

Assignment-4

Project Domain	Cloud Application Development
Project Title	News Tracker Application
Team ID	PNT2022TMID47959
Date	31st Oct 2022

Questions:

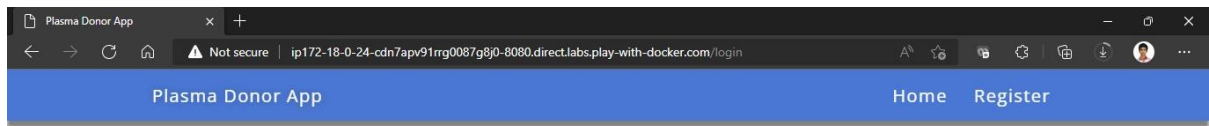
1. Pull an Image from docker hub and run it in docker playground.
2. Create a docker file for the job portal application and deploy it in Docker desktop application.
3. Create an IBM container registry and deploy hello world app or job portal app.
4. Create a Kubernetes cluster in IBM cloud and deploy 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, there's a sidebar with a clock showing 03:52:49, a 'CLOSE SESSION' button, and an 'Instances' section with a '+ ADD NEW INSTANCE' button. Below this, a small box shows the IP 192.168.0.18 and the name 'node1'. The main area shows a container instance named 'cdn7apv9_cdn7dgv91rrg0087g8r0' with IP 192.168.0.18 and port 8080. The container's memory usage is 5.58% (223.3MiB / 3.906GiB) and CPU usage is 0.64%. The SSH command is 'ssh ip172-18-0-24-cdn7apv91rrg0087g8j0@direct.labs.play-'. Below the container details, there are 'DELETE' and 'EDITOR' buttons. The terminal output shows the following commands and results:

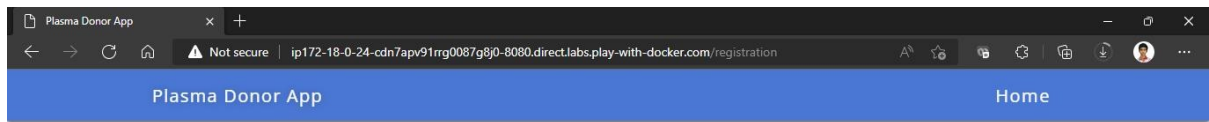
```
Using default tag: latest
latest: Pulling from sandeepdoodigani/plasmaapplication
ff3a5c916c92: Pull complete
44014a6ad6bc: Pull complete
9e372a7142ef: Pull complete
3ab6d28ced3c: Pull complete
27f34cba021a: Pull complete
a5b11f98dd3c: Pull complete
ed6e998eca84: Pull complete
879f8c8bca01: Pull complete
6e44f675ce9d: Pull complete
Digest: sha256:193e1d9a311aa6dcef22c816f731546658399ac500f559c02b23ac6c3489aec7
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)
```



Enter UserName

Enter Password

Login



Enter Your Name

Enter Email

Enter 10-digit mobile number

Enter Your City Name

Select COVID infection status

Choose your blood group

Enter Password

Register



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 sha256:302elfab8ee760d2b32d857771585acee413cc1bcf875b3e669223ba340b 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
0e29546d541c: Pull complete
9b29c73b52b: Pull complete
cb5b7ae36172: Pull complete
6494e4811622: Pull complete
6f9f74896dfa: Pull complete
5e3b1213efc5: Pull complete
9fdd3dc56334: 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%

