

## Assignment -4 Kubernetes / Docker

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Maximum Marks	2 Marks

### Question-1:

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

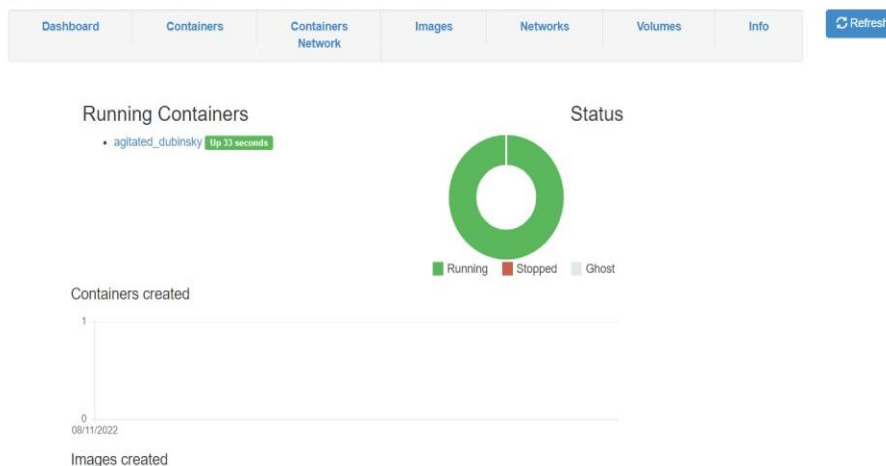
Solution:

The screenshot shows the Docker Playground interface. On the left, there's a sidebar with a clock showing 03:57:52, a 'CLOSE SESSION' button, and a list of instances. The main area displays the details of an instance named 'cdl685u0\_cdl687v91rrg00ft0om0'. It shows the IP address 192.168.0.18, an open port 9000, and memory usage at 1.58% (63.25MiB / 3.906GiB). Below this, there's a terminal window with the following commands and output:

```
# This is a sandbox environment. Using personal credentials #
# is HIGHLY discouraged. Any consequences of doing so are #
# completely the user's responsibilities. #
# The PwD team. #
#####
[node1] (local) root@192.168.0.18 ~
$ docker pull uifd/ui-for-docker
Using default tag: latest
latest: Pulling from uifd/ui-for-docker
841194d080c8: Pull complete
Digest: sha256:fe371ff5a69549269b24073a5ab1244dd4c0b834cbadf244870572150b1cb749
Status: Downloaded newer image for uifd/ui-for-docker:latest
docker.io/uifd/ui-for-docker:latest
[node1] (local) root@192.168.0.18 ~
$ docker run -d -p 9000:9000 --privileged -v /var/run/docker.sock:/var/run/docker.sock uifd/ui-for-docker
9826adaf50bd684043f39bce4af6025d4397f8ae57b04e4762962369f90c80f0
[node1] (local) root@192.168.0.18 ~
$ docker images
```

REPOSITORY	TAG	IMAGE ID	CREATED	SIZE
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### UI For Docker



**Question-2:**

Create a docker file for the nutrition application and deploy it in Docker desktop application.

**Solution:****app.py**

```
from flask import *

app = Flask(__name__)

@app.route("/")
def home():
    return "Hello World"

if __name__ == "__main__":
    app.run(debug=True)
```

