

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

Assignment Date	10 October 2022
Student Name	Karthikeyan P
Student Roll Number	412519104058
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
C:\Users\karth>docker run -d -p 80:80 docker/getting-started
Unable to find image 'docker/getting-started:latest' locally
latest: Pulling from docker/getting-started
df9b9388f04a: Pull complete
5867cba5fcbd: Pull complete
4b639e65cb3b: Pull complete
061ed9e2b976: Pull complete
bc19f3e8eeb1: Pull complete
4071be97c256: Pull complete
79b586f1a54b: Pull complete
0c9732f525d6: Pull complete
Digest: sha256:b558be874169471bd4e65bd6eac8c303b271a7ee8553ba47481b73b2bf597aee
Status: Downloaded newer image for docker/getting-started:latest
68a50f8cb64b17ecfbd36b07c61218bee475f1f98694580df3d6a3cde8d04024

C:\Users\karth>docker images
REPOSITORY          TAG                 IMAGE ID            CREATED             SIZE
alpine/git           latest             42a1cda0ba24       3 weeks ago        43.6MB
karthikeyan2/alpine/git latest            42a1cda0ba24       3 weeks ago        43.6MB
docker/getting-started latest            cb90f98fd791       7 months ago       28.8MB
```

```
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
80892d56de45: Pull complete
c71afc637d59: Pull complete
864a18b3c704: 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

