

ASSIGNMENT – 4

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STEPS TO BE FOLLOWED

1. *Install Docker Desktop*
2. *Install WSL and convert it to WSL-2 for docker to work*
3. *Go to the project directory*
4. *Create a file called as Dockerfile and add the contents below to the project folder*

```
FROM ubuntu/apache2
FROM python

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

WORKDIR /app

RUN pip install -r requirements.txt

COPY . /app

ENTRYPOINT [ "python" ]

CMD [ "app.py" ]
```

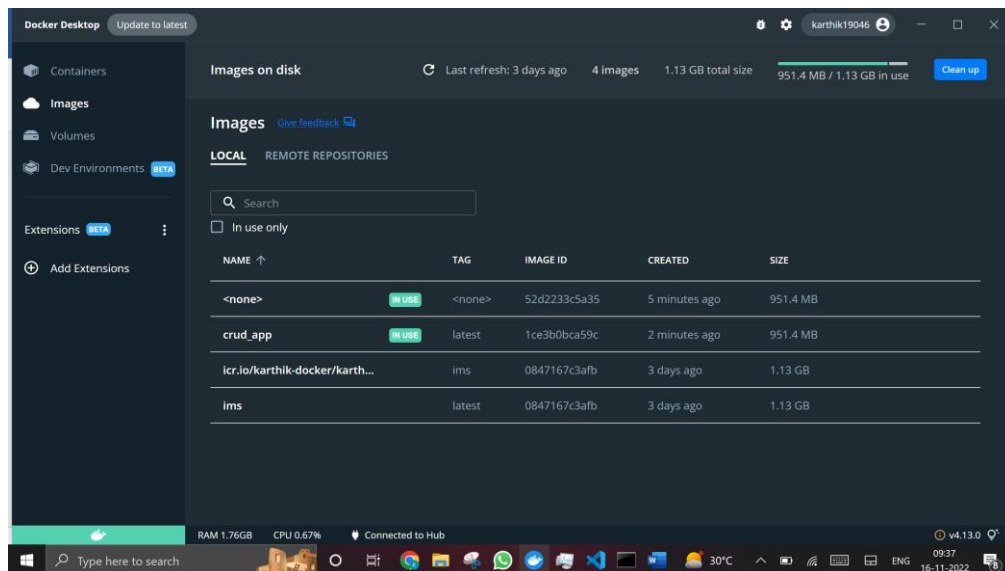
5. Create the image file as follows:

```
Command Prompt
Build an image from a Dockerfile

E:\IBM PROJECT\Assignment 4 Jayaraja_41\regApp>docker build ./ -t curd_app
[+] Building 2.6s (10/10) FINISHED
=> [internal] load build definition from Dockerfile 0.0s
=> => transferring dockerfile: 32B 0.0s
=> [internal] load .dockerignore 0.0s
=> => transferring context: 2B 0.0s
=> [internal] load metadata for docker.io/library/python:latest 2.3s
=> [internal] load build context 0.0s
=> => transferring context: 342B 0.0s
=> [stage-1 1/5] FROM docker.io/library/python@sha256:dccd682d9660c36897507618d00835d83dc6c0e92ba21253dc3 0.0s
=> CACHED [stage-1 2/5] COPY ./requirements.txt /app/requirements.txt 0.0s
=> CACHED [stage-1 3/5] WORKDIR /app 0.0s
=> CACHED [stage-1 4/5] RUN pip install -r requirements.txt 0.0s
=> CACHED [stage-1 5/5] COPY . /app 0.0s
=> exporting to image 0.1s
=> => exporting layers 0.0s
=> writing image sha256:53dbf40a90f889af8ea92d4ed97c4e1cfe866d578d0f4ea9860256803feb1d07 0.0s
=> naming to docker.io/library/curd_app 0.0s

E:\IBM PROJECT\Assignment 4 Jayaraja_41\regApp>docker images
REPOSITORY TAG IMAGE ID CREATED SIZE
curd_app latest 53dbf40a90f8 About a minute ago 951MB
ims latest 0847167c3afb 2 days ago 1.13GB
icr.io/karthik-docker/karthik-repo ims 0847167c3afb 2 days ago 1.13GB

E:\IBM PROJECT\Assignment 4 Jayaraja_41\regApp>
```