**Dockerfile:**

```
FROM
python:3.6
WORKDIR /app
ADD . /app
COPY requirements.txt /app
RUN python3 -m pip install -r
requirements.txt
RUN python3 -m pip
install ibm_db
EXPOSE 5000
CMD
["python","app.py"]
```

```

Usage: docker build [OPTIONS] PATH | URL | -

Build an image from a Dockerfile

D:\OneDrive\Desktop\IBM Docs\Assignments\assignment-four>docker build -t assignment-four .
[*] Building 418.4s (12/12) FINISHED
=> [internal] load build definition from Dockerfile                                0.0s
=> => transferring dockerfile: 231B                                              0.0s
=> [internal] load .dockerignore                                                  0.0s
=> => transferring context: 2B                                                    0.0s
=> [internal] load metadata for docker.io/library/python:3.6                    3.1s
=> [auth] library/python:pull token for registry-1.docker.io                   0.0s
=> [1/6] FROM docker.io/library/python:3.6@sha256:f8052aaf88c25f0d22354d547d8925910e7aa4026a7fa9a6819df9f309af6fc  0.0s
=> [internal] load build context                                                  0.0s
=> => transferring context: 292B                                                 0.0s
=> CACHED [2/6] WORKDIR /app                                                    0.0s
=> [3/6] ADD . /app                                                             0.0s
=> [4/6] COPY requirements.txt /app                                              0.0s
=> [5/6] RUN python2 -m pip install -r requirements.txt                          5.7s
=> [6/6] RUN python3 -m pip install ibm_db                                      400.6s
