

## Assignment-4

Project Domain	Cloud Application Development
Project Title	News Tracker Application
Team ID	PNT2022TMID44401
Name	SRIRAM K
Roll No	731119205043
Date	31st Oct 2022

### 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 an IBM container registry and deploy hello world app or job portal app.
- 4.Create a Kubernetes cluster in IBM cloud and deploy hello world image or job portal image and expose the same app to run in node port.

### Answers:

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

The screenshot displays the Docker Playground interface. On the left, a sidebar shows a timer at 03:52:49, a 'CLOSE SESSION' button, and a list of instances with one instance named 'node1' at IP 192.168.0.18. The main panel shows details for instance 'cdn7apv9\_cdn7dgv91rrg0087g8r0' with IP 192.168.0.18, 5.58% memory usage, and 0.64% CPU usage. It includes an 'OPEN PORT' button set to 8080 and an SSH command: `ssh ip172-18-0-24-cdn7apv91rrg0087g8j0@direct.labs.play-`. Below this are 'DELETE' and 'EDITOR' buttons. The terminal window shows the following output:

```
Using default tag: latest
latest: Pulling from sandeepdoodigani/plasmaapplication
ff3a5c916c92: Pull complete
44014a6ad8be: Pull complete
9a372a7142ef: Pull complete
3ab6d28ced3c: Pull complete
27f34cba021a: Pull complete
a5b11f98d43c: Pull complete
ed6e998eca84: Pull complete
879f8c8bca01: Pull complete
6e44f675ce9d: Pull complete
Digest: sha256:193e1d9a311aa6dcef22c816f731546658398ac500f559c02b23ac6c3489aec7
Status: Downloaded newer image for sandeepdoodigani/plasmaapplication:latest
docker.io/sandeepdoodigani/plasmaapplication:latest
[node1] (local) root@192.168.0.18 ~
$ docker run -p 8080:8080 sandeepdoodigani/plasmaapplication
* 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: off
* Running on all addresses.
WARNING: This is a development server. Do not use it in a production deployment.
* Running on http://172.17.0.2:8080/ (Press CTRL+C to quit)
```



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

**Commands used:**

- docker build -t dockerone .
- docker images
- docker login
- docker tag dockerone sriramrmx/dockerone
- docker push sriramrmx/dockerone
- docker pull sriramrmx/dockerone
- docker run -p 88:88 sriramrmx/dockerone
- docker run -d -p 88:88 dockerone

```
Microsoft Windows [Version 10.0.19045.2251]
(c) Microsoft Corporation. All rights reserved.

C:\Users\SRIRAM K\Documents\IBM CAD\dockerone>docker build -t dockerone .
[+] Building 242.3s (12/12) FINISHED
=> [internal] load build definition from Dockerfile                                1.7s
=> => transferring dockerfile: 32B                                                0.6s
=> [internal] load .dockerignore                                                  1.2s
=> => transferring context: 2B                                                    0.5s
=> [internal] load metadata for docker.io/library/python:3.6                    13.1s
=> [auth] library/python:pull token for registry-1.docker.io                    0.0s
=> [internal] load build context                                                  0.4s
=> => transferring context: 2.69kB                                                0.0s
=> [1/6] FROM docker.io/library/python:3.6@sha256:f8652afaf88c25f0d22354d547d892591067aa 0.0s
=> CACHED [2/6] WORKDIR /app                                                    0.0s
=> [3/6] ADD . /app                                                             1.0s
=> [4/6] COPY requirements.txt /app                                             1.4s
=> [5/6] RUN python3 -m pip install -r requirements.txt                         215.1s
=> [6/6] RUN python3 -m pip install ibm_db                                     4.2s
=> exporting to image                                                            5.1s
=> => exporting layers                                                            4.3s
=> => writing image sha256:302e1fab8ee760d2b32d8577771585acee413cc1bcf875b3e669223ba340b 0.1s
=> => naming to docker.io/library/dockerone                                     0.1s

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

C:\Users\SRIRAM K\Documents\IBM CAD\dockerone>_
```

```
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/

C:\Users\SRIRAM K>docker tag dockerone sriramrmx/dockerone

C:\Users\SRIRAM K>docker push sriramrmx/dockerone
Using default tag: latest
The push refers to repository [docker.io/sriramrmx/dockerone]
118e512c2c41: Pushed
ad94dc8bc9a3: Pushed
b5aef6309948: Pushed
056ae3aed8d2: Pushed
755ddb69edfe: Layer already exists
aa4c808c19f6: Layer already exists
8ba9f690e8ba: Layer already exists
3e607d59ef9f: Pushed
1e18e7e1fcc2: Mounted from sriramrmx/flask
c3a0d593ed24: Pushed
26a504e63be4: Pushed
8bf42db0de72: Pushed
31892cc314cb: Pushed
11936051f93b: Pushed
latest: digest: sha256:bcc0e7f195b20743bd7c5c20c22854a7060249dd4c29f5b453f72ed7362e0e75 size: 3259

C:\Users\SRIRAM K>_
```