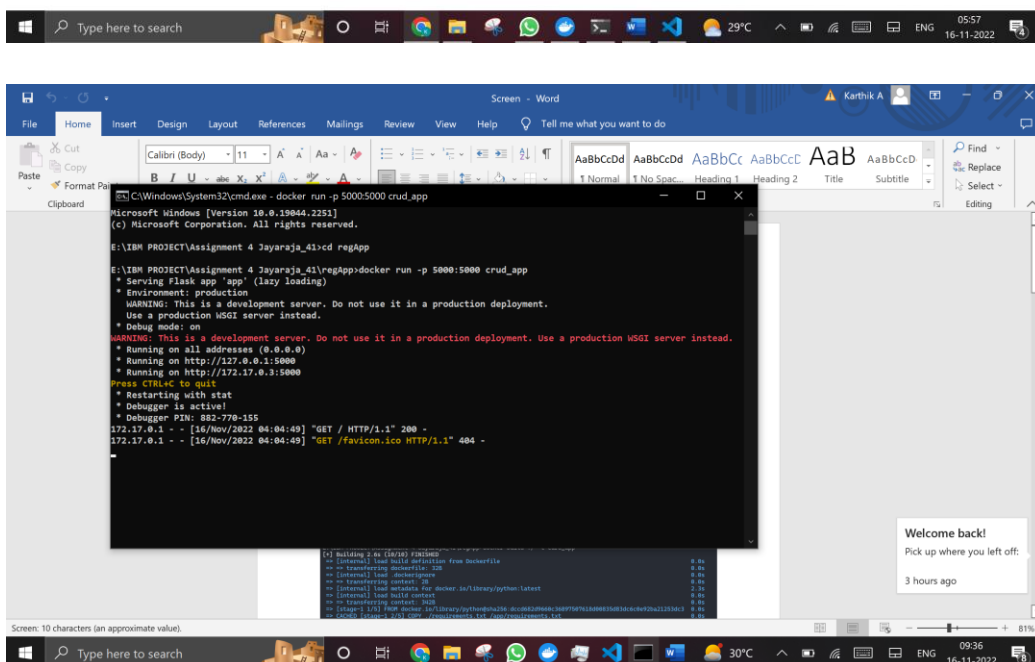
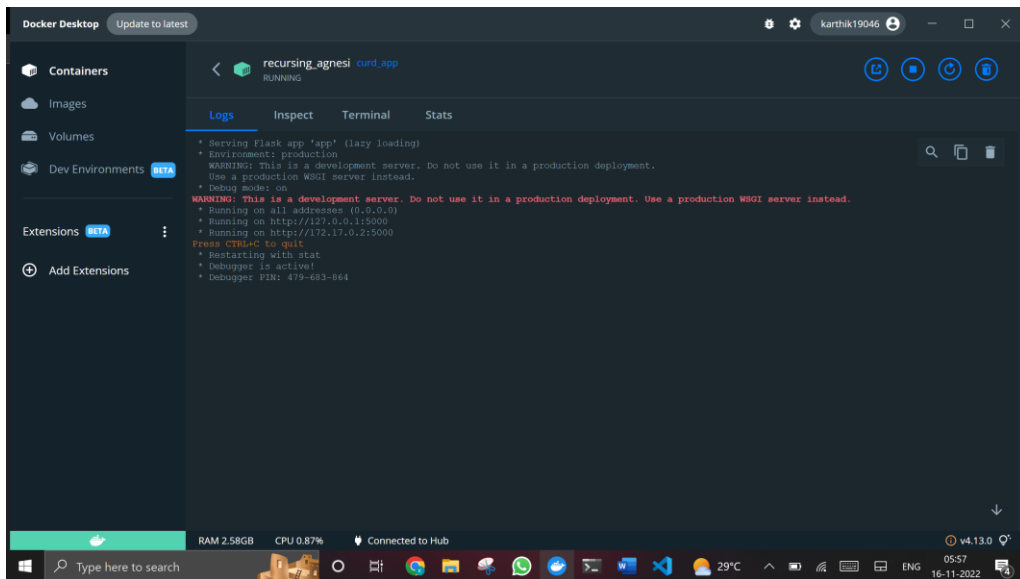
```
Command Prompt

=> => exporting layers 0.1s
=> writing image sha256:0b5c453f4e7541e69f2167cf4881b9daf672c0cb120aff39d946c996828f8101 0.0s
=> naming to docker.io/library/curd_app 0.0s

E:\IBM PROJECT\Assignment 4 Jayaraja_41\regApp>docker build ./ -t curd_app
[+] Building 6.0s (11/11) FINISHED
=> [internal] load build definition from Dockerfile 0.0s
=> => transferring dockerfile: 32B 0.0s
=> [internal] load .dockerignore 0.0s
=> => transferring context: 2B 0.0s
=> [internal] load metadata for docker.io/library/python:latest 5.8s
=> [auth] library/python:pull token for registry-1.docker.io 0.0s
=> [internal] load build context 0.0s
=> => transferring context: 342B 0.0s
=> [stage-1 1/5] FROM docker.io/library/python@sha256:dccd682d9660c36897507618d00835d83dc6c0e92ba21253dc3 0.0s
=> CACHED [stage-1 2/5] COPY ./requirements.txt /app/requirements.txt 0.0s
=> CACHED [stage-1 3/5] WORKDIR /app 0.0s
=> CACHED [stage-1 4/5] RUN pip install -r requirements.txt 0.0s
=> CACHED [stage-1 5/5] COPY . /app 0.0s
=> exporting to image 0.1s
=> => exporting layers 0.0s
=> writing image sha256:0b5c453f4e7541e69f2167cf4881b9daf672c0cb120aff39d946c996828f8101 0.0s
=> naming to docker.io/library/curd_app 0.0s

E:\IBM PROJECT\Assignment 4 Jayaraja_41\regApp>docker run -d -p 80:80 curd_app
0af6a8d5380e93f934363b905e25dd145aa451ca221d5d379169747942ac8d

E:\IBM PROJECT\Assignment 4 Jayaraja_41\regApp>
```



