

Assignment -4
Docker and kubernetes

Assignment Date	27 October 2022
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Student Roll Number	113319104045
Maximum Marks	2 Marks

Question-1: pull an image from docker hub and run it in docker playground.

1) pull an image form docker hub

```
Command Prompt
Microsoft Windows [Version 10.0.19044.1766]
(c) Microsoft Corporation. All rights reserved.

C:\Users\ADMIN>docker push shabariganesan/docker_with_flask_form
Using default tag: latest
The push refers to repository [docker.io/shabariganesan/docker_with_flask_form]
An image does not exist locally with the tag: shabariganesan/docker_with_flask_form

C:\Users\ADMIN>docker pull shabariganesan/docker_with_flask_form
Using default tag: latest
latest: Pulling from shabariganesan/docker_with_flask_form
1671565cc8df: Pull complete
3e94d13e55e7: Pull complete
fa9c7528c685: Pull complete
53ad072f9cd1: Pull complete
d6b983117533: Pull complete
d8092d56ded5: Pull complete
c71afc637d59: Pull complete
864a10b3c704: Pull complete
4334b2fe8293: Pull complete
8944570703f4: Pull complete
f885911288d0: Pull complete
086f369ca59f: Pull complete
e113bd27b88e: Pull complete
Digest: sha256:c61f28873bf1c909786ce991b8b60cd976765077f344e34d50e6cce8cf8d95c3
Status: Downloaded newer image for shabariganesan/docker_with_flask_form:latest
docker.io/shabariganesan/docker_with_flask_form:latest

C:\Users\ADMIN>
```

2) run it in docker playground

```

Select Command Prompt
Microsoft Windows [Version 10.0.19044.1766]
(c) Microsoft Corporation. All rights reserved.

C:\Users\ADMIN> docker run -d -p 5000:5000 shabariganesan/docker_with_flask_form
cc3e98e68102474e9c89c7674b07ad17a5645a7216d7c854d785197bdb54dee5

C:\Users\ADMIN>

```

Containers

Images

Volumes

Dev Environments BETA

Extensions BETA

Add Extensions

Containers Give Feedback

A container packages up code and its dependencies so the application runs quickly and reliably from one computing environment to another. [Learn more](#)

