

Assignment - 4

Kubernetes / Docker

Assignment Date	11 November 2022
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Student Roll Number	412519104023
Maximum Marks	2 Marks

Question-1:

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

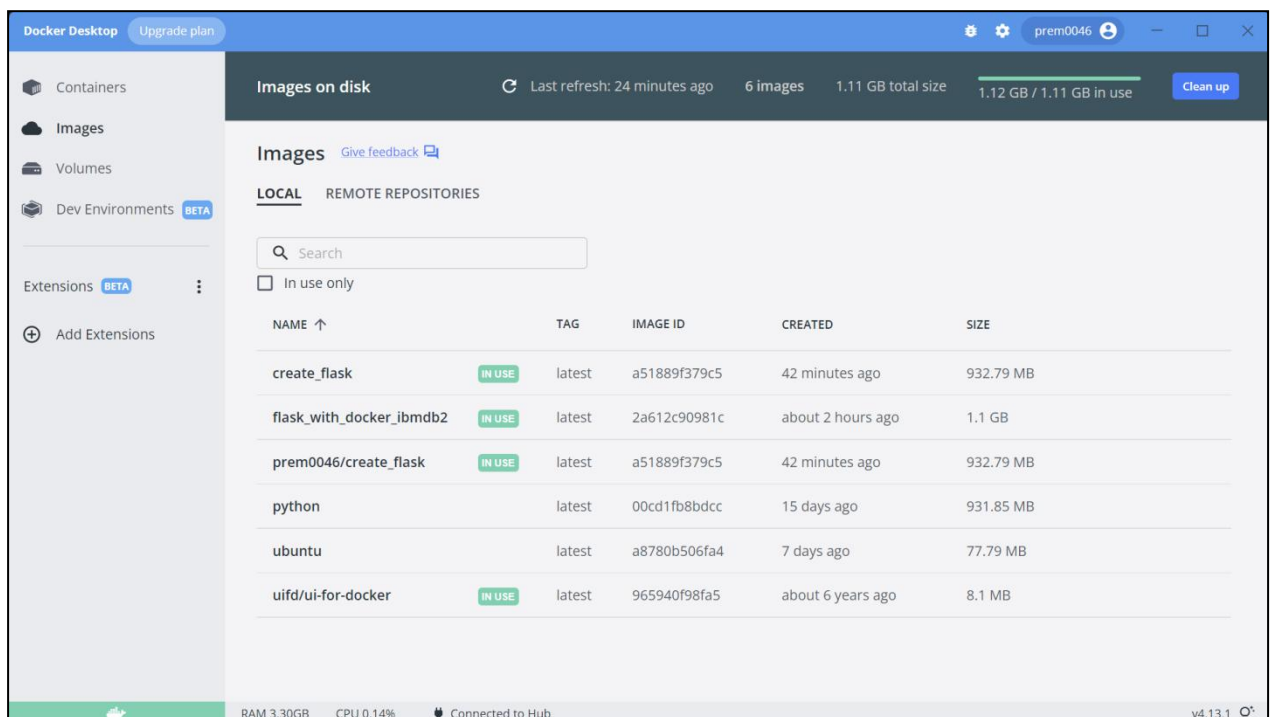
Solution:

docker pull uifd/ui-for-docker - command is used to pull an image from docker hub using command prompt.

```
C:\Users\nmani\OneDrive\Desktop\IBM_Project\Assignments\Chilakamarthi Prem Kashyap(Team Leader)\Assignment-4\create_flask>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

C:\Users\nmani\OneDrive\Desktop\IBM_Project\Assignments\Chilakamarthi Prem Kashyap(Team Leader)\Assignment-4\create_flask>
```

