

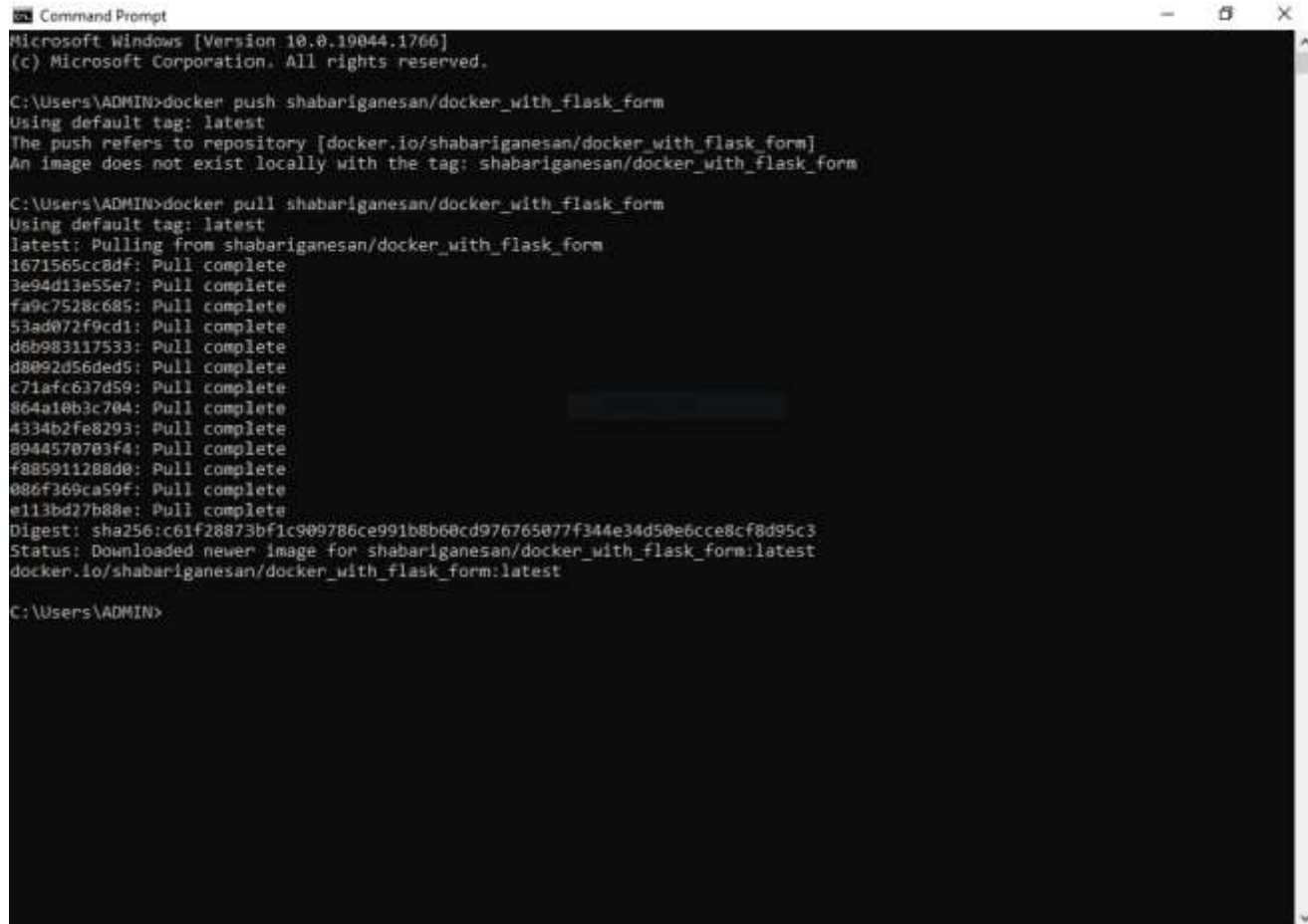
**Assignment -4**  
**Docker and kubernetes**