6. Install IBM Cloud CLI and login into it from the CMD

```
regApp
File Home Share View
Command Prompt
Microsoft Windows [Version 10.0.19044.2251]
(c) Microsoft Corporation. All rights reserved.

E:\IBM PROJECT\Assignment 4 Jayaraja_41\regApp>ibmcloud login
API endpoint: https://cloud.ibm.com
Region: au-syd
Email> jayaraja19041@cse.ssn.edu.in
Password>
Authenticating...
OK
Targeted account Jayaraja S.K.'s Account (71bca9b6d69d440dbe9d5208e4c4f246)

API endpoint: https://cloud.ibm.com
Region: au-syd
User: jayaraja19041@cse.ssn.edu.in
Account: Jayaraja S.K.'s Account (71bca9b6d69d440dbe9d5208e4c4f246)
Resource group: No resource group targeted, use 'ibmcloud target -g RESOURCE_GROUP'
CF API endpoint:
Org:
Space:

E:\IBM PROJECT\Assignment 4 Jayaraja_41\regApp>
```

```
Command Prompt
E:\IBM PROJECT\Assignment 4 Jayaraja_41\regApp>ibmcloud cr region-global
FAILED
'region-global' is not a registered command. Check your list of installed plug-ins. See 'ibmcloud cr help'.

E:\IBM PROJECT\Assignment 4 Jayaraja_41\regApp>ibmcloud cr region-set global
The region is set to 'global', the registry is 'icr.io'.
OK

E:\IBM PROJECT\Assignment 4 Jayaraja_41\regApp>ibmcloud cr namespace-add crud_app_a4
No resource group is targeted. Therefore, the default resource group for the account ('Default') is targeted.
Adding namespace 'crud_app_a4' in resource group 'Default' for account Jayaraja S.K.'s Account in registry icr.io ...
Successfully added namespace 'crud_app_a4'
OK

E:\IBM PROJECT\Assignment 4 Jayaraja_41\regApp>docker
```

```
Command Prompt
OK

E:\IBM PROJECT\Assignment 4 Jayaraja_41\regApp>ibmcloud cr namespace-add crud_app_a4
No resource group is targeted. Therefore, the default resource group for the account ('Default') is targeted.
Adding namespace 'crud_app_a4' in resource group 'Default' for account Jayaraja S.K.'s Account in registry icr.io ...
Successfully added namespace 'crud_app_a4'
OK

E:\IBM PROJECT\Assignment 4 Jayaraja_41\regApp>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:\IBM PROJECT\Assignment 4 Jayaraja_41\regApp>ibmcloud cr login
Logging 'docker' in to 'icr.io'...
Logged in to 'icr.io'.
OK

E:\IBM PROJECT\Assignment 4 Jayaraja_41\regApp>
```