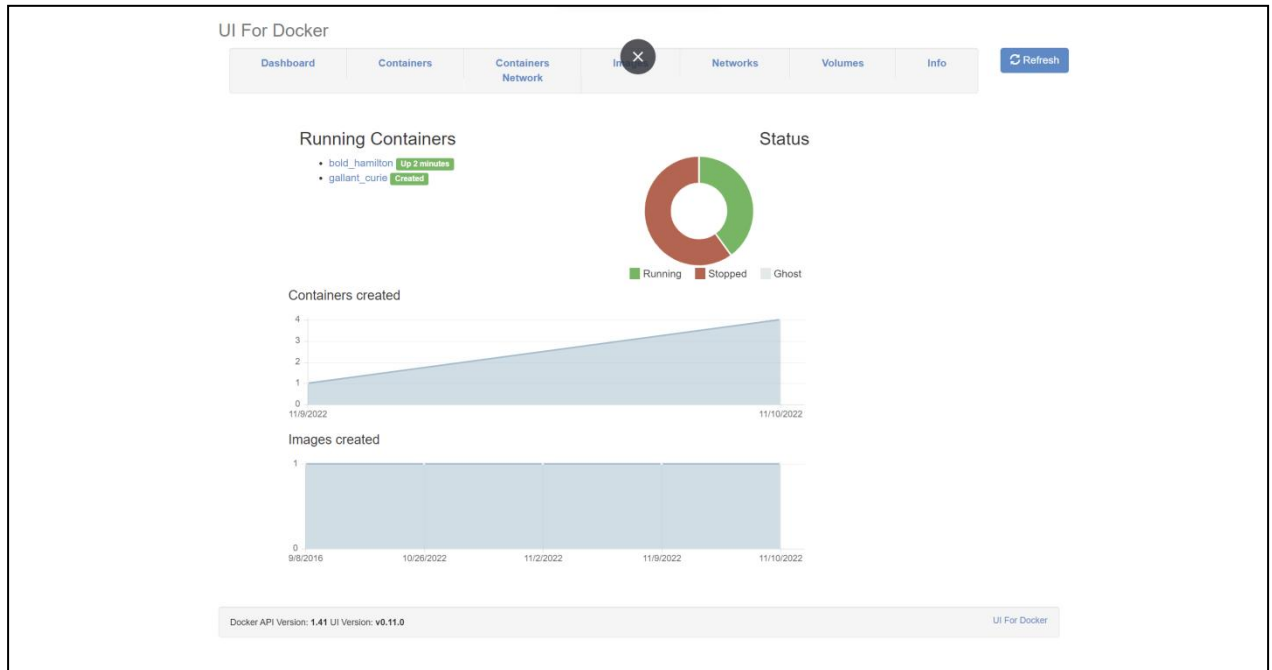
Image has been pulled for docker hub



docker run -d -p 9000:9000 --privileged -v /var/run/docker.sock:/var/run/docker.sock uifd/ui-for-docker - command is used to run an image from docker hub using command prompt.

```
C:\Users\nmani\OneDrive\Desktop\IBM_Project\Assignments\Chilakamarthi Prem Kashyap(Team Leader)\Assignment-4\create_flask>docker run
-d -p 9000:9000 --privileged -v /var/run/docker.sock:/var/run/docker.sock uifd/ui-for-docker
10057d78e25d63b899f8d7e99d4a1a800e70b204a47073e218401656fd625ef6

C:\Users\nmani\OneDrive\Desktop\IBM_Project\Assignments\Chilakamarthi Prem Kashyap(Team Leader)\Assignment-4\create_flask>
```



Docker playground:

03:56:41

CLOSE SESSION

Instances

+ ADD NEW INSTANCE

192.168.0.8
node1

cdmhhns9_cdmhhun91rrg009jd3v0

IP
192.168.0.8
OPEN PORT

Memory
26.79% (1.046GiB / 3.906GiB)