|                     |                 |
|---------------------|-----------------|
| Assignment Date     | 10 OCTOBER 2022 |
| Student Name        | Mr. ABISHEK.M   |
| Student Roll Number | 211519205005    |
| 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**



```
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
080f369ca59f: 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

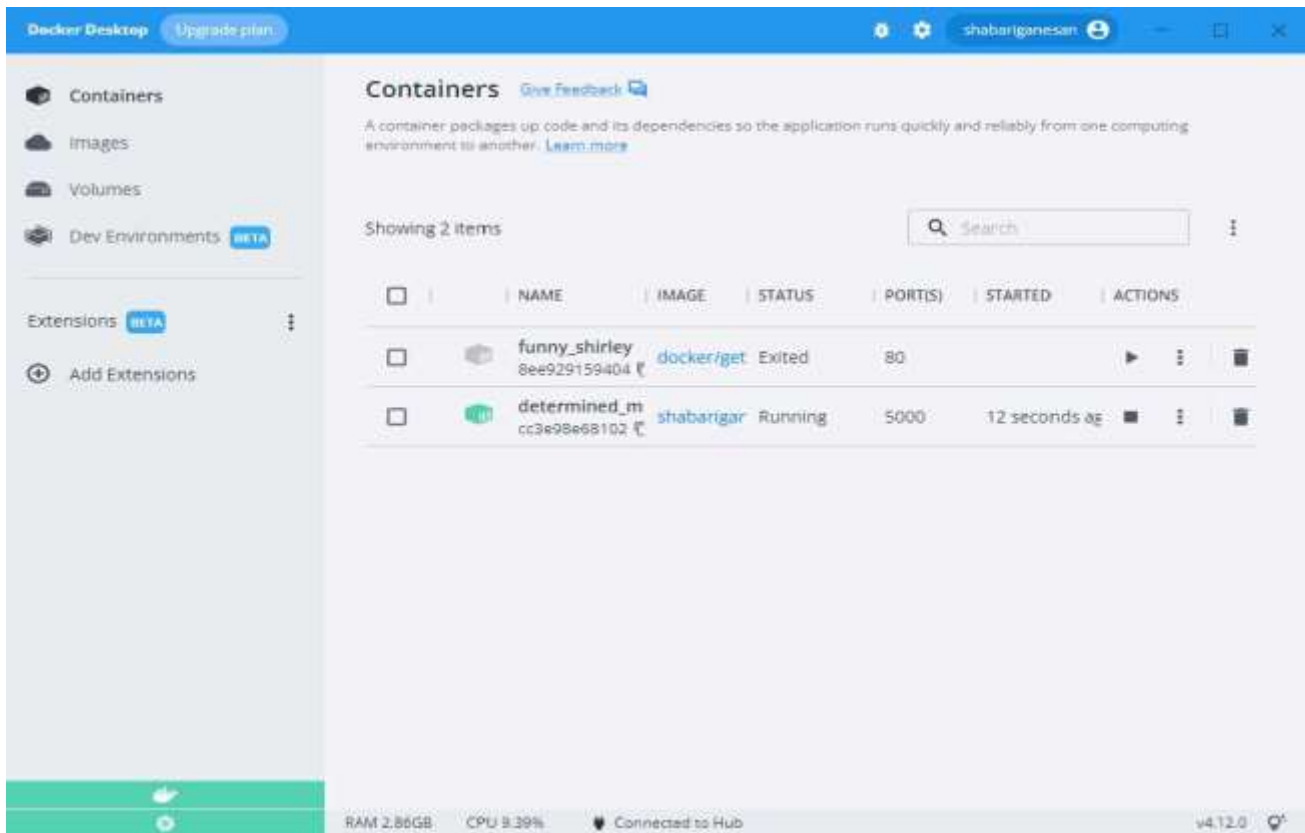
C:\Users\ADMIN>
```