03:55:21

CLOSE SESSION

Instances

+ ADD NEW INSTANCE

192.168.0.8  
node1

cdnp3fe3\_cdn54u3tccg00b2och0

IP

192.168.0.8

OPEN PORT

Memory

30.49% (1.191GiB / 3.906GiB)

CPU

0.19%

SSH

ssh ip172-18-0-38-cdn3fe3tccg00b2oce0@direct.labs.play

DELETE

EDITOR

```
# The FWD team.
#####
[node1] (local) root@192.168.0.8 ~
$ docker pull sriramrmx/dockerone
Using default tag: latest
latest: Pulling from sriramrmx/dockerone
0c29516d541c: Pull complete
9b929c73b52b: Pull complete
cb5b7ae36172: Pull complete
6494e4811622: Pull complete
6f9f74896dfa: Pull complete
5e3b1213efc5: Pull complete
9fddfdc56334: Pull complete
404f02044bac: Pull complete
c4f42be2be53: Pull complete
ad7f3e9b4c54: Pull complete
19f70b0768ef: Pull complete
9b5ea8a54d03: Pull complete
600cdf3a89df: Pull complete
e77075745dc6: Pull complete
Digest: sha256:bcc0e7f195b20743bd7c5c20c22854a7060249dd4c29f5b453f72ed7362e0e75
Status: Downloaded newer image for sriramrmx/dockerone:latest
docker.io/sriramrmx/dockerone:latest
[node1] (local) root@192.168.0.8 ~
$
```

03:54:17

CLOSE SESSION

Instances

+ ADD NEW INSTANCE

192.168.0.8  
node1

cdnp3fe3\_cdn54u3tccg00b2och0

IP

192.168.0.8

OPEN PORT

88

Memory

32.35% (1.264GiB / 3.906GiB)

CPU

0.92%

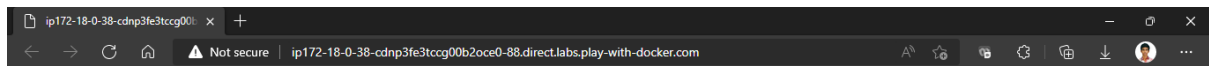
SSH

ssh ip172-18-0-38-cdn3fe3tccg00b2oce0@direct.labs.play

DELETE

EDITOR

```
9fddfdc56334: Pull complete
404f02044bac: Pull complete
c4f42be2be53: Pull complete
ad7f3e9b4c54: Pull complete
19f70b0768ef: Pull complete
9b5ea8a54d03: Pull complete
600cdf3a89df: Pull complete
e77075745dc6: Pull complete
Digest: sha256:bcc0e7f195b20743bd7c5c20c22854a7060249dd4c29f5b453f72ed7362e0e75
Status: Downloaded newer image for sriramrmx/dockerone:latest
docker.io/sriramrmx/dockerone:latest
[node1] (local) root@192.168.0.8 ~
$ docker run -p 88:88 sriramrmx/dockerone
* 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 all addresses.
  WARNING: This is a development server. Do not use it in a production deployment.
* Running on http://172.17.0.2:88/ (Press CTRL+C to quit)
* Restarting with stat
* Debugger is active!
* Debugger PIN: 875-840-812
```



Enter user Name:

Enter Password:

[Click here to register](#)