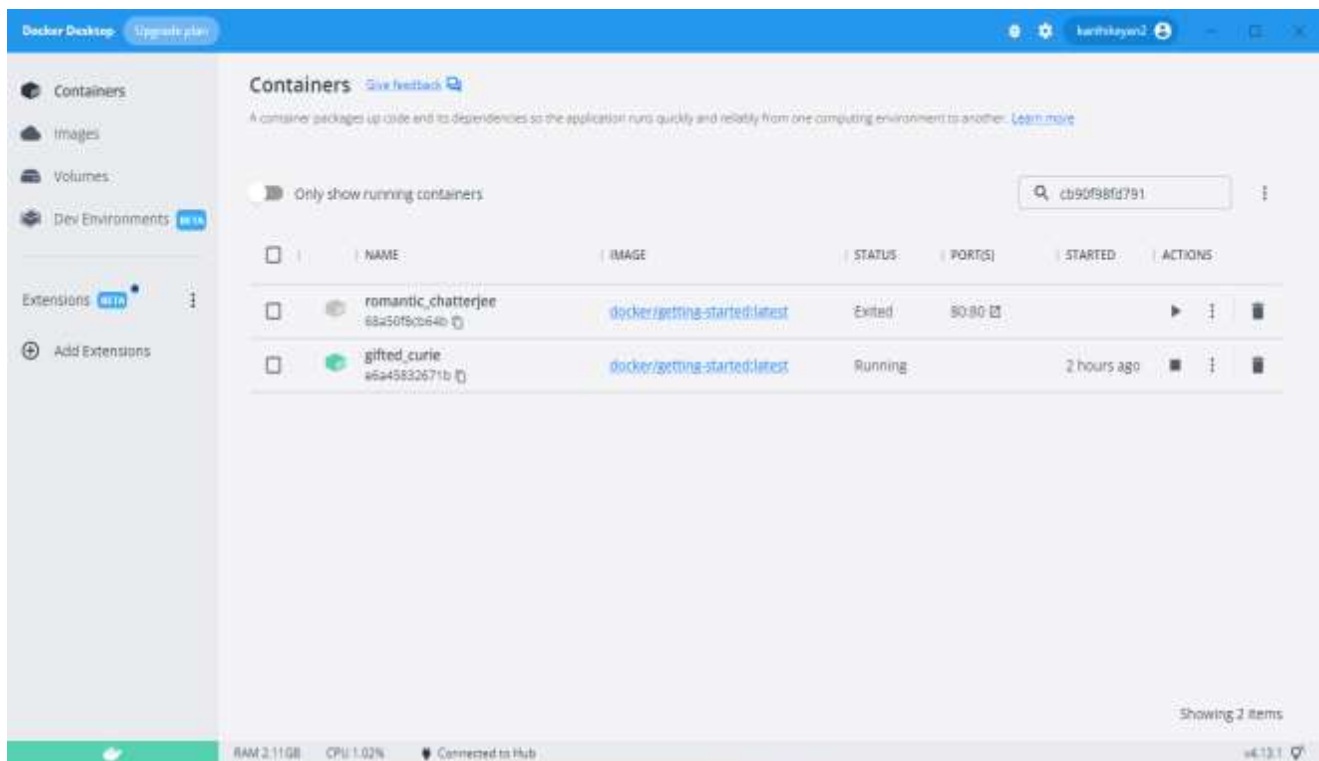
C:\Users\ADMIN>
```

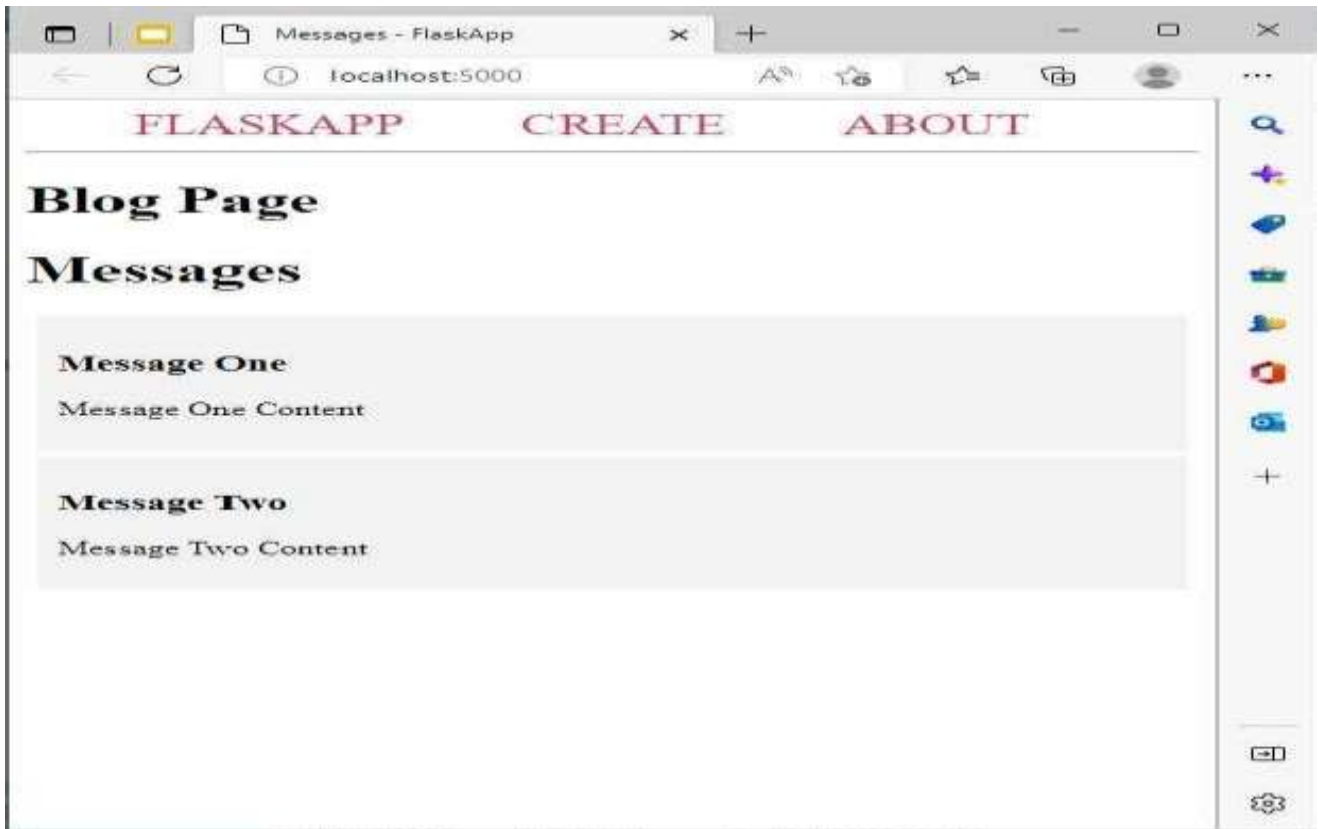
## 2) Run it in docker playground