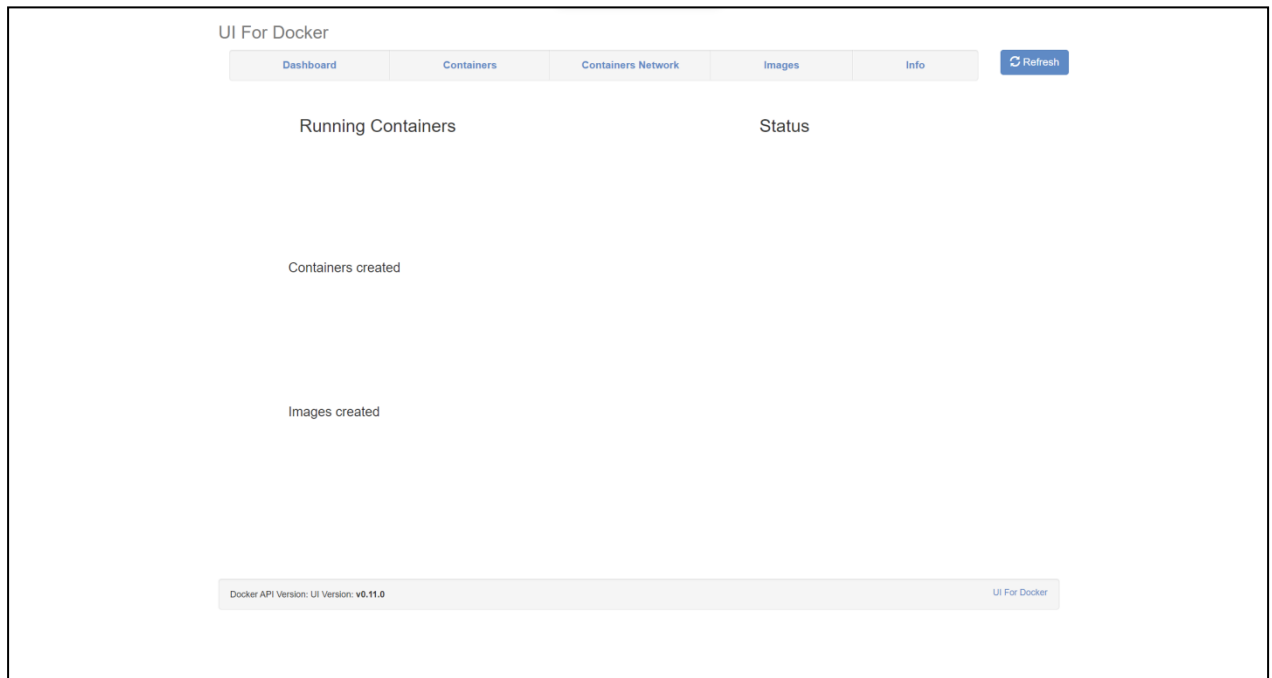
CPU
0.17%

SSH
ssh ip172-18-0-46-cdmhhns91rrg009jd3ug@direct.labs.play

DELETE EDITOR

```
Login with your Docker ID to push and pull images from Docker Hub. If you don't have a Docker ID, head over to https://hub.docker.com to create one.
Username: nmani3008@gmail.com
Password:
Error response from daemon: Get "https://registry-1.docker.io/v2/": unauthorized: incorrect username or password
(node1) (local) root@192.168.0.8 ~
$ docker login
Login with your Docker ID to push and pull images from Docker Hub. If you don't have a Docker ID, head over to https://hub.docker.com to create one.
Username: prem0046
Password:
WARNING! Your password will be stored unencrypted in /root/.docker/config.json.
Configure a credential helper to remove this warning. See
https://docs.docker.com/engine/reference/commandline/login/#credentials-store

Login Succeeded
(node1) (local) root@192.168.0.8 ~
$ docker pull prem0046/create_flask:latest
latest: Pulling from prem0046/create_flask
606d8928ed3: Pull complete
47db815c6a45: Pull complete
bf4849400000: Pull complete
a572f7a256d3: Pull complete
8f7d05258955: Pull complete
7110f04115ae: Pull complete
c4b413c6a489: Pull complete
22311b72a3cb: Pull complete
8dcbe38b6fa: Pull complete
9b05935b0f2c: Pull complete
2f1a0c141480: Pull complete
07a24093308e: Pull complete
7569e209559b: Pull complete
Digest: sha256:ddf311c89b8affc6c6242b84fc949f329cedf8905cd691b4b95a5e5d022877ad
Status: Downloaded newer image for prem0046/create_flask:latest
docker.io/prem0046/create_flask:latest
(node1) (local) root@192.168.0.8 ~
$
```