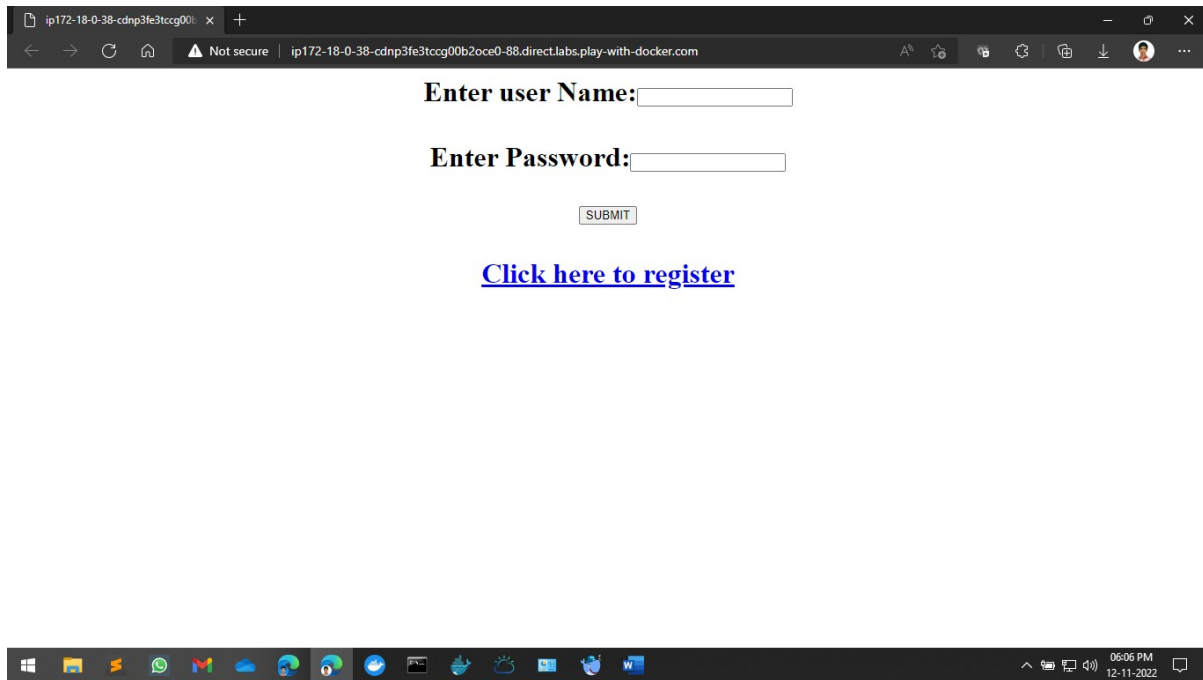
SSH

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

DELETE

EDITOR

```
9fdd3dc56334: 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
```



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...Q 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: 251-2 of 2 items11 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

