Assignment - 4
Kubernetes / Docker

Assignment Date	11 November 2022
Project name	Personal Expense Tracker
Team ID	PNT2022TMID08585
Maximum Marks	2 Marks

Question-1:

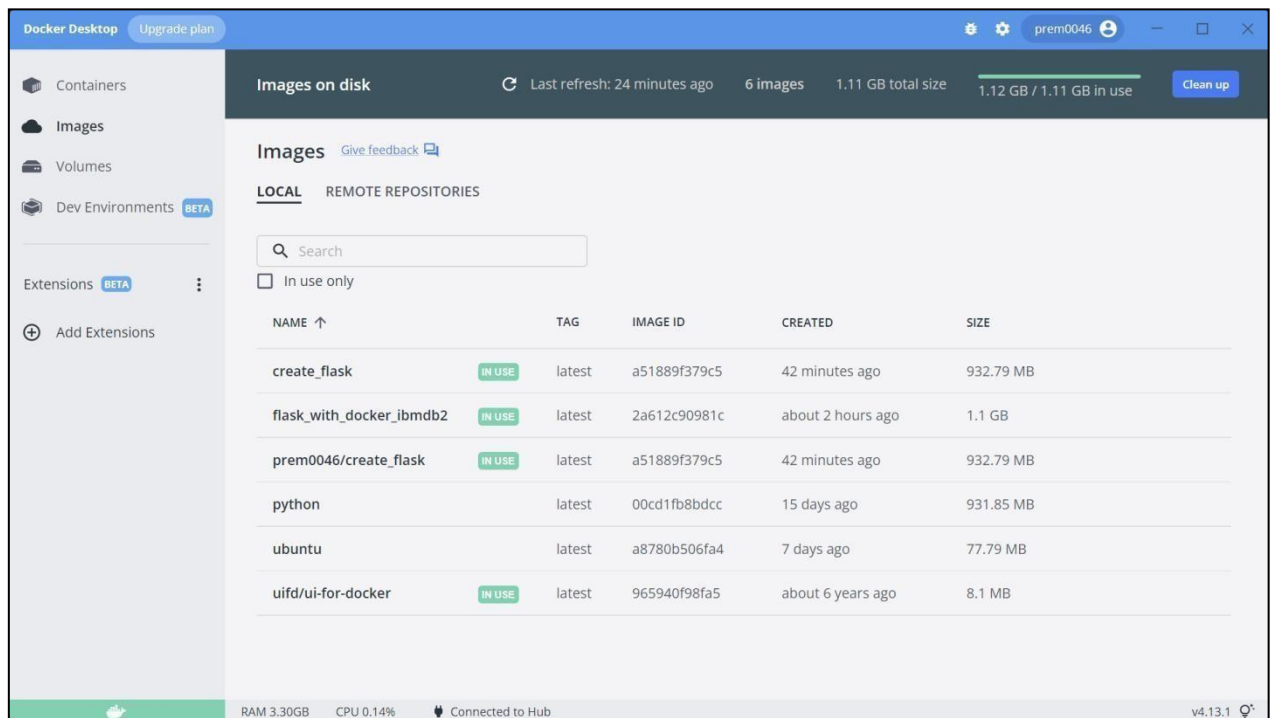**Pull an Image from docker hub and run it in docker playground.**

Solution:

docker pull uifd/ui-for-docker - command is used to pull an image form 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>
```
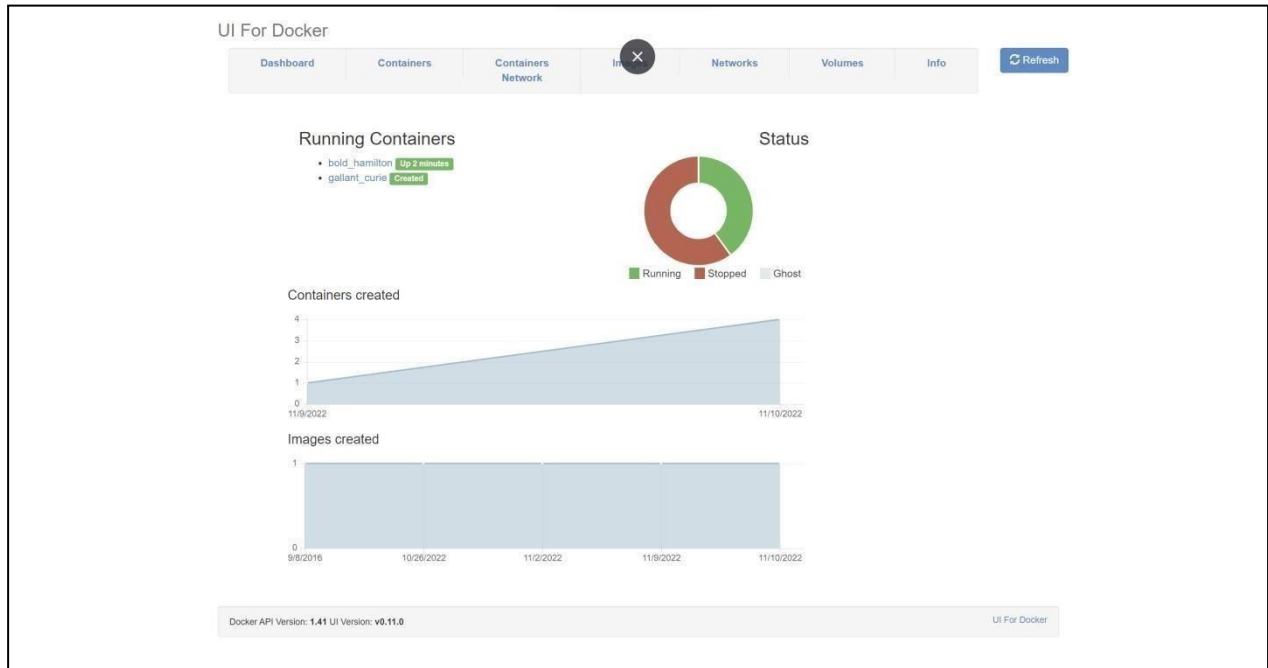
Image has been pulled for docker hub

NAME ↑		TAG	IMAGE ID	CREATED	SIZE
create_flask	IN USE	latest	a51889f379c5	42 minutes ago	932.79 MB
flask_with_docker_ibmdb2	IN USE	latest	2a612c90981c	about 2 hours ago	1.1 GB
prem0046/create_flask	IN USE	latest	a51889f379c5	42 minutes ago	932.79 MB
python		latest	00cd1fb8bdcc	15 days ago	931.85 MB
ubuntu		latest	a8780b506fa4	7 days ago	77.79 MB
uifd/ui-for-docker	IN USE	latest	965940f98fa5	about 6 years ago	8.1 MB

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 form 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>
```

UI For Docker

| Dashboard | Containers | Containers Network | Im | Networks | Volumes | Info |

Running Containers
- bold_hamilton Up 2 minutes
- gallant_curie Created

Status
Running   Stopped   Ghost

Containers created
11/9/2022 — 11/10/2022

Images created
9/8/2016   10/26/2022   11/2/2022   11/9/2022   11/10/2022

Docker API Version: **1.41** UI Version: **v0.11.0**

UI For Docker

Docker playground:

03:56:41

CLOSE SESSION

Instances 🔧 ⚙

+ ADD NEW INSTANCE

192.168.0.8
node1

cdmhhsn9_cdmhhun91rrg009jd3v0

IP
192.168.0.8   OPEN PORT

Memory
26.79% (1.046GiB / 3.906GiB)