Question-2:

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

Building docker image: hello_world

```
Microsoft Windows [Version 10.0.22623.885]
(c) Microsoft Corporation. All rights reserved.

C:\Users\nmani\OneDrive\Desktop\IBM_Project\Assignments\Chilakamarthi Prem Kashyap(Team Leader)\Assignment-4\hello_world>docker build -t hello_world .
[*] Building 2.8s (11/11) FINISHED
=> [internal] load build definition from Dockerfile
=> => transferring dockerfile: 184B
=> [internal] load .dockerignore
=> => transferring context: 2B
=> [internal] load metadata for docker.io/library/python:3.10.7
=> [auth] library/python:pull token for registry-1.docker.io
=> [internal] load build context
=> => transferring context: 545B
=> [1/5] FROM docker.io/library/python:3.10.7@sha256:53e577204d362233ee92aeb5119449271f5eb24f99c61464efe9167ddbc
=> CACHED [2/5] WORKDIR /app
=> CACHED [3/5] COPY requirements.txt ./
=> CACHED [4/5] RUN pip install -r requirements.txt
=> [5/5] COPY . .
=> exporting image
=> => exporting layers
=> => writing image sha256:02b4aa4395a108417d48df9b218b540aa95f54c9fc72aa4aea2340c783c8cf1b
=> => naming to docker.io/library/hello_world
0.0s
0.0s
0.0s
0.0s
2.7s
0.0s
0.0s
0.0s
0.0s
0.0s
0.0s
0.0s
0.0s
0.0s
0.0s

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

C:\Users\nmani\OneDrive\Desktop\IBM_Project\Assignments\Chilakamarthi Prem Kashyap(Team Leader)\Assignment-4\hello_world>
```

Pushing the image into repository in docker hub:

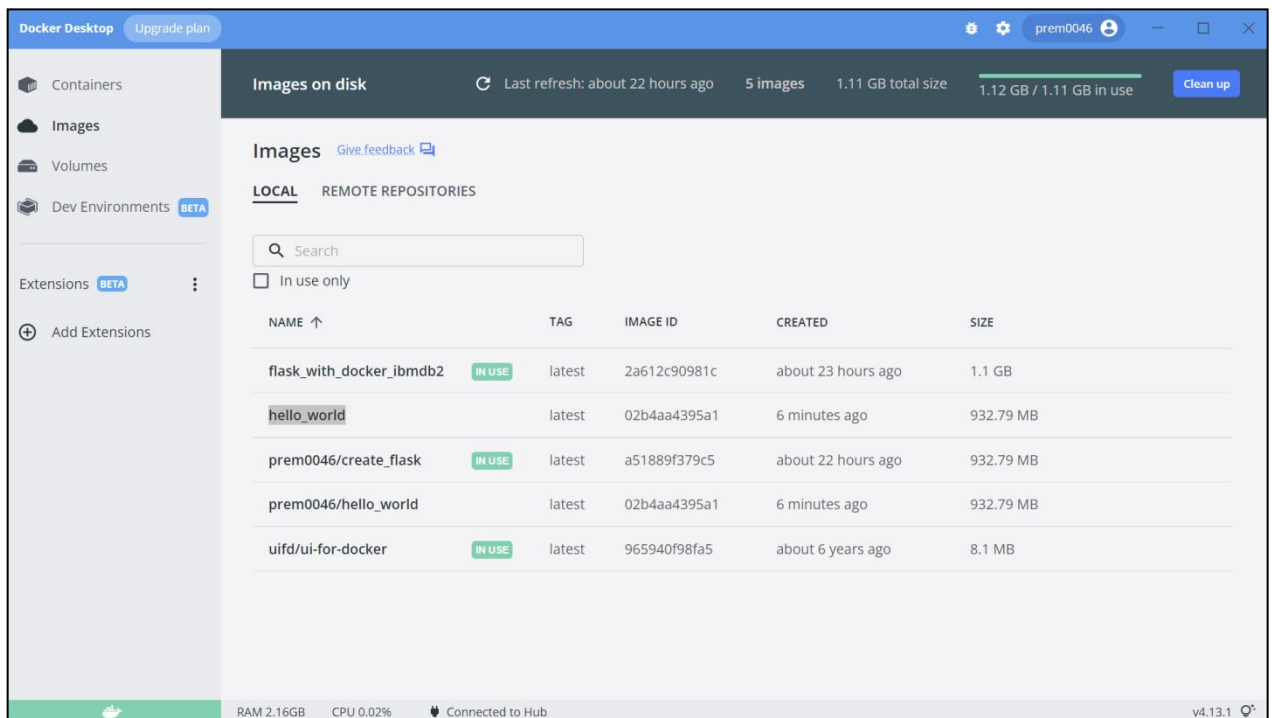
```
C:\Users\nmani\OneDrive\Desktop\IBM_Project\Assignments\Chilakamarthi Prem Kashyap(Team Leader)\Assignment-4\hello_world>docker login
Authenticating with existing credentials...
Login Succeeded

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/

C:\Users\nmani\OneDrive\Desktop\IBM_Project\Assignments\Chilakamarthi Prem Kashyap(Team Leader)\Assignment-4\hello_world>docker tag hello_world prem0046/hello_world

C:\Users\nmani\OneDrive\Desktop\IBM_Project\Assignments\Chilakamarthi Prem Kashyap(Team Leader)\Assignment-4\hello_world>docker push prem0046/hello_world
Using default tag: latest
The push refers to repository [docker.io/prem0046/hello_world]
096703ae4106: Pushed
30b75c628008: Mounted from prem0046/create_flask
265d09ef557c: Mounted from prem0046/create_flask
94b76bc8510f: Mounted from prem0046/create_flask
cf399be408ea: Mounted from prem0046/create_flask
793b971cc99: Mounted from prem0046/create_flask
d172a96ff9e6: Mounted from prem0046/create_flask
6c7da9972e3: Mounted from prem0046/create_flask
76ba02927496: Mounted from prem0046/create_flask
288cf3a46e32: Mounted from prem0046/create_flask
186da837555d: Mounted from prem0046/create_flask
955c9335e041: Mounted from prem0046/create_flask
8e079fee2186: Mounted from prem0046/create_flask
latest: digest: sha256:a66e001d30bfff36740ec97fe3f5bca2cbc87f7750dfd359b260e6c89d2fd8f1b size: 3050

C:\Users\nmani\OneDrive\Desktop\IBM_Project\Assignments\Chilakamarthi Prem Kashyap(Team Leader)\Assignment-4\hello_world>
```



Testing it using docker playground:

03:56:04

CLOSE SESSION

Instances

+ ADD NEW INSTANCE

192.168.0.8 model

cdmimr63_cdmimte3tccg009qdjgg

IP

192.168.0.8

OPEN PORT

5002

Memory

28.12% (1.098GiB / 3.906GiB)