---

3. Create an IBM container registry and deploy hello world app or job portal app.

**Commands used:**

- docker login
- ibmcloud login
- ibmcloud cr login
- ibmcloud cr namespace-add dockerone
- docker tag dockerone us.icr.io/dockerone/rmx
- docker push us.icr.io/dockerone/rmx

```
Administrator: Command Prompt
Microsoft Windows [Version 10.0.19045.2251]
(c) Microsoft Corporation. All rights reserved.

C:\Windows\system32>ibmcloud login
API endpoint: https://cloud.ibm.com
Region: us-south

Email> 731119205043@smartinternz.com

Password>
Authenticating...
OK

Targeted account SRIRAM K's Account (62c6c90806884b3a8a39867c980ba1a1)

API endpoint:      https://cloud.ibm.com
Region:            us-south
User:              731119205043@smartinternz.com
Account:           SRIRAM K's Account (62c6c90806884b3a8a39867c980ba1a1)
Resource group:    No resource group targeted, use 'ibmcloud target -g RESOURCE_GROUP'
CF API endpoint:
Org:
Space:
```

```
Administrator: Command Prompt
Microsoft Windows [Version 10.0.19045.2251]
(c) Microsoft Corporation. All rights reserved.

C:\Windows\system32>ibmcloud login
API endpoint: https://cloud.ibm.com
Region: us-south

Email> 731119205043@smartinternz.com

Password>
Authenticating...
OK

Targeted account SRIRAM K's Account (62c6c90806884b3a8a39867c980ba1a1)

API endpoint:      https://cloud.ibm.com
Region:            us-south
User:              731119205043@smartinternz.com
Account:           SRIRAM K's Account (62c6c90806884b3a8a39867c980ba1a1)
Resource group:    No resource group targeted, use 'ibmcloud target -g RESOURCE_GROUP'
CF API endpoint:
Org:
Space:
```

```
C:\Windows\system32>ibmcloud cr login
Logging 'docker' in to 'us.icr.io'...
Logged in to 'us.icr.io'.

OK

C:\Windows\system32>docker tag dockerone us.icr.io/dockerone/rmx

C:\Windows\system32>docker push us.icr.io/dockerone/rmx
Using default tag: latest
The push refers to repository [us.icr.io/dockerone/rmx]
118e512c2c41: Pushed
ad94dc8bc9a3: Pushing  10.53MB/176.2MB
b5aef6309948: Pushed
056ae3aed8d2: Pushed
755ddb69edfe: Pushed
aa4c808c19f6: Pushed
8ba9f690e8ba: Pushed
3e607d59ef9f: Pushing  23.36MB/41.36MB
1e18e7e1fcc2: Pushing  19.04MB
c3a0d593ed24: Pushing  65.42MB/528.4MB
26a504e63be4: Pushing  26.35MB/151.9MB
8bf42db0de72: Waiting
31892cc314cb: Waiting
11936051f93b: Waiting
```

IBM Cloud

Search resources and products...

Q

Catalog

Manage

SRIRAM K's Account

?

Container Registry

Quick start

Namespaces2

Repositories1

Images1

Trash0

Settings

Namespaces

Location

Dallas

Resource group: Filter... Search

Create +

Name	Resource group	Repository count	Image count	Retention policy
dockerone	Default	1	1	Retain all images
Repository		Image count	Last updated	
us.icr.io/dockerone/rmx		1	2 days ago	
newstracker	Default	0	0	Retain all images

Items per page: 25 1-2 of 2 items

1 1 of 1 page

IBM Cloud

Search resources and products...

Q

Catalog

Manage

SRIRAM K's Account

?