Showing 2 items

Search

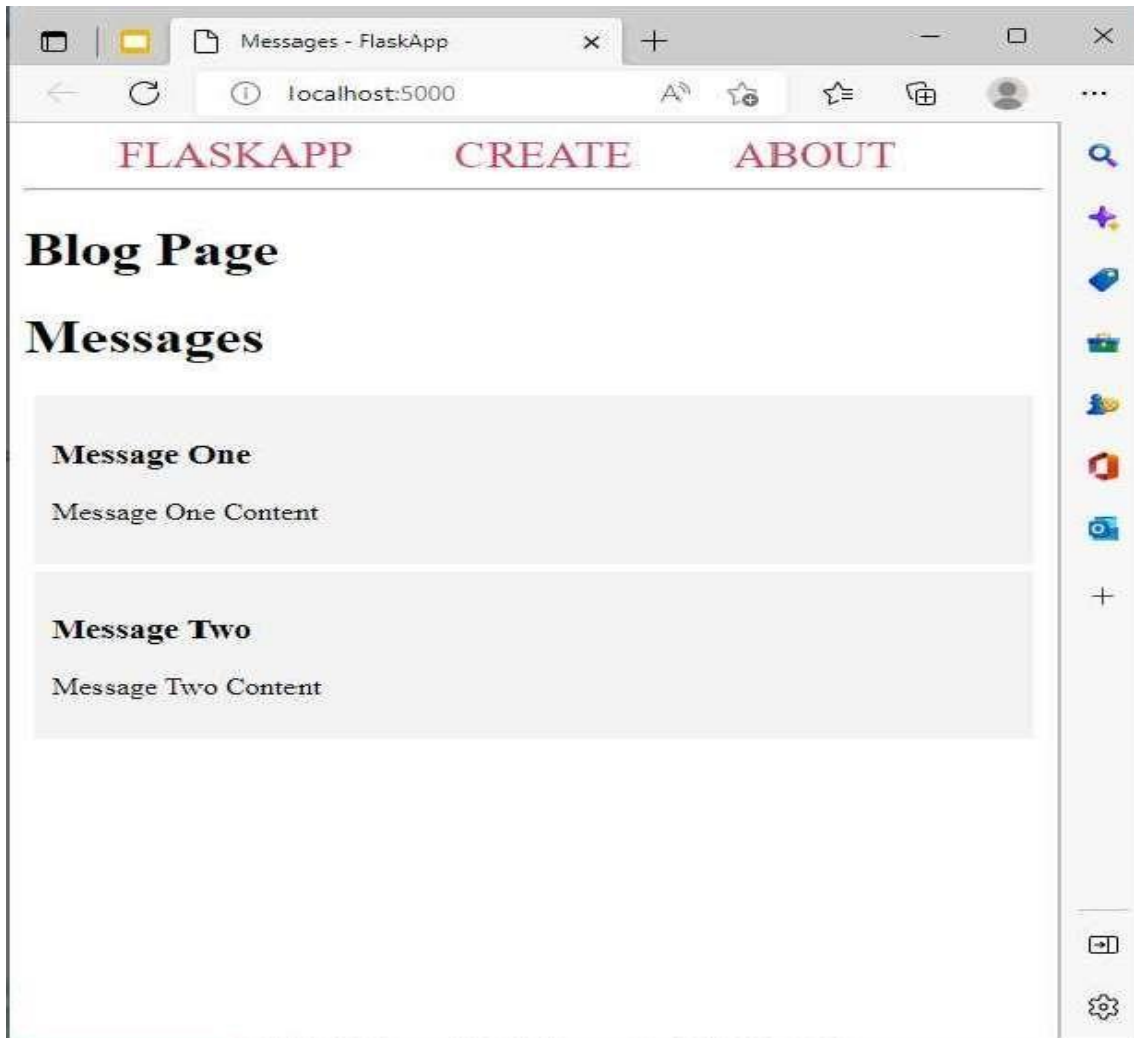
	NAME	IMAGE	STATUS	PORT(S)	STARTED	ACTIONS
<input type="checkbox"/>	<div>funny_shirley</div> <div>8ee929159404</div>	docker/get	Exited	80		<div></div> <div></div> <div></div>
<input type="checkbox"/>	<div>determined_m</div> <div>cc3e98e68102</div>	shabarigar	Running	5000	12 seconds ago	<div></div> <div></div> <div></div>

RAM 2.86GB

CPU 9.39%

Connected to Hub

v4.12.0



Question-2:

Create a docker file for the jobportal application and deploy it in docker application.

1) Creating a docker file for the jobportal application

```
C:\Users\gan\Desktop\job_portal\Dockertfile - Notepad++
File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?
Dockerfile
1 FROM python:3.10.6
2 WORKDIR /app
3 COPY requirements.txt ./
4 RUN pip install -r requirements.txt
5 COPY . .
6 EXPOSE 5000
7 CMD ["python", "./app.py"]
8
```