CPU

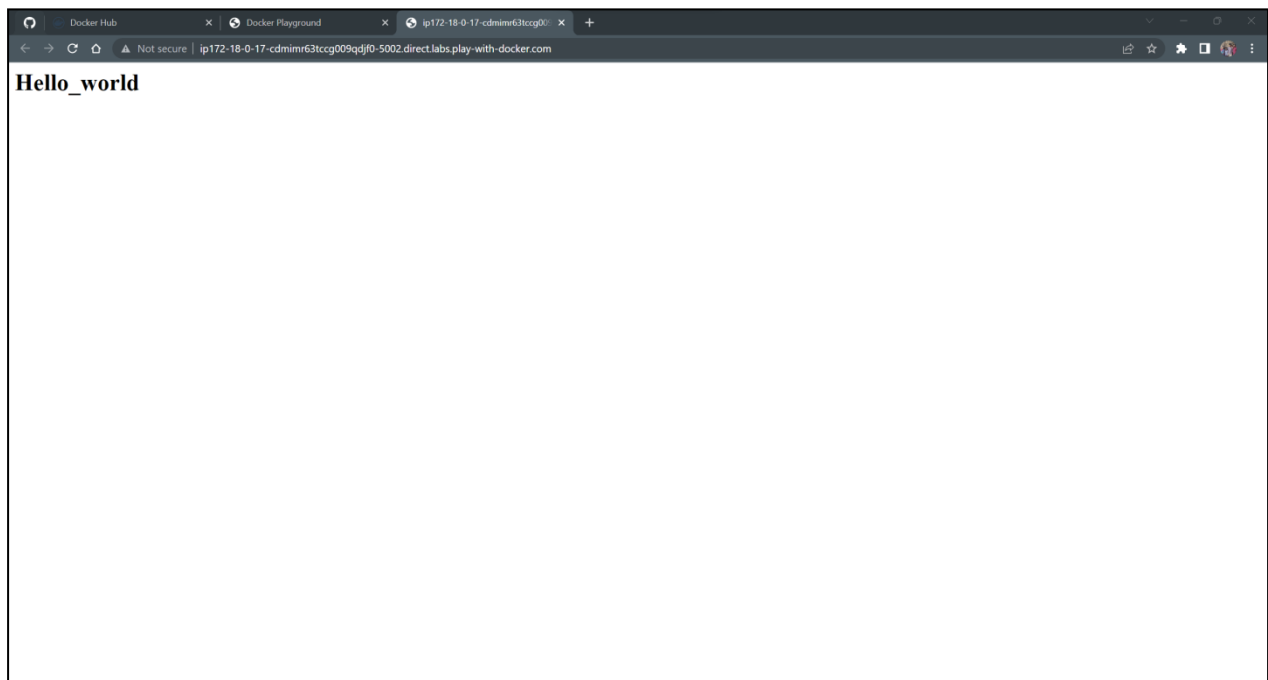
0.32%

SSH

ssh ip172-18-0-17-cdmimr63tccg009qdjf0@direct.labs.play

DELETE EDITOR

```
1cb21a2b0930: Download complete
failed to register layer: Error processing tar file(exit status 1): write /usr/share/bash-completion/completions/delpart: no space left on device
[model] (local) root@192.168.0.8 ~
$ docker pull prem0046/hello_world
Using default tag: latest
latest: Pulling from prem0046/hello_world
f606d928ed3: Pull complete
47db815c6a45: Pull complete
bf4849400000: Pull complete
a572f7a256d3: Pull complete
8f7d05258955: Pull complete
7110f04115ae: Pull complete
c4b413c6a489: Pull complete
22311b72a3cb: Pull complete
8dc8fe38b6fa: Pull complete
9b0893b0f2fc: Pull complete
2f1a0c141488: Pull complete
07a24093d86e: Pull complete
1cb21a2b0930: Pull complete
Digest: sha256:a66e001d30bfff36740ec97fe3f5bca2cbc87f7750dfd359b260e6c89d2fd8f1b
Status: Downloaded newer image for prem0046/hello_world:latest
docker.io/prem0046/hello_world:latest
[model] (local) root@192.168.0.8 ~
$ docker run -p 5002:5002 prem0046/hello_world
* Serving Flask app 'app'
* Debug mode: on
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://127.0.0.1:5002
* Running on http://172.17.0.2:5002
Press CTRL+C to quit
* Restarting with stat
* Debugger is active!
```



Question- 3:

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

Hello_world Image link: [icr.io/create_flask/hello_world](https://cr.console.ibm.com/home/region/jp-tok/images/ibmcloud/container-registry/containers/hello_world)

```
C:\Users\nmani>ibmcloud login
API endpoint: https://cloud.ibm.com
Region: jp-tok

Email> sec19cs095@sairamtap.edu.in

Password>
Authenticating...
OK

Targeted account Prem Kashyap Chilakamarthi's Account (c50714902c8f4427b45032b104b525a1)

API endpoint:      https://cloud.ibm.com
Region:            jp-tok
User:              sec19cs095@sairamtap.edu.in
Account:           Prem Kashyap Chilakamarthi's Account (c50714902c8f4427b45032b104b525a1)
Resource group:    No resource group targeted, use 'ibmcloud target -g RESOURCE_GROUP'
CF API endpoint:
Org:
Space:

C:\Users\nmani>ibmcloud plugin install container-service
Looking up 'container-service' from repository 'IBM Cloud'...
Plug-in 'container-service[kubernetes-service/ks] 1.0.459' found in repository 'IBM Cloud'
Attempting to download the binary file...
26.86 MiB / 26.86 MiB [=====] 100.00% 1s
28168192 bytes downloaded
Installing binary...
OK
Plug-in 'container-service 1.0.459' was successfully installed into C:\Users\nmani\bluemix\plugins\container-service. Use 'ibmcloud plugin show container-service' to show its details.

C:\Users\nmani>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% 0s
12476416 bytes downloaded
Installing binary...
OK
Plug-in 'container-registry 1.0.2' was successfully installed into C:\Users\nmani\bluemix\plugins\container-registry. Use 'ibmcloud plugin show container-registry' to show its details.
```

```
C:\Users\nmani>ibmcloud plugin install observe-service
Looking up 'observe-service' from repository 'IBM Cloud'...
Plug-in 'observe-service 1.0.82' found in repository 'IBM Cloud'
Attempting to download the binary file...
13.38 MiB / 13.38 MiB [=====] 100.00% 0s
14024704 bytes downloaded
Installing binary...
OK
Plug-in 'observe-service 1.0.82' was successfully installed into C:\Users\nmani\bluemix\plugins\observe-service. Use 'ibmcloud plugin show observe-service' to show its details.

C:\Users\nmani>ibmcloud plugin list
Listing installed plug-ins...

Plugin Name      Version  Status  Private endpoints supported
container-registry 1.0.2    true
container-service[kubernetes-service/ks] 1.0.459  false
observe-service[ob] 1.0.82   false
```

```
C:\Users\nmani>docker tag hello_world icr.io/create_flask/hello_world:latest

C:\Users\nmani>docker push icr.io/create_flask/hello_world:latest
The push refers to repository [icr.io/create_flask/hello_world]
096793ae4106: Pushed
30b75c628008: Pushed
265d09ef557c: Pushed
90b76bc8510f: Pushed
cf399be408ea: Pushed
793b971ccb99: Pushed
d172a9e6f9e6: Pushed
0c7daf9a72c8: Pushed
75ba02937496: Pushed
288cf3a46e32: Pushed
186da837755d: Pushed
955c99336e041: Pushed
8e079fee2186: Pushed
latest: digest: sha256:a66e001d30bfff36740ec97fe3f5bca2cbc87f7750dfd359b260e6c89d2fd8f1b size: 3050

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

Repository          Created      Size      Security status      Tag      Digest      Namespace
icr.io/create_flask/hello_world  latest      a66e001d30bf  create_flask  19 hours ago  356 MB  -
```

IBM Cloud

Container Registry

Quick start

Namespaces 1

Repositories 1

Images 1

Trash 0

Settings

Search resources and products...