Container Registry

Quick start

Namespaces2

Repositories1

Images1

Trash0

Settings

Repositories

Location

Dallas

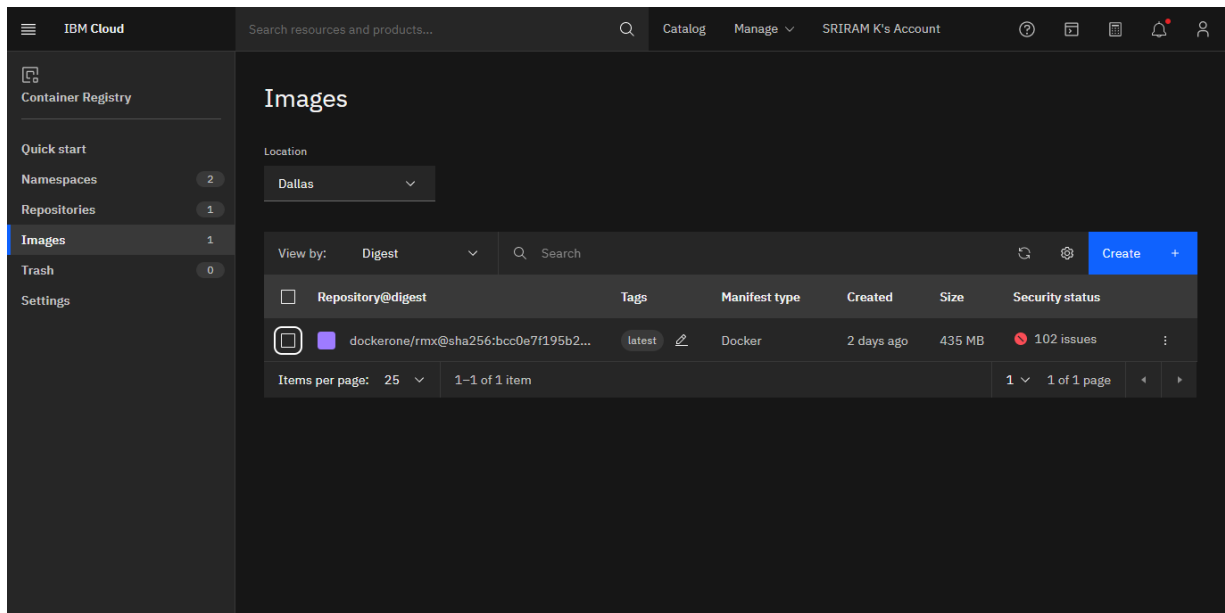
Search

Create +

Name	Image count	Namespace	Last updated			
rmx us.icr.io/dockerone/rmx	1	dockerone	2 days ago			
Digest		Manifest type	Tags	Created	Size	Security status
bcc0e7f195b2		Docker	latest	2 days ago	435 MB	102 issues

Items per page: 25 1-1 of 1 item

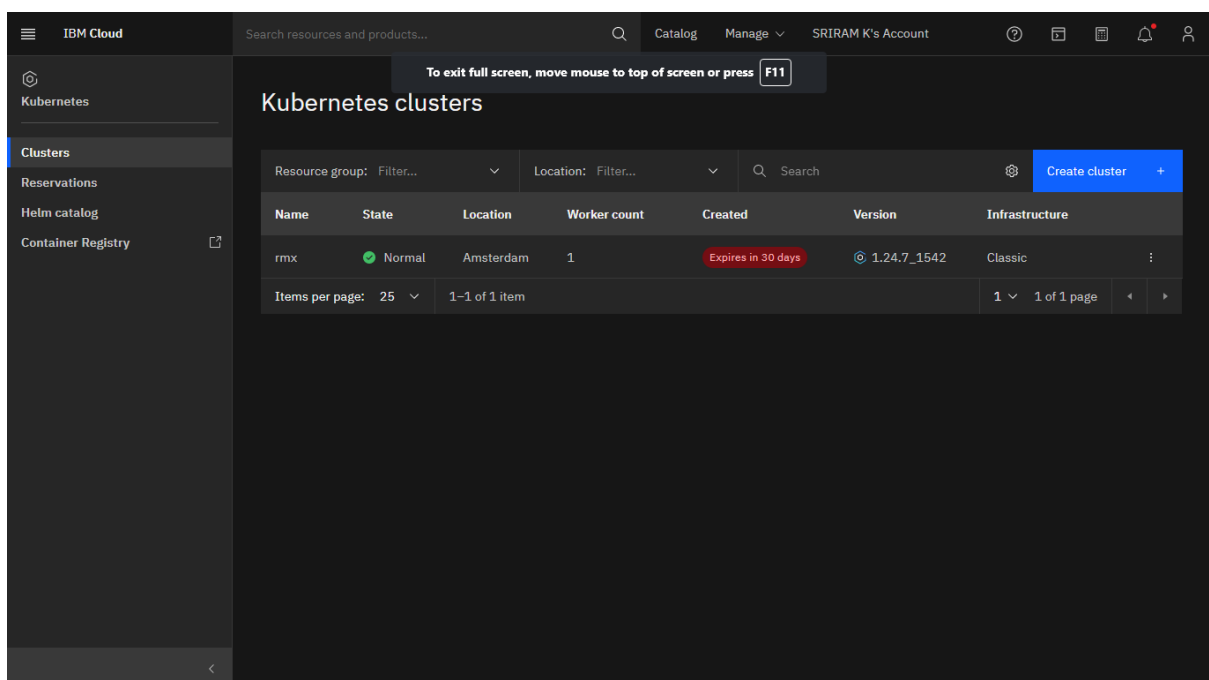
1 1 of 1 page



4. Create a Kubernetes cluster in IBM cloud and deploy hello world image or job portal image and expose the same app to run in node port.