2) deploy in in docker application

```
Select C:\Windows\System32\cmd.exe
C:\Users\gan\Desktop\job_portal>cd ..
C:\Users\gan\Desktop>cd job_portal
C:\Users\gan\Desktop\job_portal>docker build -t job_portal
"docker build" requires exactly 1 argument.
See 'docker build --help'.

Usage: docker build [OPTIONS] PATH | URL [-]

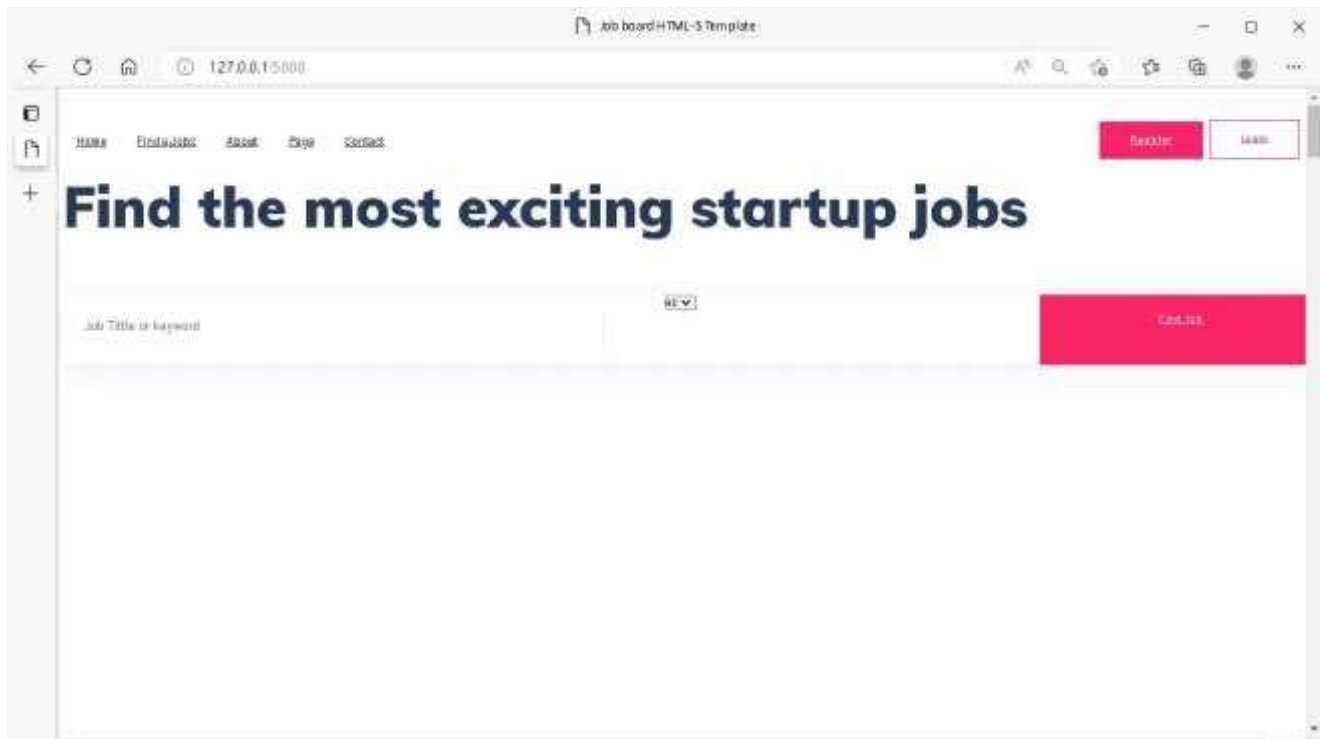
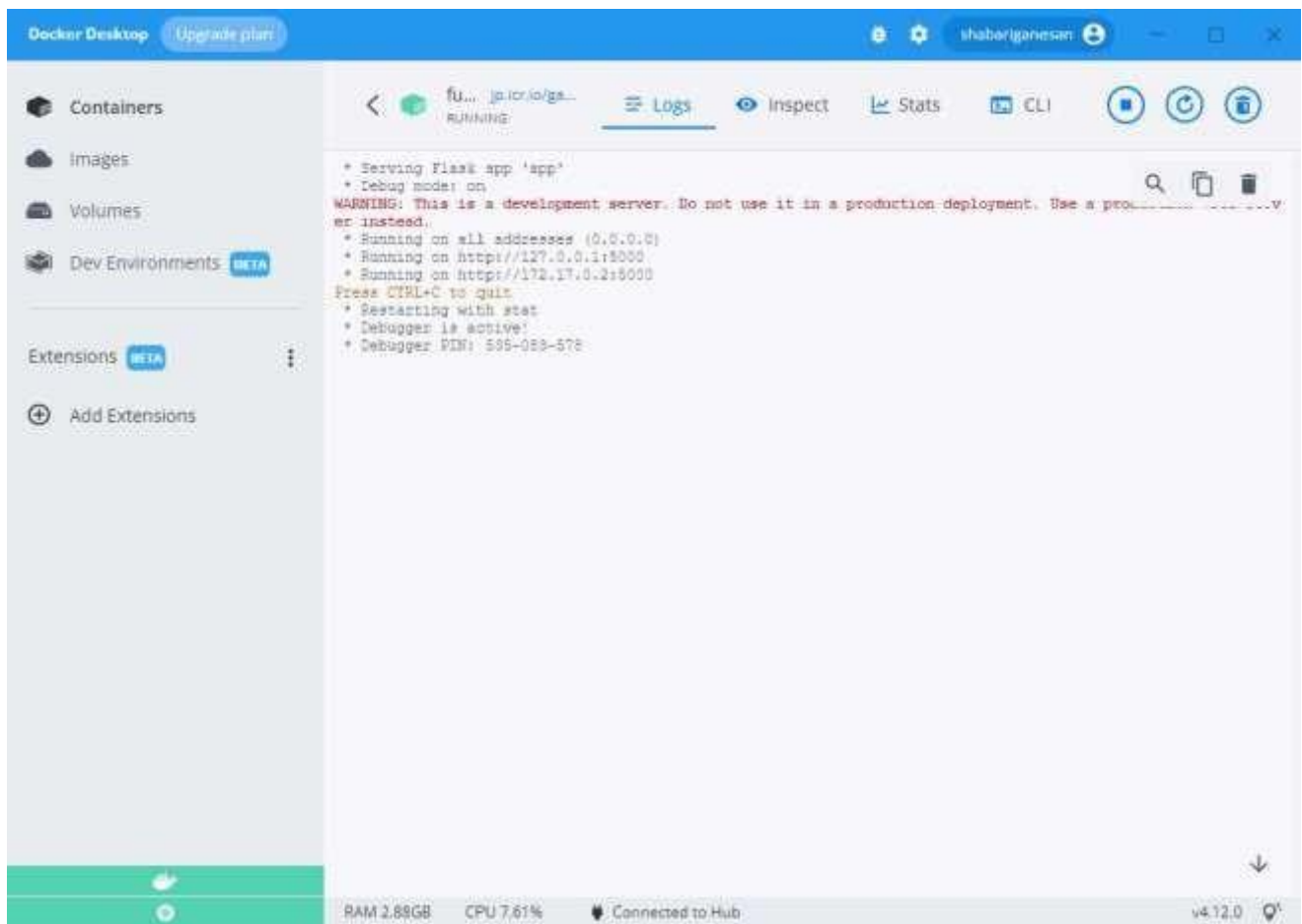
Build an image from a Dockerfile

C:\Users\gan\Desktop\job_portal>dir
Volume in drive C has no label.
Volume Serial Number is 86A3-1D86

Directory of C:\Users\gan\Desktop\job_portal
10/25/2022  04:59 PM    <DIR>          .
10/25/2022  04:59 PM    <DIR>          ..
10/25/2022  04:11 PM             320 app.py
10/22/2022  10:48 PM             148 Dockerfile
10/22/2022  10:48 PM             148 requirements.txt
10/25/2022  04:53 PM    <DIR>          static
10/25/2022  04:53 PM    <DIR>          templates
10/25/2022  04:53 PM    <DIR>          __pycache__
               3 file(s)          474 bytes
               5 dir(s)  77,847,934,876 bytes free

C:\Users\gan\Desktop\job_portal>docker build -t job_portal
Invalid argument "job_portal." for "-t, --tag" flag: Invalid reference format
See 'docker build --help'.

C:\Users\gan\Desktop\job_portal>docker build -t job_portal .
[+] Building 407.6s (11/11) FINISHED
=> [internal] load build definition from Dockerfile                                1.2s
=> [internal] load Dockerfile 170B                                                0.0s
=> [internal] load .dockerignore                                                    0.0s
=> [internal] transfer config file to Docker daemon 30B                          0.0s
=> [internal] load metadata for docker.io/library/python:3.10.6                  0.0s
=> [auth] docker.io/library/python:3.10.6: pull access for the repository         0.0s
=> [auth] docker.io/library/python:3.10.6: resolve docker.io/library/python:3.10.6 421.8s
=> [internal] fetch https://github.com/docker/docker-credential-helpers/releases/download/v0.7.0/docker-credential-helpers-v0.7.0-linux-amd64.tar.gz 0.0s
```

