

Ingresses

Ingress Classes

Services

Config and Storage

Config Maps

CPU Usage

Memory Usage

Deployments

Name	Images	Labels	Pods	Created
hello-world-deployment	Show all		1 / 1	34 minutes ago

kubernetes

default

Search

+

Workloads > Pods > hello-world-deployment-6c75b9c898-p4ntv > Logs

Workloads

Cron Jobs

Daemon Sets

Deployments

Jobs

Pods

Replica Sets

Replication Controllers

Stateful Sets

Service

Ingresses

Ingress Classes

Services

Config and Storage

Logs from hello-world in hello-world-dep...

```
* 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://172.30.82.142:5000
Press CTRL+C to quit
```