7. Push the image to the container registry

```
Command Prompt
For better security, log in with a limited-privilege personal access token. Learn more at https://docs.docker.com/go/access-tokens/

E:\IBM PROJECT\Assignment 4 Jayaraja_41\regApp>ibmcloud cr login
Logging 'docker' in to 'icr.io'...
Logged in to 'icr.io'.

OK

E:\IBM PROJECT\Assignment 4 Jayaraja_41\regApp>docker tag crud_app:icr/crud_app_a4/repo_a4/crud_app
"docker tag" requires exactly 2 arguments.
See 'docker tag --help'.

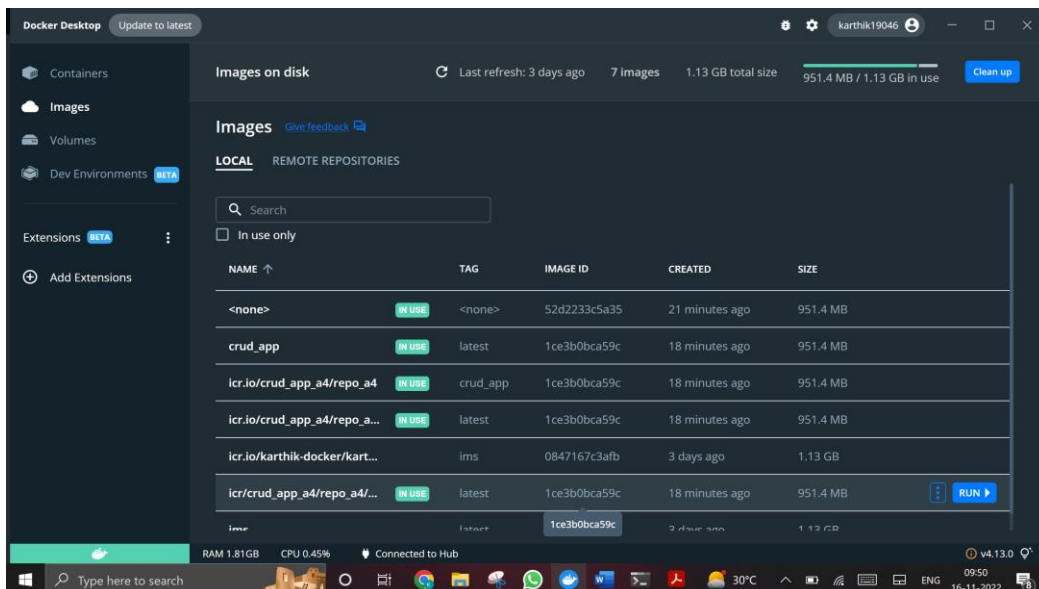
Usage:  docker tag SOURCE_IMAGE[:TAG] TARGET_IMAGE[:TAG]

Create a tag TARGET_IMAGE that refers to SOURCE_IMAGE

E:\IBM PROJECT\Assignment 4 Jayaraja_41\regApp>docker tag crud_app icr/crud_app_a4/repo_a4/crud_app

E:\IBM PROJECT\Assignment 4 Jayaraja_41\regApp>docker images
REPOSITORY          TAG         IMAGE ID      CREATED       SIZE
icr/crud_app_a4/repo_a4/crud_app   latest     1ce3b0bca59c  14 minutes ago  951MB
crud_app             latest     1ce3b0bca59c  14 minutes ago  951MB
<none>              <none>     52d2233c5a35  16 minutes ago  951MB
ims                 latest     0847167c3afb  3 days ago    1.13GB
icr.io/karthik-docker/karthik-repo  ims        0847167c3afb  3 days ago    1.13GB