CPU
0.17%

SSH
ssh ip172-18-0-46-cdmhhsn91rrg009jd3ug@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
f606d8928ed3: Pull complete
47db815c6a45: Pull complete
bf4849400000: Pull complete
a572f7a256d3: Pull complete
8f7d05258955: Pull complete
7110f04115ae: Pull complete
c4b413c6a489: Pull complete
22311b72a3cb: Pull complete
8dcbfe38b6fa: Pull complete
9b05935b0f2c: Pull complete
2f1a0c141488: Pull complete
07a24093d86e: Pull complete
7569e209559b: Pull complete
Digest: sha256:ddf311c89b8affc4c6242b84fc949f329cedf8905cd691b4b95a5e5d022877ad
Status: Downloaded newer image for prem0046/create_flask:latest
docker.io/prem0046/create_flask:latest
[node1] (local) root@192.168.0.8 ~
$ 
```
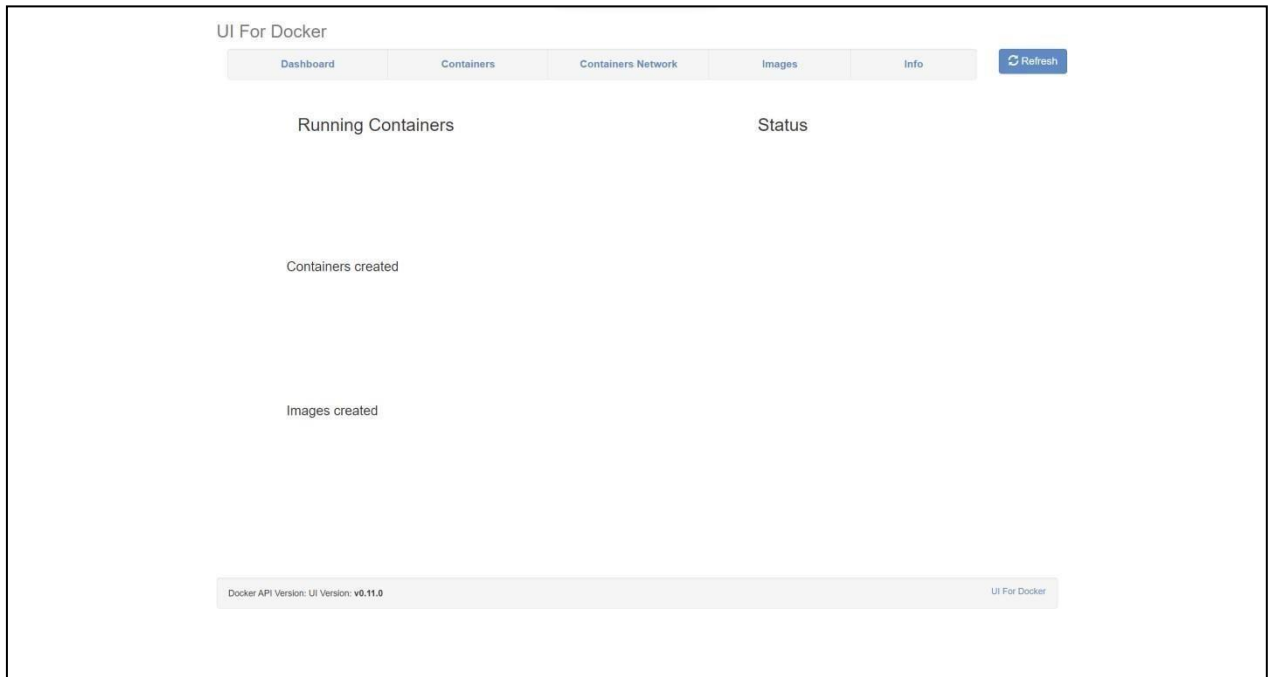
Question-2:

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

Building docker image: hello_world
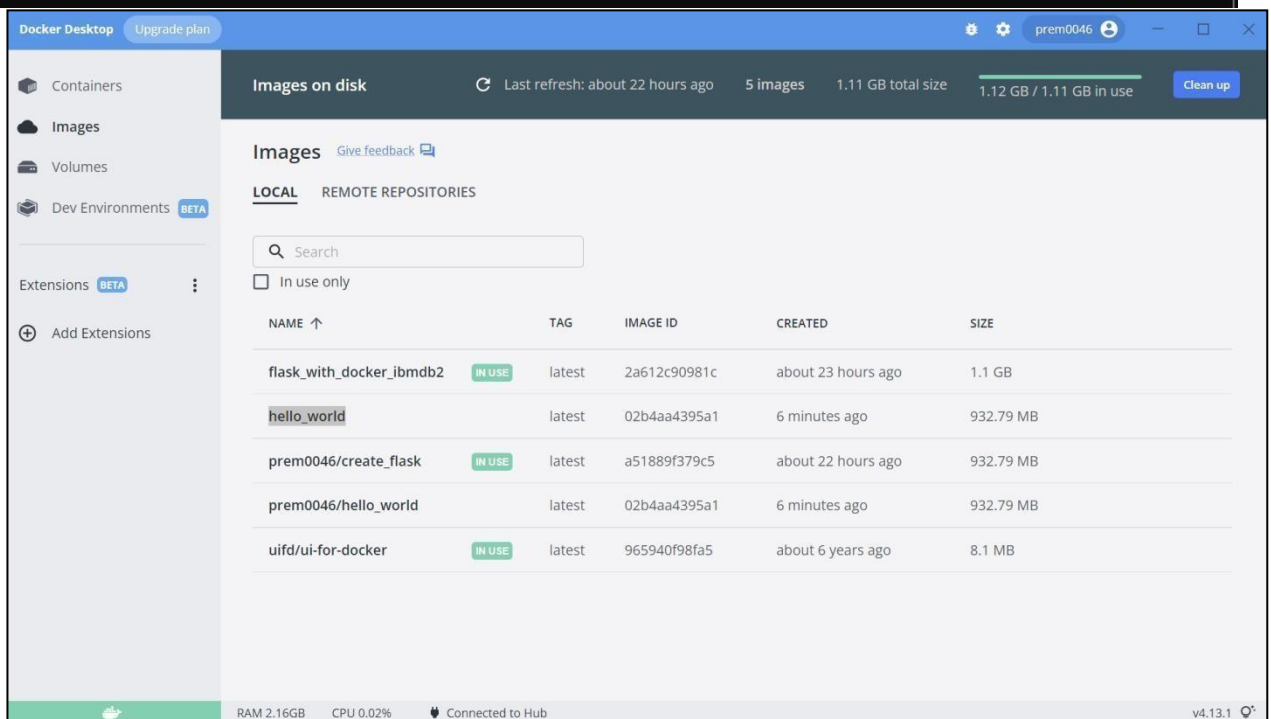

Pushing the image into repository in docker hub:

```
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
793b971ccb99: Mounted from prem0046/create_flask
d172a9e6f9e6: Mounted from prem0046/create_flask
0c7daf9a72c8: Mounted from prem0046/create_flask
75ba02937496: 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:a66e001d30bff36740ec97fe3f5bca2cbc87f7750dfd359b260e6c89d2fd8f1b size: 3050

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

Testing it using docker playground:

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

```
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 det
ails.

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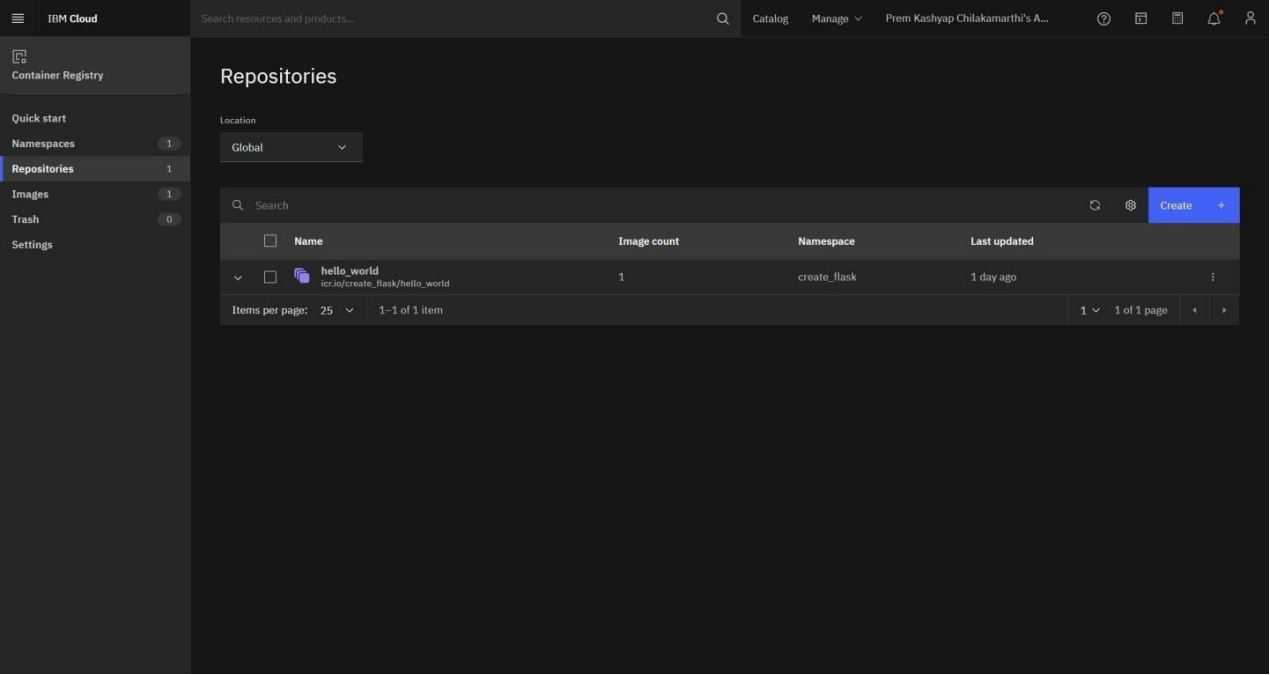
```
C:\Users\nmani>docker tag hello_world icr.io/create_flask/hello_world:latest