running in docker desktop 1

Question-3: Create a IBM container registry and deploy helloworld app or jobportalapp

1) create a ibm container registry

```
Command Prompt
Account:      Ganesan S's Account (2a239674b9ba463891acc3c4fcbe0a99)
Resource group: No resource group targeted, use 'ibmcloud target -g RESOURCE_GROUP'
CF API endpoint:
Org:
Space:

New version 2.11.1 is available.
Change logs: https://github.com/IBM-Cloud/ibm-cloud-cli-release/releases/tag/v2.11.1
TIP: use 'ibmcloud config --check-version=false' to disable update check.

Do you want to update? [y/N] > y

Installing version '2.11.1'...
Downloading...
 14.88 MiB / 14.88 MiB [=====] 100.00% 2s
15604696 bytes downloaded
Saved in C:\Users\ADMIN\.bluemix\tmp\bx_2625690972\IBM_Cloud_CLI_2.11.1_amd64.exe

C:\Users\ADMIN>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% 1s
12476416 bytes downloaded
Installing binary...
OK
Plug-in 'container-registry 1.0.2' was successfully installed into C:\Users\ADMIN\.bluemix\plugins\container-registry. Use 'ibmcloud plugin show container-registry' to show its details.

C:\Users\ADMIN>
```

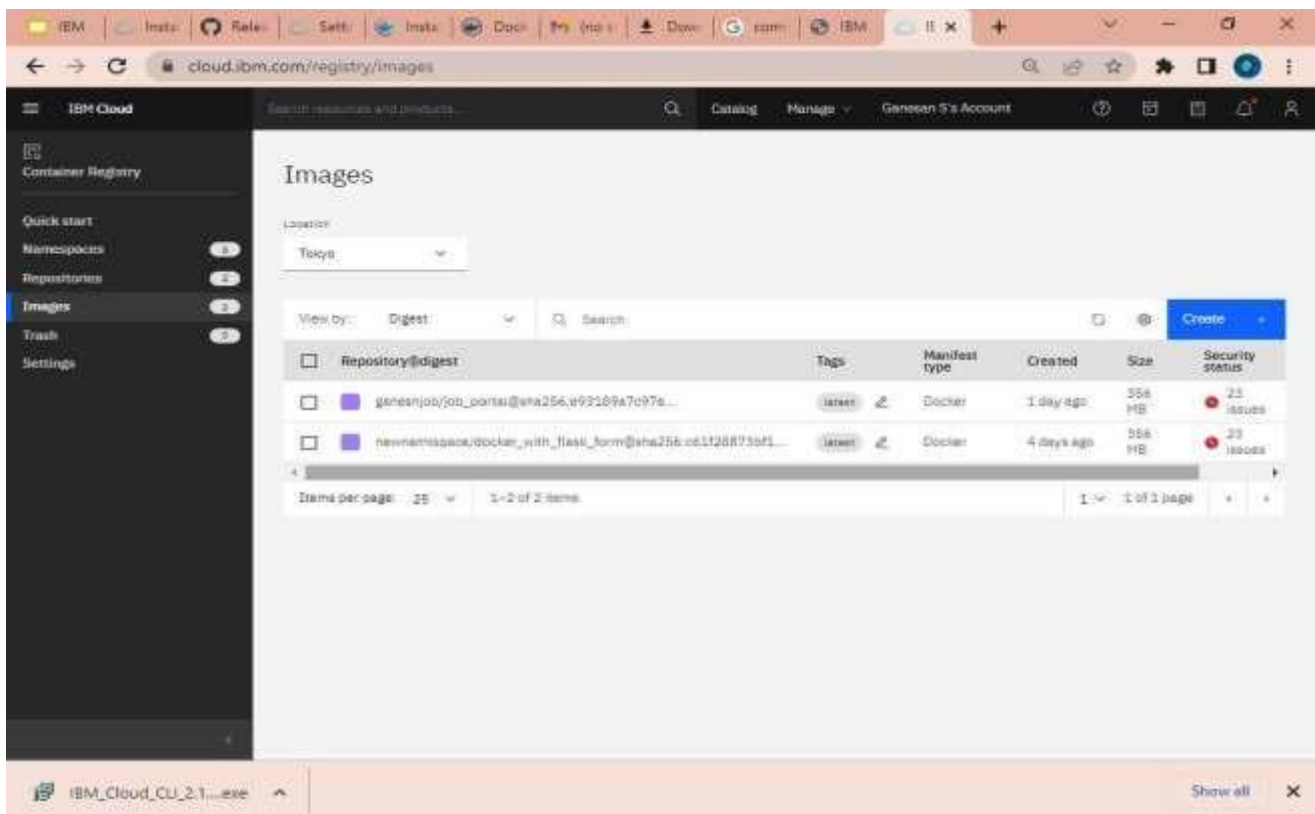
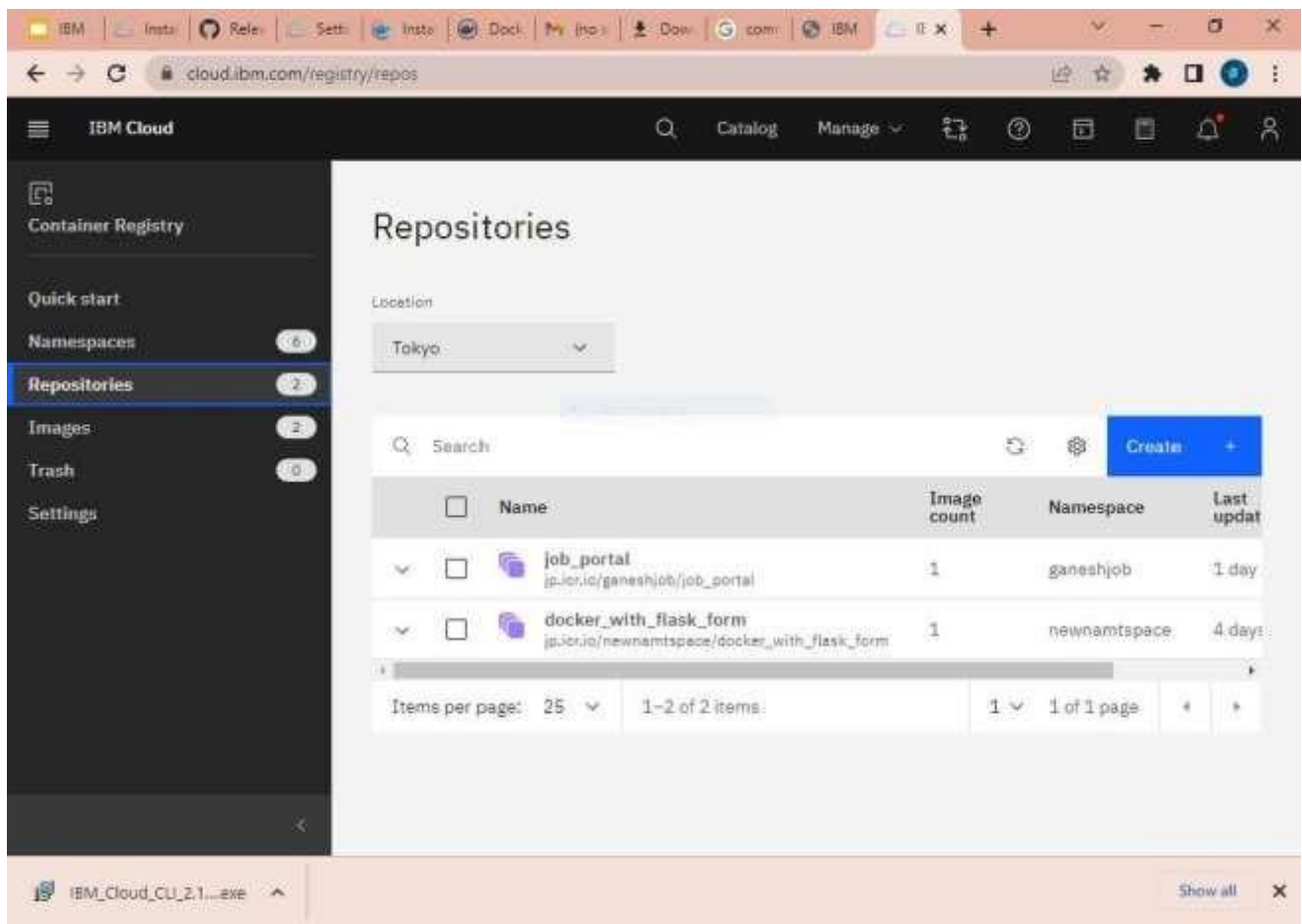
2) deployhelloworld or jobportal

```
C:\Windows\system32\cmd.exe
54acb5a6fa8b: Retrying in 1 second
8d51c618126f: Retrying in 1 second
9ffae4d46744: Waiting
a89dd47b5e1: Waiting
055ed1b7a420: Waiting
Failed to lookup host: jp.kcr.io

C:\Users\ganl\Desktop\job_portal>docker push jp.kcr.io/ganeshjob/job_portal
Using default tag: latest
The push refers to repository [jp.kcr.io/ganeshjob/job_portal]
1503b158a025: layer already exists
80e64fb5e186: Pushed
48c2a7a4c12b: layer already exists
9b72c7835466: layer already exists
bfc1deb8136e: layer already exists
1f123106024c: layer already exists
3d8eb1152931: Pushed
180796cdf3b1: Pushed
54acb5a6fa8b: Retrying in 1 second