E:\IBM PROJECT\Assignment 4 Jayaraja_41\regApp>
```



```
Command Prompt

E:\IBM PROJECT\Assignment 4 Jayaraja_41\regApp>docker tag crud_app icr.io/crud_app_a4/repo_a4/crud_app

E:\IBM PROJECT\Assignment 4 Jayaraja_41\regApp>docker push icr.io/crud_app_a4/repo_a4/crud_app:crud_app
The push refers to repository [icr.io/crud_app_a4/repo_a4/crud_app]
tag does not exist: icr.io/crud_app_a4/repo_a4/crud_app:crud_app

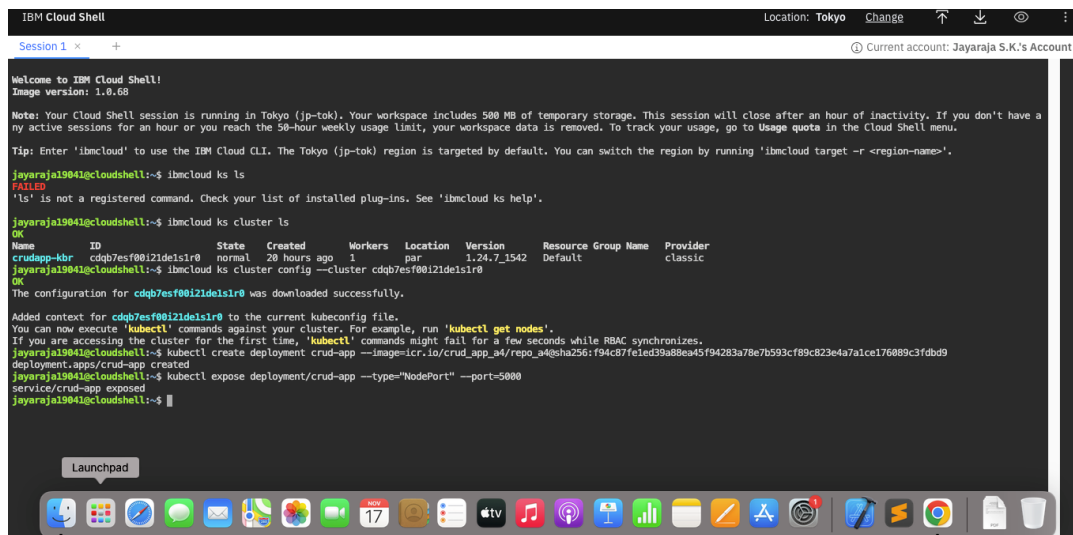
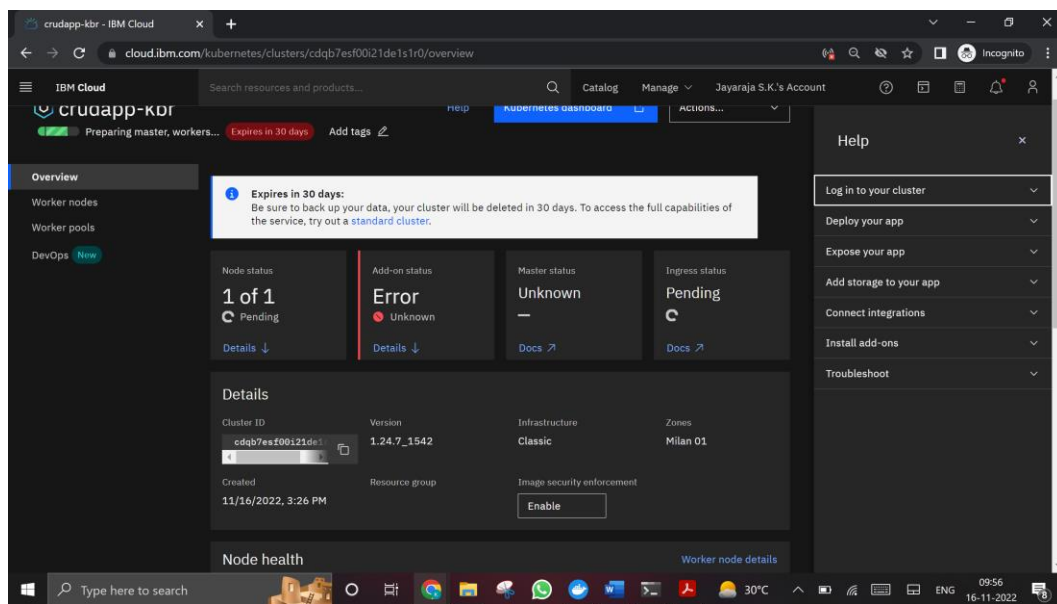
E:\IBM PROJECT\Assignment 4 Jayaraja_41\regApp>docker push icr.io/crud_app_a4/repo_a4:crud_app
^C

E:\IBM PROJECT\Assignment 4 Jayaraja_41\regApp>docker tag crud_app icr.io/crud_app_a4/repo_a4:crud_app

E:\IBM PROJECT\Assignment 4 Jayaraja_41\regApp>docker push icr.io/crud_app_a4/repo_a4:crud_app
The push refers to repository [icr.io/crud_app_a4/repo_a4]
c06384c4e46f: Pushed
e41573224a3d: Pushed
5f70bf18a086: Pushed
5cdbfb4bc986: Pushed
345c9e42b8e4: Pushed
24bf8dd8c4a6: Pushed
18bbb218c890: Pushed
e6e9854ca999: Pushed
397a239a053b: Pushed
89c3244a87b2: Pushed
80231db1194c: Pushed
f1c1f2298584: Pushed
ccba29d69270: Pushed
crud_app: digest: sha256:f94c87fe1ed39a88ea45f94283a78e7b593cf89c823e4a7a1ce176089c3fdbd9 size: 3050

E:\IBM PROJECT\Assignment 4 Jayaraja_41\regApp>
```