C:\Users\nmani>docker push icr.io/create_flask/hello_world:latest
The push refers to repository [icr.io/create_flask/hello_world]
096703ae4106: Pushed
30b75c628008: Pushed
265d09ef557c: Pushed
94b76bc8510f: Pushed
cf399be408ea: Pushed
793b971ccb99: Pushed
d172a9e6f9e6: Pushed
0c7daf9a72c8: Pushed
75ba02937496: Pushed
288cf3a46e32: Pushed
186da837555d: Pushed
955c9335e041: Pushed
8e079fee2186: Pushed
latest: digest: sha256:a66e001d30bff36740ec97fe3f5bca2cbc87f7750dfd359b260e6c89d2fd8f1b size: 3050


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

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

OK
```


IBM Cloud — Container Registry — Repositories

| Name	Image count	Namespace	Last updated
hello_world icr.io/create_flask/hello_world	1	create_flask	1 day ago

```
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 -
```
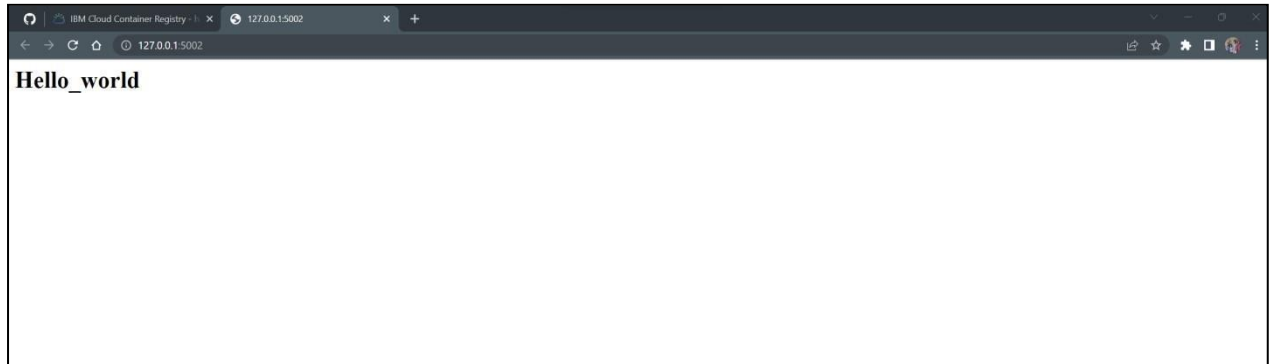

Hello_world

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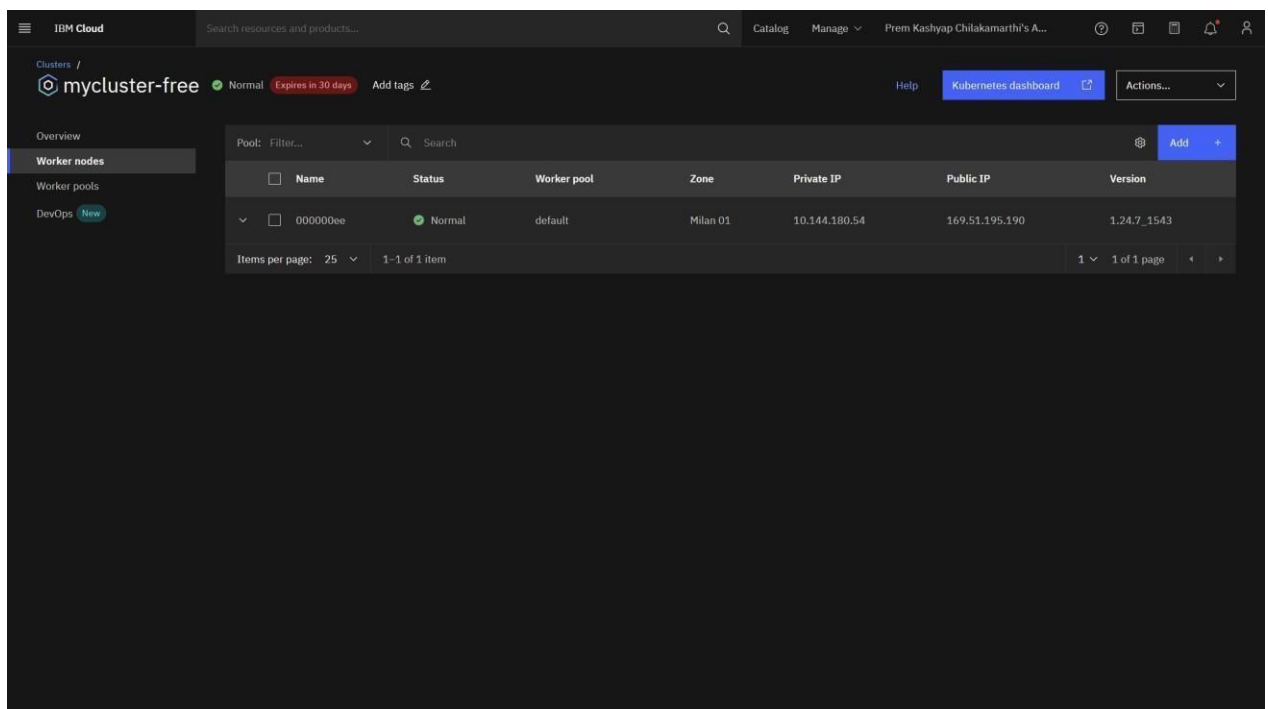
```
C:\Users\gani\Desktop>cd deploy
The system cannot find the path specified.