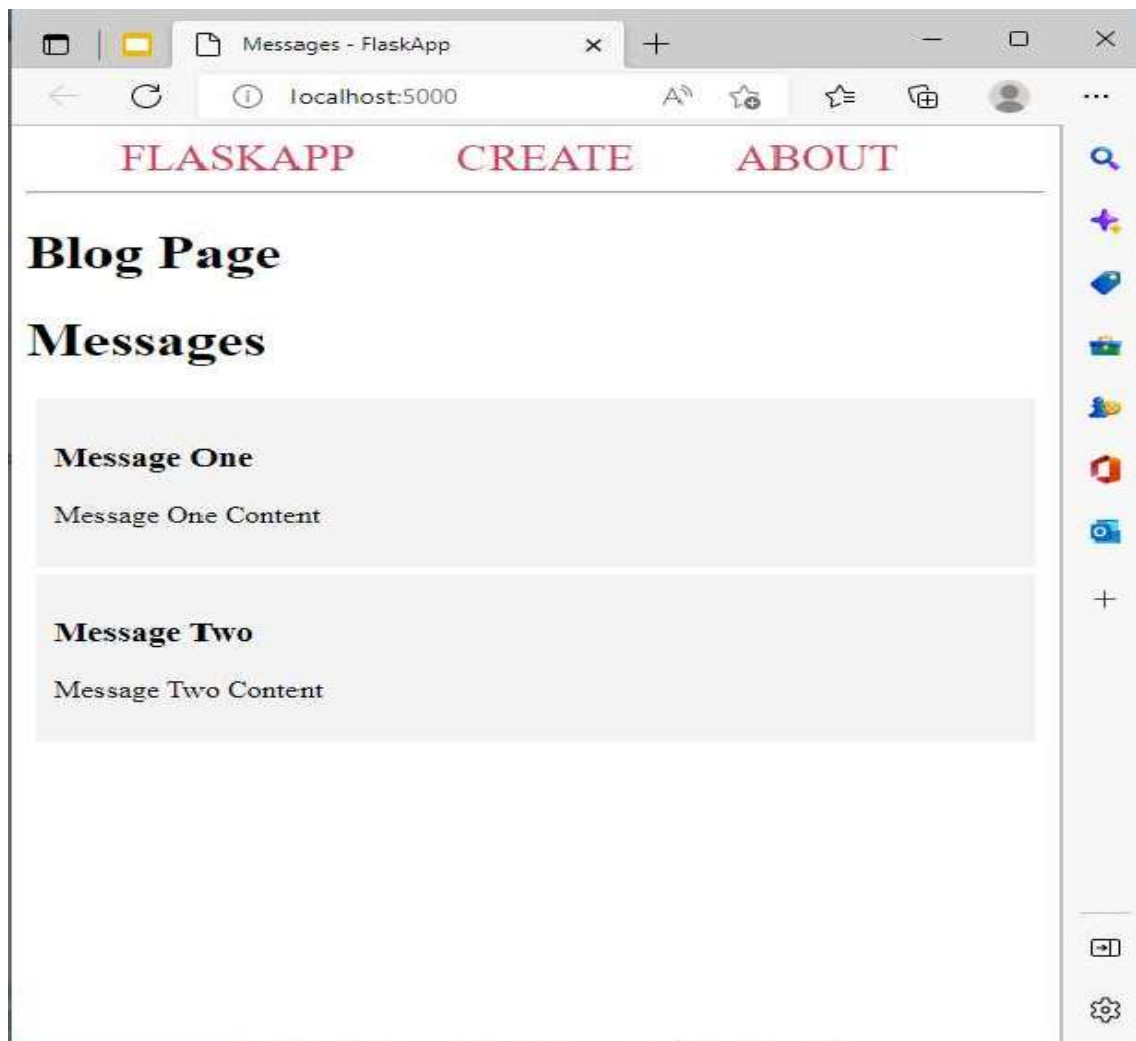
## 2) run it in docker playground

```
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>
```

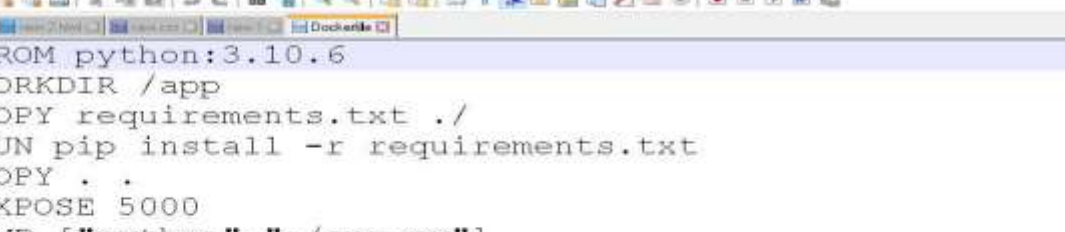




### Question-2:

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

## 1) Creating a docker file for the jobportal application



The screenshot shows a Notepad++ window titled "C:\Users\gabri\Desktop\job\_gabri\Dockertile - Notepad++". The menu bar includes File, Edit, Search, View, Encoding, Language, Settings, Tools, Macro, Run, Plugins, Window, and Help. The toolbar contains various icons for file operations and editing. The text area displays the following Dockerfile content:

```
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
```

The bottom status bar shows "to search" on the left and system icons on the right.