=> exporting image                                                                0.0s
=> => exporting layers                                                            0.7s
=> => writing image sha256:c878f0dadaefc509e6a60020e5640f17a4aae881c58d3f7c7c416ec0c88fcbac  0.0s
=> => naming to docker.io/library/assignment-four                              0.0s

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

D:\OneDrive\Desktop\IBM Docs\Assignments\assignment-four>

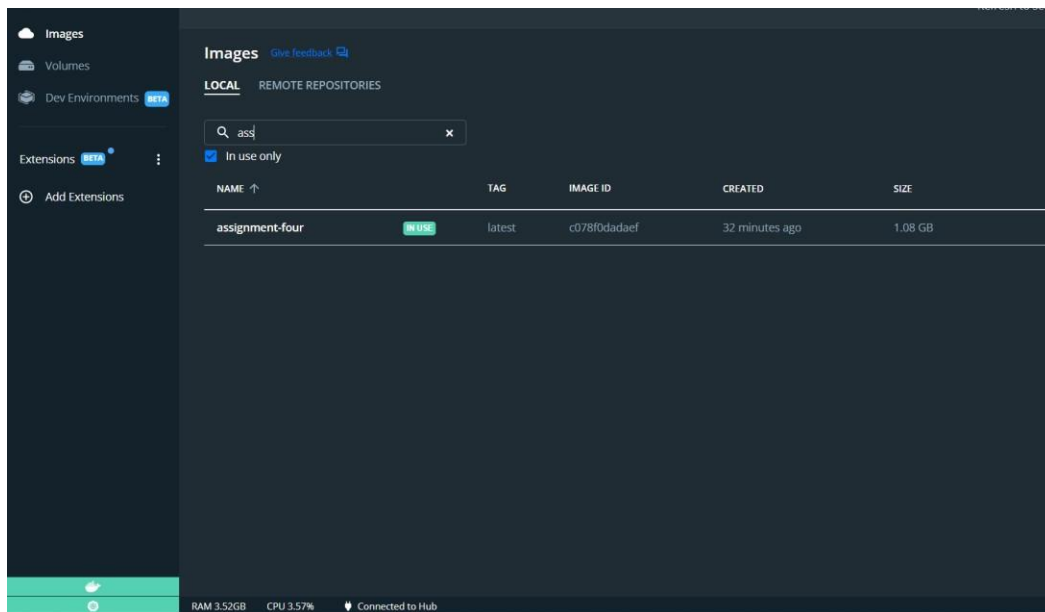
```

```

ago 43.6MB
cker/desktop-git-helper c1e302e18fba86bb07f6b657155611bd6791dfc5 352f94e41a19
ago 45.8MB
bproxy.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 09d7c1dbc2c4
ago 363MB
s.gcr.io/kube-apiserver v1.25.2 97801f839450
ago 128MB
s.gcr.io/kube-scheduler v1.25.2 ca0ea1ee3cfd
ago 50.6MB
s.gcr.io/kube-controller-manager v1.25.2 dbfceb93c69b
ago 117MB
s.gcr.io/kube-proxy v1.25.2 1c7d8c51823b
ago 61.7MB
s.gcr.io/pause 3.8 4873874c08ef
ago 711kB
s.gcr.io/etcd 3.5.4-0 a8a176a5d5d6
ago 300MB
s.gcr.io/coredns v1.9.3 5105b96f0bec
ago 48.8MB
cker/getting-started latest cb90f98-d751
ago 28.8MB
cker/desktop-git-helper 5a4fca126aadcd3f6cc3a811aa991de982ae7600 efe2d67c403b
s ago 44.2MB
cker/desktop-vpnkit-controller v2.0 8c2c38aa676e
s ago 21MB
cker/desktop-storage-provisioner v2.0 99f89471f470
s ago 41.9MB

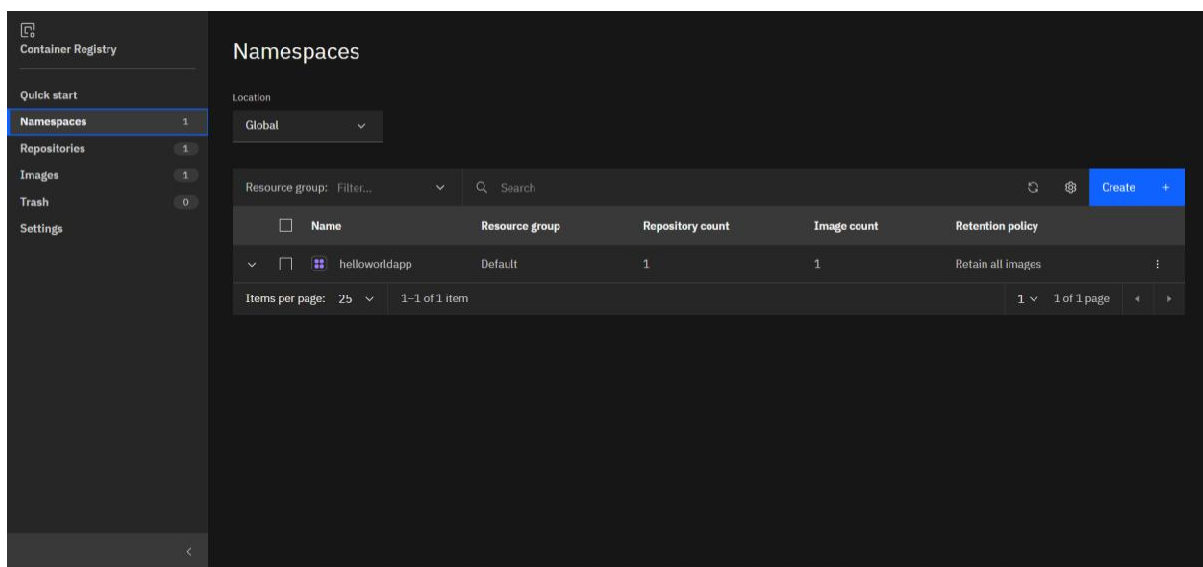
OneDrive\Desktop\IBM Docs\Assignments\assignment-four>docker run -p 5000:5000 assignment-four
Serving Flask app 'app' (lazy loading)
Environment: production
WARNING: This is a development server. Do not use it in a production deployment.
Use a production WSGI server instead.
Debug mode: on
Running on http://127.0.0.1:5000/ (Press CTRL+C to quit)
Restarting with stat