8d51c618126f: Pushed
9ffae4d46744: Pushed
a89dd47b5e1: Pushed
055ed1b7a420: Pushing [=====] 89.89MB/124MB
^C

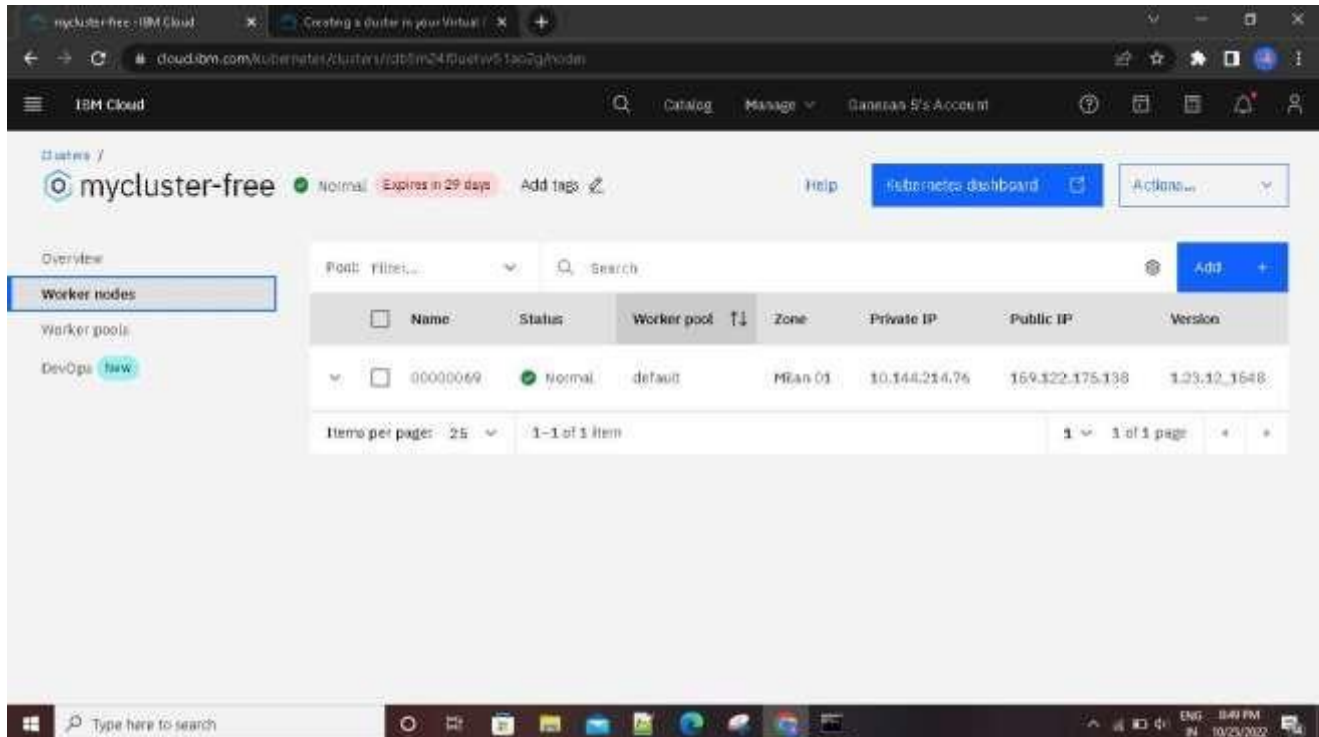
C:\Users\ganl\Desktop\job_portal>docker push jp.kcr.io/ganeshjob/job_portal
Using default tag: latest
The push refers to repository [jp.kcr.io/ganeshjob/job_portal]
1503b158a025: layer already exists
80e64fb5e186: layer already exists
48c2a7a4c12b: layer already exists
9b72c7835466: layer already exists
bfc1deb8136e: layer already exists
1f123106024c: layer already exists
3d8eb1152931: layer already exists
180796cdf3b1: layer already exists
54acb5a6fa8b: Pushed
8d51c618126f: layer already exists
9ffae4d46744: layer already exists
a89dd47b5e1: layer already exists
055ed1b7a420: Pushed
latest: digest: sha256:e93189a7c97eeb9308660a54e895cf61aa6eda939998c8c7a2147a7961fc207 size: 3852

C:\Users\ganl\Desktop\job_portal>
C:\Users\ganl\Desktop\job_portal>
```