## 2) deploy in in dokcer application

```
C:\Users\gan1>Select-Object System32\cmd.exe
C:\Users\gan1\Desktop\job_portal>cd ..
C:\Users\gan1\Desktop>cd job_portal
C:\Users\gan1\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\gan1\Desktop\job_portal>dir
Volume in drive C has no label...
Volume Serial Number is 86A3-10B6

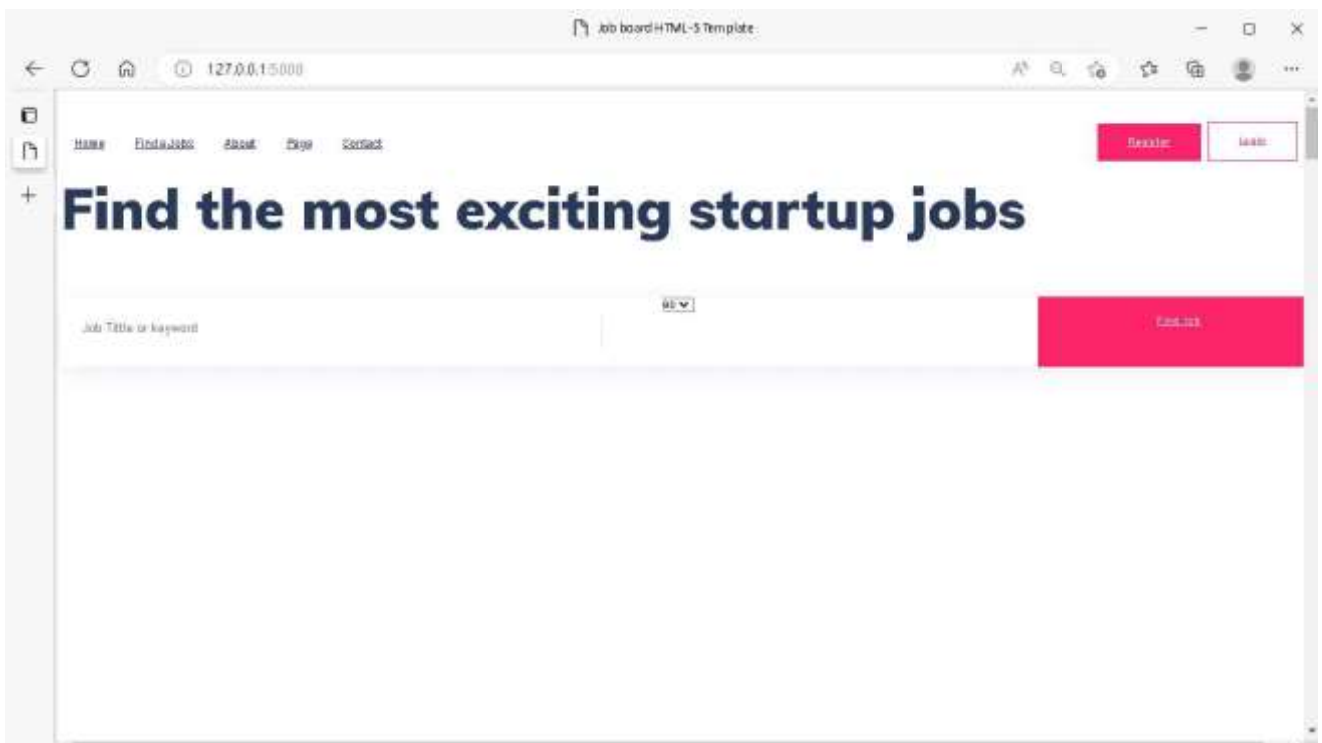
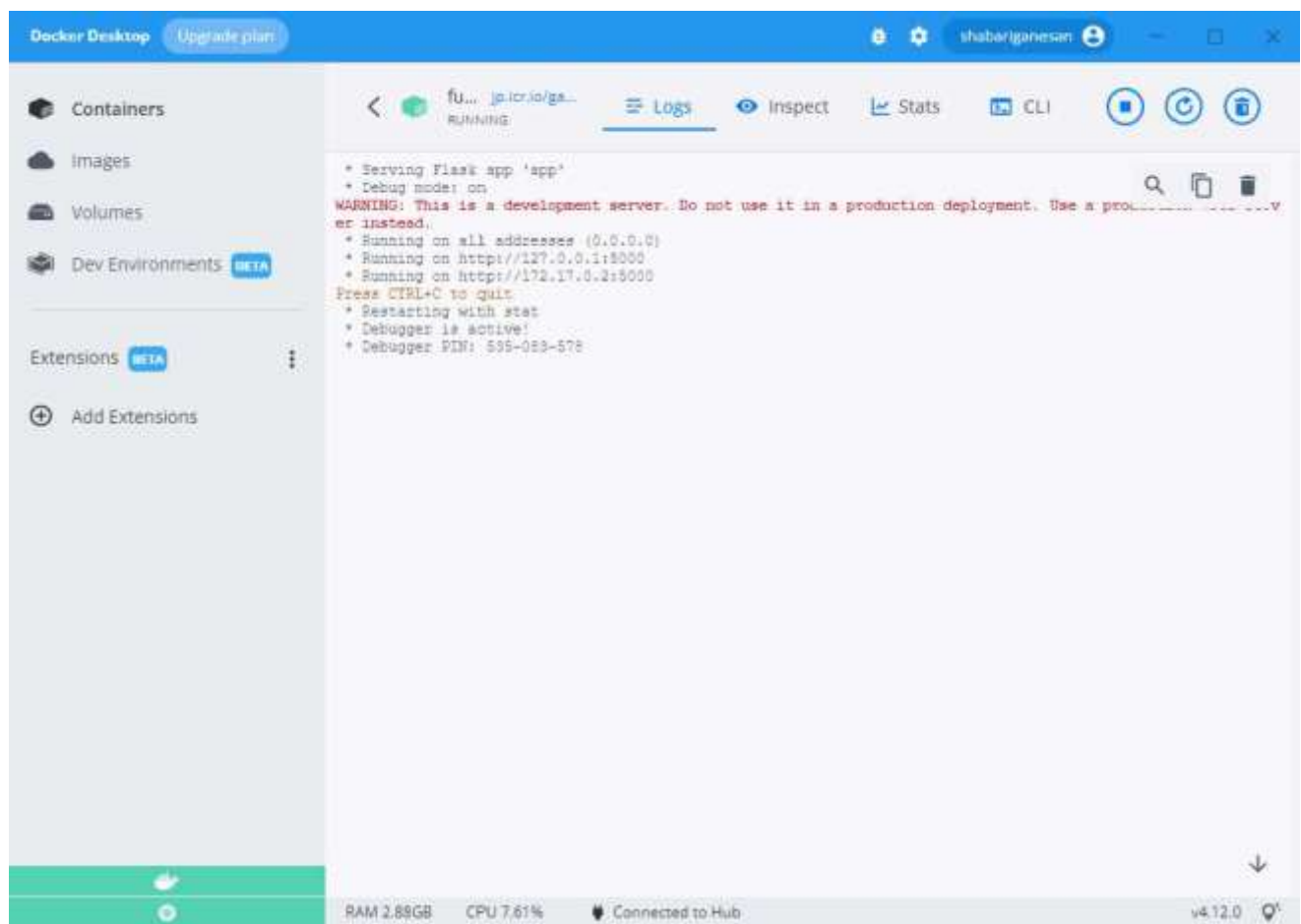
Directory of C:\Users\gan1\Desktop\job_portal

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                $ requirements.txt
10/25/2022  04:59 PM    <DIR>          static
10/25/2022  04:59 PM    <DIR>          templates
10/25/2022  04:59 PM    <DIR>          __pycache__
                 3 File(s)      474 bytes
                 5 Dir(s)      77,847,894 bytes free

C:\Users\gan1\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\gan1\Desktop\job_portal>docker build -t job_portal .
[+] Building 0.67s (11/11) FINISHED
=> [internal] load build definition from Dockerfile
=> [internal] load Dockerfile /tmp/
=> [internal] load definitions
=> [internal] load definitions
=> [internal] load metadata for docker://python:3.9-slim
=> [stage] docker://python:3.9-slim run --rm python:3.9-slim pip install --no-cache-dir -r requirements.txt
=> [stage] docker://python:3.9-slim run --rm python:3.9-slim python -m http.server 80
```