8. Create a Kubernetes cluster in IBM Cloud and push the app to deploy it globally



```
ucs1704-mep-cse- x Search results - Go x Resource list - IBM x IBM Cloud Contain x IBM Cloud Shell x crudapp-kbr - Kub x 169.51.194.183 x +
cloud.ibm.com/shell
IBM Cloud Shell Location: Tokyo Change
Session 1 x + Current account: Jayaraja S.K.'s Account

'ls' is not a registered command. Check your list of installed plug-ins. See 'ibmcloud ks help'.
jayaraja19841@cloudshell:~$ ibmcloud ks cluster ls
OK
Name ID State Created Workers Location Version Resource Group Name Provider
crudapp-kbr cdqb7esf00121de1s1r0 normal 20 hours ago 1 par 1.24.7_1542 Default classic
jayaraja19841@cloudshell:~$ ibmcloud ks cluster config --cluster cdqb7esf00121de1s1r0
OK
The configuration for cdqb7esf00121de1s1r0 was downloaded successfully.

Added context for cdqb7esf00121de1s1r0 to the current kubeconfig file.
You can now execute 'kubectl' commands against your cluster. For example, run 'kubectl get nodes'.
If you are accessing the cluster for the first time, 'kubectl' commands might fail for a few seconds while RBAC synchronizes.
jayaraja19841@cloudshell:~$ kubectl create deployment crud-app --image=icr.io/crud_app_94/repo_94@sha256:f94c87fe1ed39a88ea45f94283a78e7b593cf89c823e4a7a1ce176089c3fdd9
deployment.apps/crud-app created
jayaraja19841@cloudshell:~$ kubectl expose deployment/crud-app --type="NodePort" --port=5000
service/crud-app exposed
jayaraja19841@cloudshell:~$ kubectl describe service crud-app
Name: crud-app
Namespace: default
Labels: app=crud-app
Annotations: <none>
Selector: app=crud-app
Type: NodePort
IP Family Policy: SingleStack
IP Families: IPv4
IP: 172.21.243.4
IPs: 172.21.243.4
Port: <unset> 5000/TCP
TargetPort: <unset> 5000/TCP
NodePort: <unset> 31447/TCP
Endpoints: 172.30.91.75:5000
Session Affinity: None
External Traffic Policy: Cluster
Events: <none>
jayaraja19841@cloudshell:~$ ibmcloud ks workers --cluster cdqb7esf00121de1s1r0
OK
ID kube-cdqb7esf00121de1s1r0--crudappkbr-default-000000fd Public IP 169.51.194.183 Private IP 10.144.183.163 Flavor free State normal Status Ready Zone mil01 Version 1.24.7_1543
jayaraja19841@cloudshell:~$
```

eu-de.containers.cloud.ibm.com/kubeproxy/clusters/cdqb7esf00121de1s1r0/service/#/workloads?namespace=default

kubernetes default Search

Workloads

Replica Sets

Deployments

Name	Images	Labels	Pods	Created
crud-app	Show all	Show all	1 / 1	7 minutes ago

Pods

Name	Images	Labels	Node	Status	Restarts	CPU Usage (cores)	Memory Usage (bytes)	Created
crud-app-567c46c8b6-nxptj	Show all	Show all	10.144.183.163	Running	0	3.00m	41.22M	7 minutes ago

Replica Sets

Name	Images	Labels	Pods	Created
crud-app-567c46c8b6	Show all	Show all	1 / 1	7 minutes ago