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 noteport

1)Creating a kubernetes cluster in ibm cloud



2) deploy helloworld image or jobportal image and also expose the same app to run in noteport

```
C:\Windows\System32\cmd.exe
10/16/2022 12:28 PM 3,721 windows shortcut.txt
08/25/2022 08:40 PM 2,897 YouTube.lnk
24 File(s) 804,677,196 bytes
9 Dir(s) 79,221,886,976 bytes free

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>
```

mycluster-free - IBM Cloud mycluster-free - Kubernetes Dash... flask-app-with-ibm-kubernetes-ec...

eu-de.containers.cloud.ibm.com/kubeproxy/clusters/cdb5m2#0uetvv51ad2g/service/#/pod?namespace=default

kubernetes default Search

Workloads > Pods

Workloads: Cron Jobs, Daemon Sets, Deployments, Jobs, **Pods**, Replica Sets, Replication Controllers, Stateful Sets

Service: Ingresses, Services

Config and Storage: Config Maps, Persistent Volume Claims, Secrets, Storage Classes

Usage: Waiting for more data to display chart... Memory Usage: Waiting for more data to display chart...

Name	Image	Labels	Node	Status	Restarts	CPU Usage (cores)	Memory Usage (bytes)	Created
flask-app-79447b5c8c-4d8ww	gcr.io/genwhyco/flask-app	Show all	10.144.214.76	Running	0	0.00%	37.4310 MB	8 minutes ago
flask-app-79447b5c8c-dprrn5	Show all	Show all	10.144.214.76	Running	0	0.00%	37.4310 MB	8 minutes ago
flask-app-79447b5c8c-vzpg	Show all	Show all	10.144.214.76	Running	0	0.00%	37.5310 MB	5 minutes ago

mycluster-free - IBM Cloud mycluster-free - Kubernetes Dash... 127.0.0.1 172.21.135.01

eu-de.containers.cloud.ibm.com/kubeproxy/clusters/cdb5m2#0uetvv51ad2g/service/#/log/default/flask-app-79447b5c8c-4d8ww/pod?na...

kubernetes default Search

Workloads > Pods > flask-app-79447b5c8c-4d8ww > Logs

Logs from flask-app-cont... in flask-app-7944...

```
Installing Flask app 'app'
Running on all addresses (0.0.0.0)
Running on http://127.0.0.1:5000
Press CTRL+C to quit
Starting with status
Debugger is active!
Debugger PID: 316-487-349
```

from Oct 26, 2022 to Oct 26, 2022 UTC

```

C:\Windows\System32>cmd.exe
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 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 127.0.0.1:8081
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  cncn    *              80              27m
C:\Windows\system32>kubectl get svc
NAME          TYPE          CLUSTER-IP          EXTERNAL-IP          PORT(S)          AGE

```