running in docker desktop 1

### Question-3: Create albm 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) deploy helloworld or jobportal

```
C:\Windows\system32\cmd.exe
54acb5a6fa8b: Retrying in 1 second
8d51c618126f: Retrying in 1 second
9ffae4d46744: Waiting
a80d1d47b5a1: Waiting
055ed1b7a428: Waiting
Failed to lookup host: jp.lcr.io

C:\Users\gan1\Desktop\job_portal>docker push jp.lcr.io/ganeshjob/job_portal
Using default tag: latest
The push refers to repository [jp.lcr.io/ganeshjob/job_portal]
1503b1584025: layer already exists
80e94fb5e186: Pushed
48c2a7a4c12b: layer already exists
9b72c7835466: layer already exists
bfc1deb0136e: layer already exists
1f123186024c: layer already exists
3d5eb1152931: Pushed
180796cdf3b1: Pushed
54acb5a6fa8b: Retrying in 1 second
8d51c618126f: Pushed
9ffae4d46744: Pushed
a80d1d47b5a1: Pushed
055ed1b7a428: Pushing [=====] 89.85MB/124MB
OK
C:\Users\gan1\Desktop\job_portal>docker push jp.lcr.io/ganeshjob/job_portal
Using default tag: latest
The push refers to repository [jp.lcr.io/ganeshjob/job_portal]
1503b1584025: layer already exists
80e94fb5e186: layer already exists
48c2a7a4c12b: layer already exists
9b72c7835466: layer already exists
bfc1deb0136e: layer already exists
1f123186024c: layer already exists
3d5eb1152931: layer already exists
180796cdf3b1: layer already exists
54acb5a6fa8b: Pushed
8d51c618126f: layer already exists
9ffae4d46744: layer already exists
a80d1d47b5a1: layer already exists
055ed1b7a428: Pushed
latest: digest: sha256:e93189a7c97eeb990660a54e896cf61aa0eda939990c8c7a2147a7963fc207 size: 3852

C:\Users\gan1\Desktop\job_portal>
C:\Users\gan1\Desktop\job_portal>
```



IBM Cloud

Container Registry

Quick start

Namespaces 16

**Repositories 2**

Images 2

Trash 0

Settings

## Repositories

Location: Tokyo

Search

Create +

| <input type="checkbox"/> | Name  | Image count | Namespace    | Last updated |
|--------------------------|---|-------------|--------------|--------------|
| <input type="checkbox"/> | job_portal<br>jp.cri.io/ganeshjob/job_portal                            | 1           | ganeshjob    | 1 day        |
| <input type="checkbox"/> | docker_with_flask_form<br>jp.cri.io/newnamespace/docker_with_flask_form | 1           | newnamespace | 4 days       |

Items per page: 25 1-2 of 2 items 1 1 of 1 page

IBM\_Cloud\_CU\_2.1...exe Show all

IBM Cloud

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Repositories 2

**Images 2**

Trash 0

Settings

## Images

Location: Tokyo

View by: Digest Search

Create +

| <input type="checkbox"/> | repository@digest  | Tags   | Manifest type | Created    | Size   | Security status |
|--------------------------|--|--------|---------------|------------|--------|-----------------|
| <input type="checkbox"/> | ganeshjob/job_portal@sha256:e93189a7c97a...                | latest | Docker        | 1 day ago  | 356 MB | 23 issues       |
| <input type="checkbox"/> | newnamespace/docker_with_flask_form@sha256:cd1128873af1... | latest | Docker        | 4 days ago | 356 MB | 23 issues       |