```
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>
```

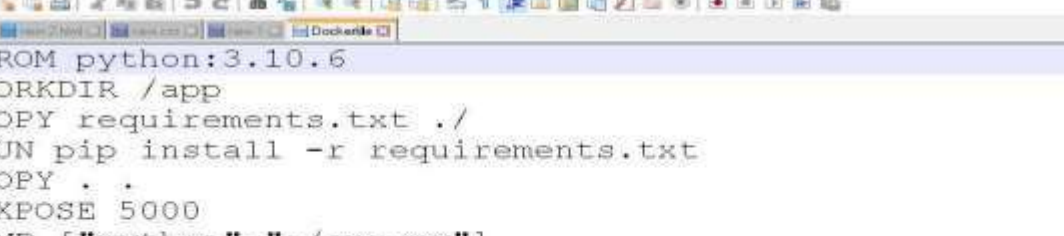




### Question-2:

**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 with the title bar "C:\Users\gan\Desktop\jeb\_ganta\Dockerfile - 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 tab bar shows "Dockerfile" as the active document. The text area contains 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 taskbar at the bottom shows a search bar and several application icons, including File Explorer, Edge, and others. The system tray on the right shows the date and time as "11/11/2023 11:58 AM".

## 2) Deploy in in docker application

```
C:\Users\ganil>Select C:\Windows\System32\cmd.exe
C:\Users\ganil\Desktop\job_portal>cd ..
C:\Users\ganil\Desktop>cd job_portal
C:\Users\ganil\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\ganil\Desktop\job_portal>dir
Volume in drive C has no label.
Volume Serial Number is B643-1098

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

10/25/2022  04:53 PM   <DIR>          .
10/25/2022  04:53 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  04:53 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 bytes free