**Commands used:**

- Kubectl create -f deployment.yaml
- Kubectl apply -f service.yaml
- kubectl expose deployment/flask-node-deployment --type=NodePort --port=88 --name=dockerone --target-port=88





IBM Cloud

Search resources and products...

Clusters /

rmx Normal Expires in 30 days Add tags

Help Kubernetes dashboard Actions...

Expires in 30 days:  
Be sure to back up your data, your cluster will be deleted in 30 days. To access the full capabilities of the service, try out a [standard cluster](#).

Overview

Worker nodes

Worker pools

DevOps **New**

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  
cdp6vkqf0lenugunjcf0

Version  
1.24.7\_1542

Infrastructure  
Classic

Zones  
Milan 01

Created  
14/11/2022, 10:11 pm

Resource group  
Default

Image security enforcement  
Enable

Node health

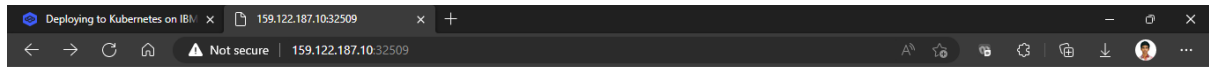
1 total nodes

Worker node details

```
Labels: <none>
Annotations: <none>
Selector: app=flasknode
Type: NodePort
IP Family Policy: SingleStack
IP Families: IPv4
IP: 172.21.99.236
IPs: 172.21.99.236
Port: <unset> 88/TCP
TargetPort: 88/TCP
NodePort: <unset> 32509/TCP
Endpoints: 172.30.159.214:88
Session Affinity: None
External Traffic Policy: Cluster
Events: <none>

C:\Windows\system32>kubectrl get pods
NAME                                READY  STATUS             RESTARTS  AGE
deploy                              1/1    Running            0          9h
deploydockerone-6976f965b7-88hr5    0/1    ImagePullBackOff   0          9h
flask-node-deployment               1/1    Running            0          7h37m
flask-node-deployment-9cdc4bf8-k5w85 1/1    Running            0          7h59m

C:\Windows\system32>kubectrl get nodes
NAME           STATUS  ROLES  AGE  VERSION
10.144.185.227 Ready   <none> 23h  v1.24.7+IKS
```



Enter user Name:

Enter Password:

[Click here to register](#)



```
C:\Users\SRIRAM K\Documents\IBM CAD\dockerone>kubectl get nodes
NAME                STATUS    ROLES    AGE   VERSION
10.144.185.227      Ready    <none>   24h   v1.24.7+IKS

C:\Users\SRIRAM K\Documents\IBM CAD\dockerone>kubectl get pods
NAME                                READY   STATUS    RESTARTS   AGE
flask-node-deployment-9cdc4bf8-5v4tm 1/1     Running   0           6m22s

C:\Users\SRIRAM K\Documents\IBM CAD\dockerone>kubectl get deployments
NAME                READY   UP-TO-DATE   AVAILABLE   AGE
flask-node-deployment 1/1     1             1           6m36s

C:\Users\SRIRAM K\Documents\IBM CAD\dockerone>kubectl get services
NAME                TYPE        CLUSTER-IP    EXTERNAL-IP   PORT(S)        AGE
dockerone           NodePort    172.21.131.50 <none>        88:31364/TCP   5m21s
flask-node-deployment ClusterIP    172.21.227.148 <none>        88/TCP         6m9s
kubernetes           ClusterIP    172.21.0.1     <none>        443/TCP        24h

C:\Users\SRIRAM K\Documents\IBM CAD\dockerone>ibmcloud cs workers --cluster cdp6vkgf0lenugunjcf0
OK
ID                Public IP    Private IP    Flavor    State    St
atus    Zone    Version
kube-cdp6vkgf0lenugunjcf0-rmx-default-00000053 159.122.187.10 10.144.185.227 free    normal    Re
ady    mil01    1.24.7_1543

C:\Users\SRIRAM K\Documents\IBM CAD\dockerone>
```

=====