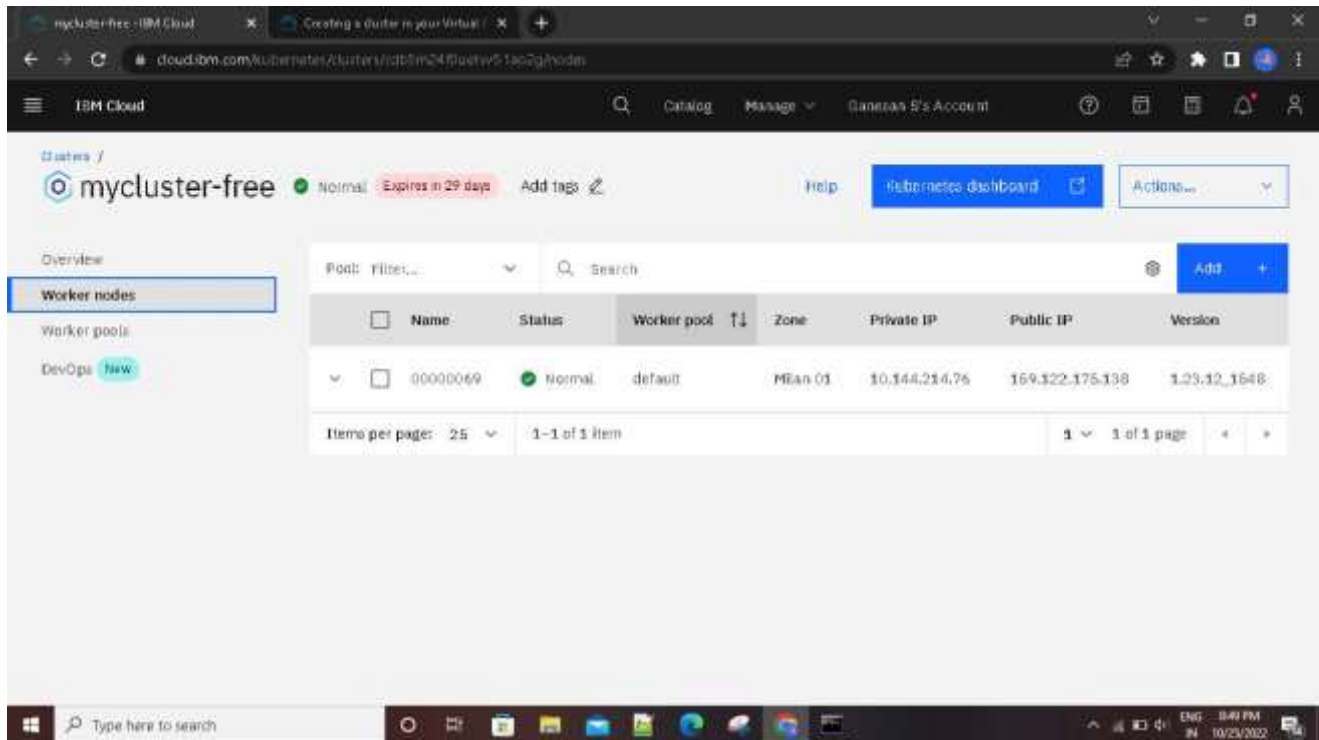
Items per page: 25 1-2 of 2 items 1 1 of 1 page

IBM\_Cloud\_CU\_2.1...exe Show all



**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 Dashb... | flask-app-with-ibm-kubernetes-ao...

eu-de.containers.cloud.ibm.com/kubeproxy/clusters/cdb5m3n00uehv51ao2g/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...

js

| Name                       | Images                      | Labels   | Node          | Status  | Restarts | CPU Usage (cores) | Memory Usage (bytes) | Created       |
|----------------------------|-----------------------------|----------|---------------|---------|----------|-------------------|----------------------|---------------|
| flask-app-79447b5c8c-4d8ww | gcr.io/geneshop/job_0-1rtai | Show all | 10.144.214.76 | Running | 0        | 0.000             | 27.2MB               | 5 minutes ago |
| flask-app-79447b5c8c-qpmv5 | Show all                    | Show all | 10.144.214.76 | Running | 0        | 0.000             | 27.2MB               | 5 minutes ago |
| flask-app-79447b5c8c-vzqg  | Show all                    | Show all | 10.144.214.76 | Running | 0        | 0.000             | 27.2MB               | 5 minutes ago |

mycluster-free - IBM Cloud | mycluster-free - Kubernetes Dashb... | 127.0.0.1 | 172.21.159.01

eu-de.containers.cloud.ibm.com/kubeproxy/clusters/cdb5m3n00uehv51ao2g/service/#/log/default/flask-app-79447b5c8c-4d8ww/pod?na...

kubernetes | default | Search

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

Jobs

Pods

Replica Sets

Replication Controllers

Stateful Sets

Service

- Ingresses
- Services

Config and Storage

- Config Maps
- Persistent Volume Claims
- Secrets
- Storage Classes

Cluster

- Cluster Role Bindings
- Cluster Roles
- Events

Logs

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

```

Using Flask app 'app'
bug 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://127.0.0.1:5000
Running on http://172.30.23.11:5000
Press CTRL+C to quit
Starting with stat
Debugger is active!
Debugger PIN: 116-487-149
  
```

from Oct 26, 2021 to Oct 26, 2021 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
^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 deploy
^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  cncn    *          *            80         27m

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