C:\Users\ganil\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\ganil\Desktop\job_portal>docker build -t job_portal ,
[+] Building 463.0s (11/11) FINISHED
=> [internal] load build definition from Dockerfile
=> [internal] load Dockerfile /tmp
=> [internal] load .dockerignore
=> [internal] transfer context to docker daemon
=> [internal] load metadata for docker.io/library/python:3.9-slim
=> [stage] 1/4 FROM python:3.9-slim@sha256:b3c2e3d3f3333333333333333333333333333333333333333333333333333333
=> [stage] 2/4 WORKDIR /app
=> [stage] 3/4 COPY . /app
=> [stage] 4/4 RUN pip install -r requirements.txt
```



Containers


Images

Volumes

Dev Environments beta

Extensions beta

Add Extensions




<  fu... | ja.ioxio/ga...  
RUNNING

Logs

Inspect

Stats

CLI



\* Serving Flask app 'app'

\* Debug mode: on

WARNING: This is a development server. Do not use it in a production deployment. Use a production web server instead.

\* Running on all addresses (0.0.0.0)

\* Running on http://127.0.0.1:5000

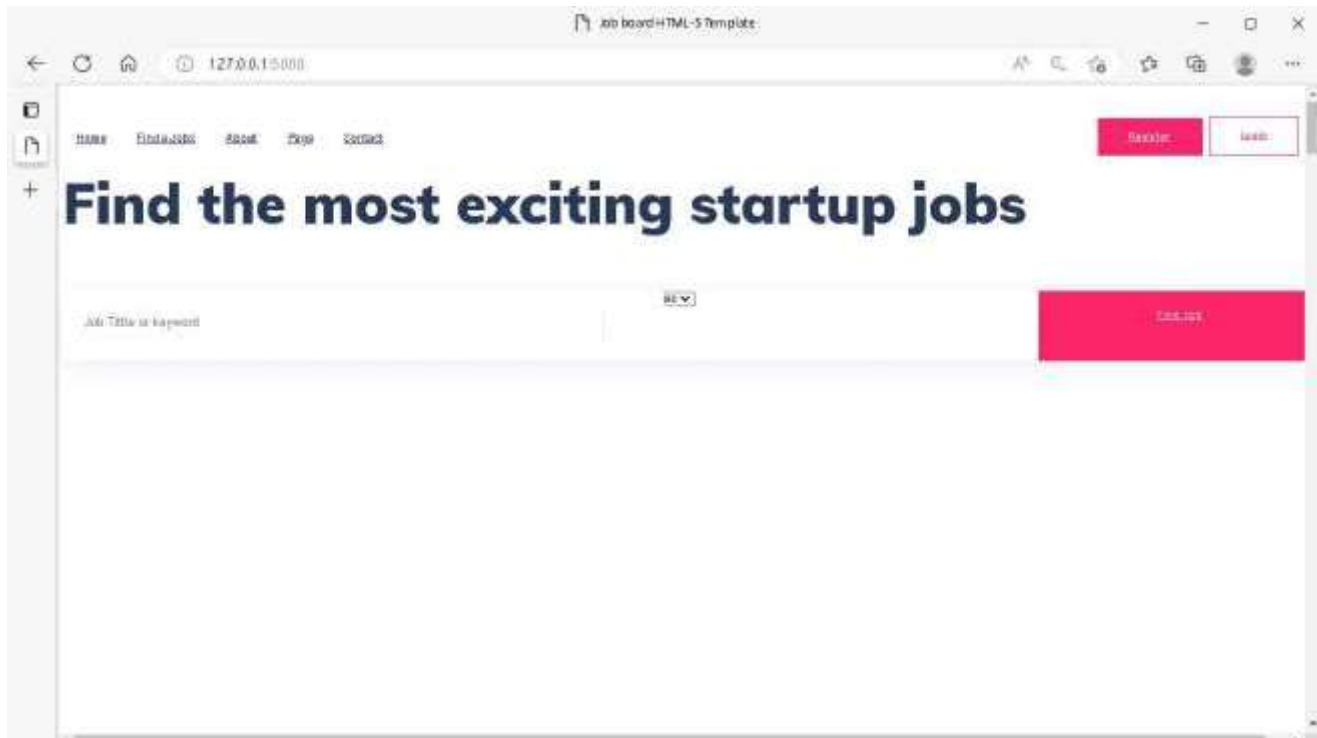
\* Running on http://172.17.0.2:5000

Press CTRL+C to quit

\* Restarting with stat

\* Debugger is active!

\* Debugger PIN: 535-023-572



### Question-3: Create a Ibm container registry and deploy helloworld app or jobportal app

#### 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. U
se '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
9ff6e4d6744: Waiting
e89d1d47b541: Waiting
055ed1b74428: 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]
1563b1584025: layer already exists
80e94fb5e186: Pushed
48c2a7a4c12b: layer already exists
9b72c7835466: layer already exists
bfc1deb8136e: layer already exists
1f123186024c: layer already exists
3d6eb1152931: Pushed
180796cdf3b1: Pushed
54acb5a6fa8b: Retrying in 1 second
8d51c618126f: Pushed
9ff6e4d6744: Pushed
e89d1d47b541: Pushed
055ed1b74428: Pushing [=====] 89.80MB/134MB
^C

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]
1563b1584025: layer already exists
80e94fb5e186: layer already exists
48c2a7a4c12b: layer already exists