```



### Question-3:

Create a IBM container registry and deploy helloworld app or nutrition app.



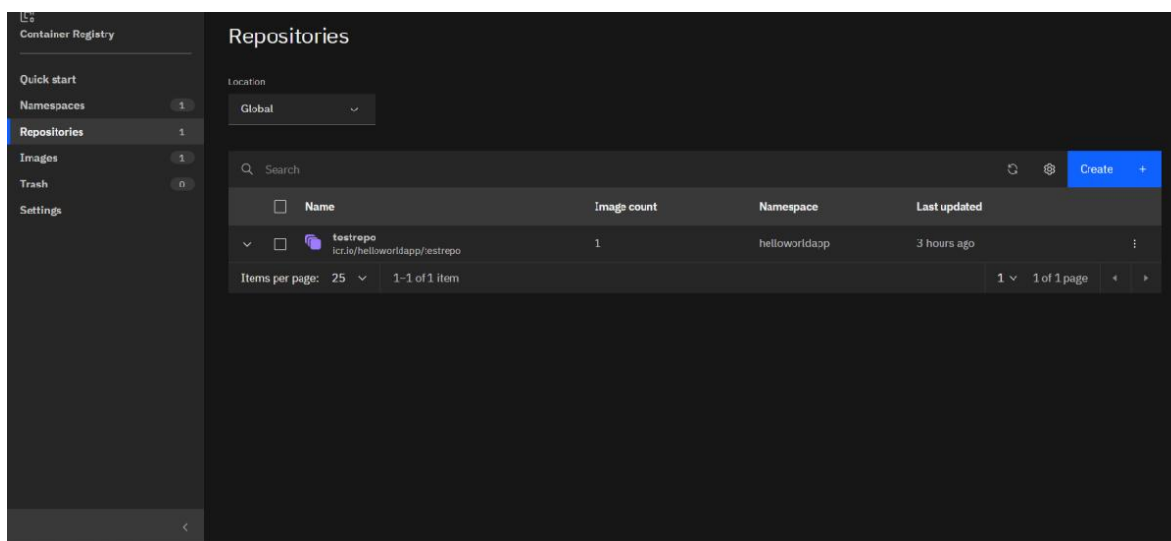
```
C:\Users\ASUS>docker push icr.io/helloworldapp/testrepo:hellworldtest
The push refers to repository [icr.io/helloworldapp/testrepo]
7f54fa385bac: Pushed
22a411d35e51: Pushed
3b94bdb2ef50: Pushed
9ea062ac7e5d: Pushed
78ac81885ac4: Pushed
aa4c888c19f6: Pushed
8ba9f690e3ba: Pushed
3e607d59ef9f: Pushed
1e18e7e1fcc2: Pushed
c3a0d593cd24: Pushed
26a504e63be4: Pushed
8bf42db0d572: Pushed
31092cc314cb: Pushed
11936851f93b: Pushed
hellworldtest: digest: sha256:78e5bb538c5b55c5827f0eecf765cb3690a4cf37ec0195dc98cb222669f0155e size: 3262

C:\Users\ASUS>ibmcloud cr image-list
Listing images...

Repository          Tag          Digest          Namespace      Created      Size      Security status
icr.io/helloworldapp/testrepo  hellworldtest  78e5bb538c5b    helloworldapp  2 hours ago  435 MB    -

OK

C:\Users\ASUS>|
```



#### Question-4:

Create a Kubernetes cluster in IBM cloud and deploy helloworld image or nutrition image and also expose the same app to run in node port.

kubernetes

default

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Overview

Workloads

Cron Jobs

Daemon Sets

Deployments

Jobs

Pods

Replica Sets

Replication Controllers

Stateful Sets

Service

Ingresses

Namespaces

Name	Labels	Phase	Created ↑
ibm-cert-store	Show all	Active	an hour ago
ibm-operators	Show all	Active	an hour ago
ibm-system	Show all	Active	2 hours ago
default	Show all	Active	2 hours ago
kube-node-lease	Show all	Active	2 hours ago
kube-public	Show all	Active	2 hours ago
kube-system	Show all	Active	2 hours ago

Overview

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Service

Ingresses

Ingress Classes

Services

Config and Storage

Config Maps

Persistent Volume Claims

Secrets

Storage Classes

Workloads

Workload Status

Pending: 1

Deployments

Pending: 1

Pods

Pending: 1

Replica Sets

Deployments

Name	Images	Labels	Pods	Created ↑
worldapp	Show all	Show all	0 / 1	19 seconds ago