Repositories

Location: Global

Search

Create +

Name	Image count	Namespace	Last updated
<div>hello_world</div> <div>icr.io/create_flask/hello_world</div>	1	create_flask	1 day ago

Items per page: 25 1-1 of 1 item

```
PS C:\Users\nmani> docker run -p 5002:5002 icr.io/create_flask/hello_world
* Serving Flask app 'app'
* Debug mode: on
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://127.0.0.1:5002
* Running on http://172.17.0.2:5002
Press CTRL+C to quit
* Restarting with stat
* Debugger is active!
* Debugger PIN: 166-878-257
172.17.0.1 - - [11/Nov/2022 12:09:17] "GET / HTTP/1.1" 200 -
```

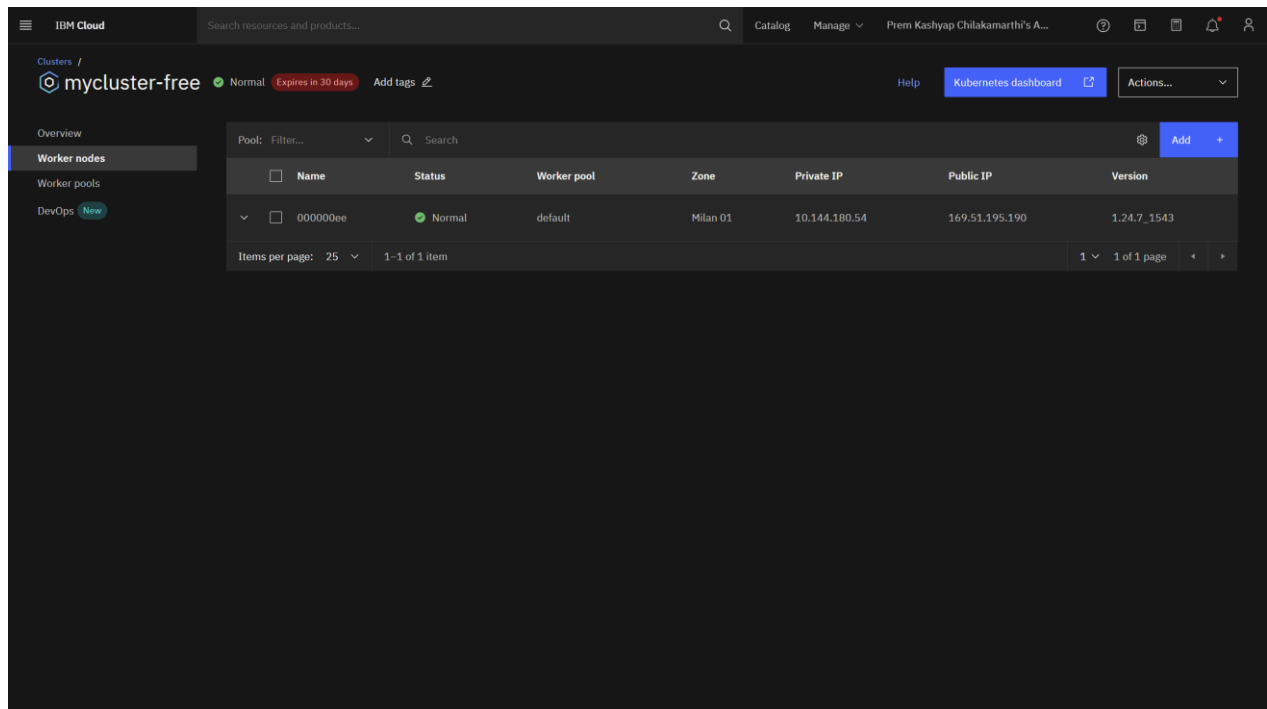
IBM Cloud Container Registry 127.0.0.1:5002

Hello_world

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 node port.

Creating a Kubernetes cluster in IBM cloud



```
C:\Users\gani\Desktop>cd deploy
The system cannot find the path specified.

C:\Users\gani\Desktop>kubectl apply -f kubernetes/depoly.yaml
error: the path "kubernetes/depoly.yaml" does not exist

C:\Users\gani\Desktop>kubectl apply -f depoly.yaml
error: the path "depoly.yaml" does not exist

C:\Users\gani\Desktop>kubectl apply -f C:\Users\gani\Desktop\deploy.yaml
deployment.apps/flask-app created

C:\Users\gani\Desktop>
```