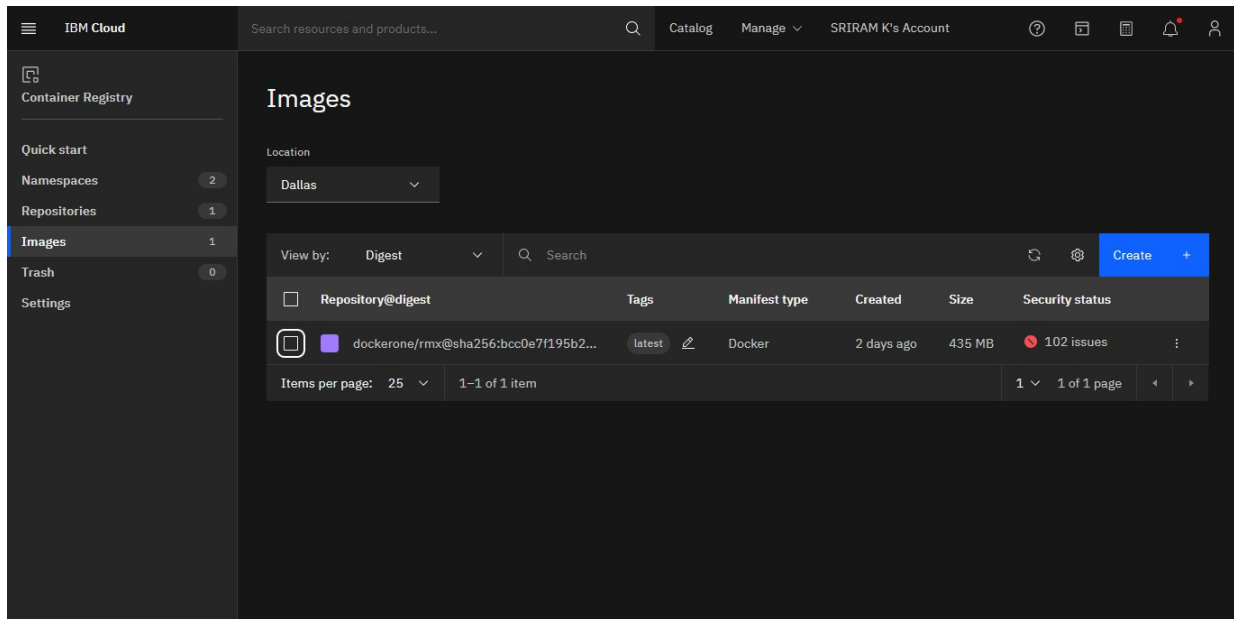
Dallas

Q 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

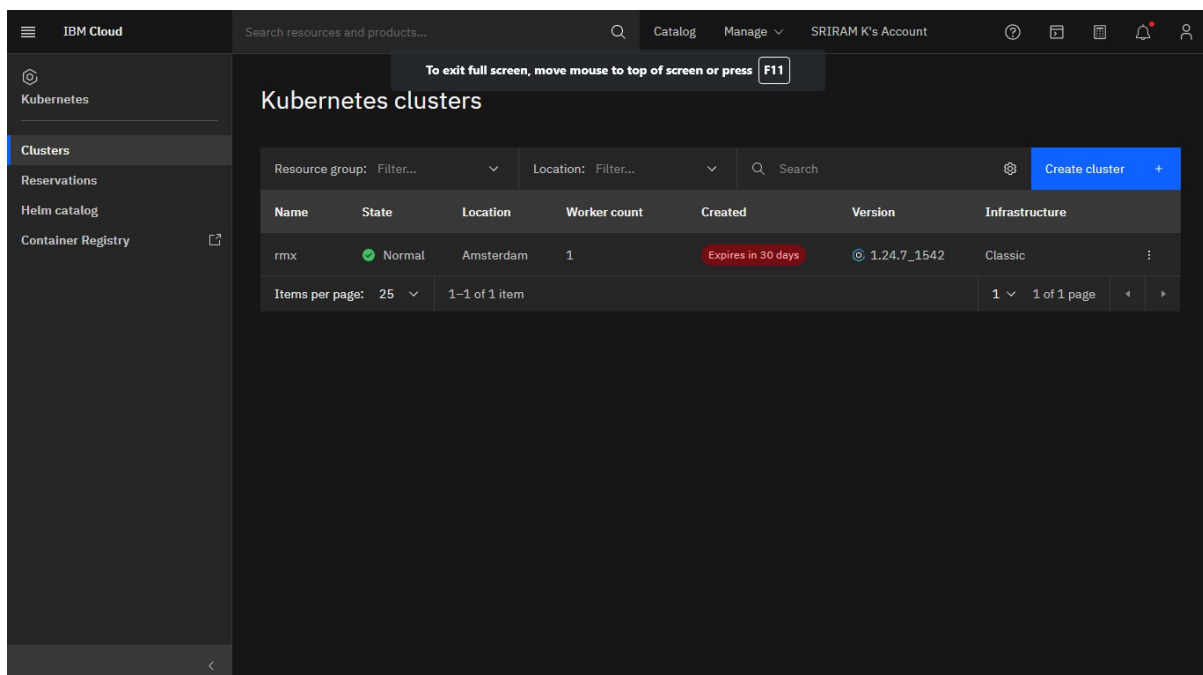
Items per page: 251-1 of 1 item11 of 1 page



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



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?

Clusters /

rmx

Normal

Expires in 30 days

Add tags

Help

Kubernetes dashboard

Actions...

Overview

Worker nodes

Worker pools

DevOps New

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](#).

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

cdp6vkgfelenugunjcf8

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:
Annotations:
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>kubectl 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

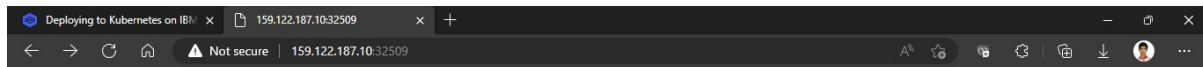
C:\Windows\system32>kubectl get nodes

NAME	STATUS	ROLES	AGE	VERSION
10.144.185.227	Ready	<none>	23h	v1.24.7+IKS

```
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>kubectl 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>kubectl 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 cdp6vkpf0lenugunjcf0
OK
ID                Public IP    Private IP    Flavor    State    St
atus    Zone    Version
kube-cdp6vkpf0lenugunjcf0-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>
```