9b72c7835466: layer already exists
bfc1deb8136e: layer already exists
1f123186024c: layer already exists
3d6eb1152931: layer already exists
180796cdf3b1: layer already exists
54acb5a6fa8b: Pushed
8d51c618126f: layer already exists
9ff6e4d6744: layer already exists
e89d1d47b541: layer already exists
055ed1b74428: Pushed
latest: digest: sha256:e92189a7c97eeb9908660a54e896cf61a46eda939996c8c7a2147a7961fc207 size: 3852

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



cloud.ibm.com/registry/repos

IBM Cloud

CatalogManage

Container Registry

Quick start

Namespaces2

Repositories2

Images2

Trash0

Settings



Repositories

Location

Tokyo

Search

Create

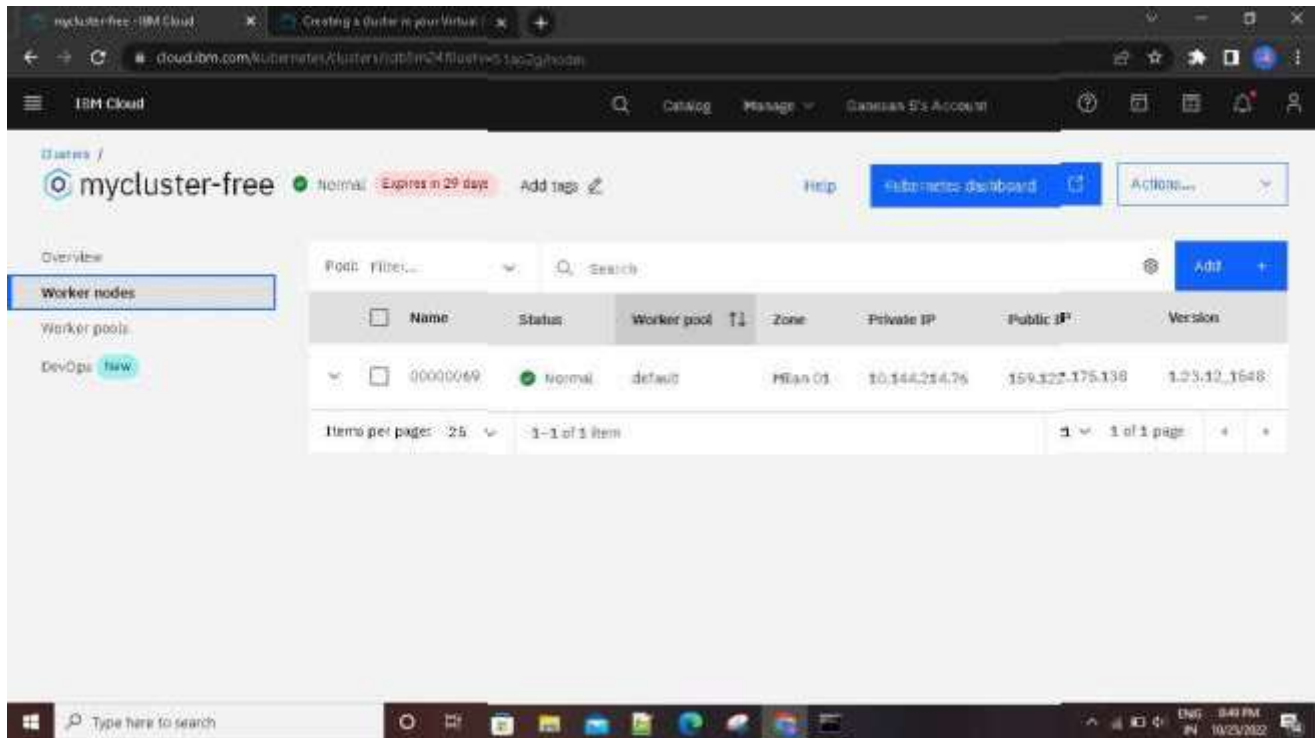
<input type="checkbox"/>	Name	Image count	Namespace	Last update
<input type="checkbox"/>	 job_portal js.vcr.io/ganeshjob/job_portal	1	ganeshjob	1 day
<input type="checkbox"/>	 docker_with_flask_form js.vcr.io/newnamespace/docker_with_flask_form	1	newnamespace	4 days

Items per page: 251-2 of 2 items11 of 1 page

#### 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/cdb5m3n0uehvv51ao2g/service/#/pod?namespace=default

kubernetes default Search

Workloads > Pods

Workloads

- Ono 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

U 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_0-101	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	21.4MB	5 minutes ago
flask-app-79447b5c8c-vzyp	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/cdb5m3n0uehvv51ao2g/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
- Namespaces

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

```
lving flask app 'app'
ug model on
40[InkRR03N6: This is a development server. Do not use it in a production deployment. Use a production WSGI server instead.]0m
ning on all addresses (0.0.0.0)
ning on http://127.0.0.1:5000
ning on http://172.28.23.11:5000
Press CTRL-C to quit[0m
starting with stat
sugger is active!
sugger PIN: 316-487-149
```

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
^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

```