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>
```

```
C:\Windows\System32\cmd.exe                                                                                        —  □  X

C:\Windows\system32>kubectl expose deployment flask-app --type=NodePort --name=flask_service
The Service "flask_service" is invalid: metadata.name: Invalid value: "flask_service": a DNS-1035 label must consist of lower case alphanumeric characters or '-', start
 with an alphabetic character, and end with an alphanumeric character (e.g. 'my-name',  or 'abc-123', regex used for validation is '[a-z]([-a-z0-9]*[a-z0-9])?')

C:\Windows\system32>kubectl expose deployment flask-app --type=NodePort --name=flask_service
The Service "flask_service" is invalid: metadata.name: Invalid value: "flask_service": a DNS-1035 label must consist of lower case alphanumeric characters or '-', start
 with an alphabetic character, and end with an alphanumeric character (e.g. 'my-name',  or 'abc-123', regex used for validation is '[a-z]([-a-z0-9]*[a-z0-9])?')

C:\Windows\system32>kubectl expose deployment flask-app --type=NodePort --name=flask_service
The Service "flask_service" is invalid: metadata.name: Invalid value: "flask_service": a DNS-1035 label must consist of lower case alphanumeric characters or '-', start
 with an alphabetic character, and end with an alphanumeric character (e.g. 'my-name',  or 'abc-123', regex used for validation is '[a-z]([-a-z0-9]*[a-z0-9])?')

C:\Windows\system32>kubectl expose deployment flask-app --type=NodePort --name=flask-service
Error from server (AlreadyExists): services "flask-service" already exists

C:\Windows\system32>
C:\Windows\system32>kubectl -n kubernetes-dashboard get depploy
^C
C:\Windows\system32>kubectl -n kubernetes-dashboard get deploy
No resources found in kubernetes-dashboard namespace.

C:\Windows\system32>kubectl -n kubernetes-dashboard get deploy
No resources found in kubernetes-dashboard namespace.

C:\Windows\system32>kubectl proxy
Starting to serve on 127.0.0.1:8001
^C
C:\Windows\system32>kubectl -n kubernetes-dashboard get deplou
^C
C:\Windows\system32>kubectl -n kubernetes-dashboard get deploy
No resources found in kubernetes-dashboard namespace.

C:\Windows\system32>kubectl -n kubernetes-dashboard get pods
No resources found in kubernetes-dashboard namespace.

C:\Windows\system32>kubectl expose deployment flask-app --type=NodePort --name=flask-service
Error from server (AlreadyExists): services "flask-service" already exists

C:\Windows\system32>kubectl get ing
NAME                CLASS    HOSTS    ADDRESS    PORTS    AGE
flask-app-ingress   <none>   *                   80       27m

C:\Windows\system32>kubectl get svc
NAME                TYPE         CLUSTER-IP      EXTERNAL-IP   PORT(S)        AGE
```