

Assignment - 4

Kubernetes / Docker

Assignment Date	11 November 2022
Student Name	KANNAN M
Student Register Number	822719104024
Maximum Marks	2 Marks

Question-1:

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

Solution:

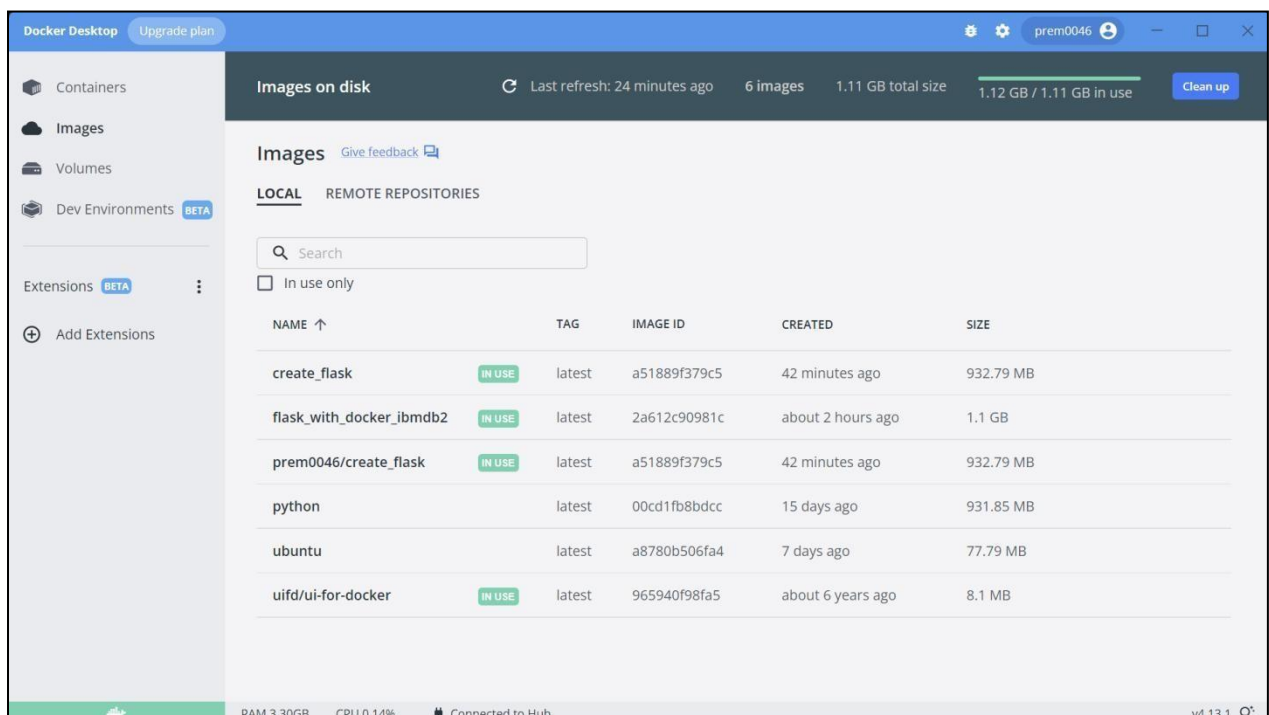
docker pull uifd/ui-for-docker - command is used to pull an image from docker hub using command prompt.

```
C:\Users\Dhana Pragathish>docker pull nginx
Using default tag: latest
latest: Pulling from library/nginx
a603fa5e3b41: Pull complete
c39e1cda007e: Pull complete
90cfe7ba34d7: Pull complete
a38226fb7aba: Pull complete
62583498bae6: Pull complete
9002a2cfd08d: Pull complete
Digest: sha256:e209ac2f37c70c1e0e9873a5f7231e91dc83fd71178d8ed36c2ec09974210ba
Status: Downloaded newer image for nginx:latest
docker.io/library/nginx:latest

C:\Users\Dhana Pragathish>docker images
REPOSITORY              TAG         IMAGE ID      CREATED      SIZE
nginx                   latest      88736fe82739  6 days ago   142MB
dailycodebuffer/docker/getting-started latest      cb90f98fd791  7 months ago 28.8MB
docker/getting-started  latest      cb90f98fd791  7 months ago 28.8MB

C:\Users\Dhana Pragathish>
```

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.

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
f606d8928ed3: Pull complete
47db815c6a45: Pull complete
bf4849400000: Pull complete
a572fa256d3: Pull complete
8f7d05258955: Pull complete
711d0f04115ae: Pull complete
c4b413c6a489: Pull complete
22311b72a3cb: Pull complete
8dcbe38b6fa: Pull complete
9b05935b0f2c: Pull complete
2f1a0c141488: Pull complete
07a24093a86e: 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 ~
\$

Docker API Version: 1.41 UI Version: v0.11.0

UI For Docker

UI For Docker

Dashboard

Containers

Containers Network

Images

Info

Refresh

Running Containers

Status

Containers created

Images created

Docker API Version: UI Version: v0.11.0

UI For Docker

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                                0.0s
=> => transferring dockerfile: 184B                                              0.0s
=> [internal] load .dockerignore                                                 0.0s
=> => transferring context: 2B                                                  0.0s
=> [internal] load metadata for docker.io/library/python:3.10.7                2.7s
=> [auth] library/python:pull token for registry-1.docker.io                  0.0s
=> [internal] load build context                                                0.0s
=> => transferring context: 545B                                                0.0s
=> [1/5] FROM docker.io/library/python:3.10.7@sha256:53e577204d362233ee92aeb5119449271f5eb24f99c61464efe9167ddbc 0.0s
=> CACHED [2/5] WORKDIR /app                                                    0.0s
=> CACHED [3/5] COPY requirements.txt ./                                        0.0s
=> CACHED [4/5] RUN pip install -r requirements.txt                            0.0s
=> [5/5] COPY . .                                                              0.0s
=> exporting to image                                                          0.0s
=> => exporting layers                                                          0.0s
=> => writing image sha256:02b4aa4395a168417d48df9b210b540aa95f54c9fc72aa4aaa2340c793c8cf1b 0.0s
=> => naming to docker.io/library/hello_world                                  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>
```

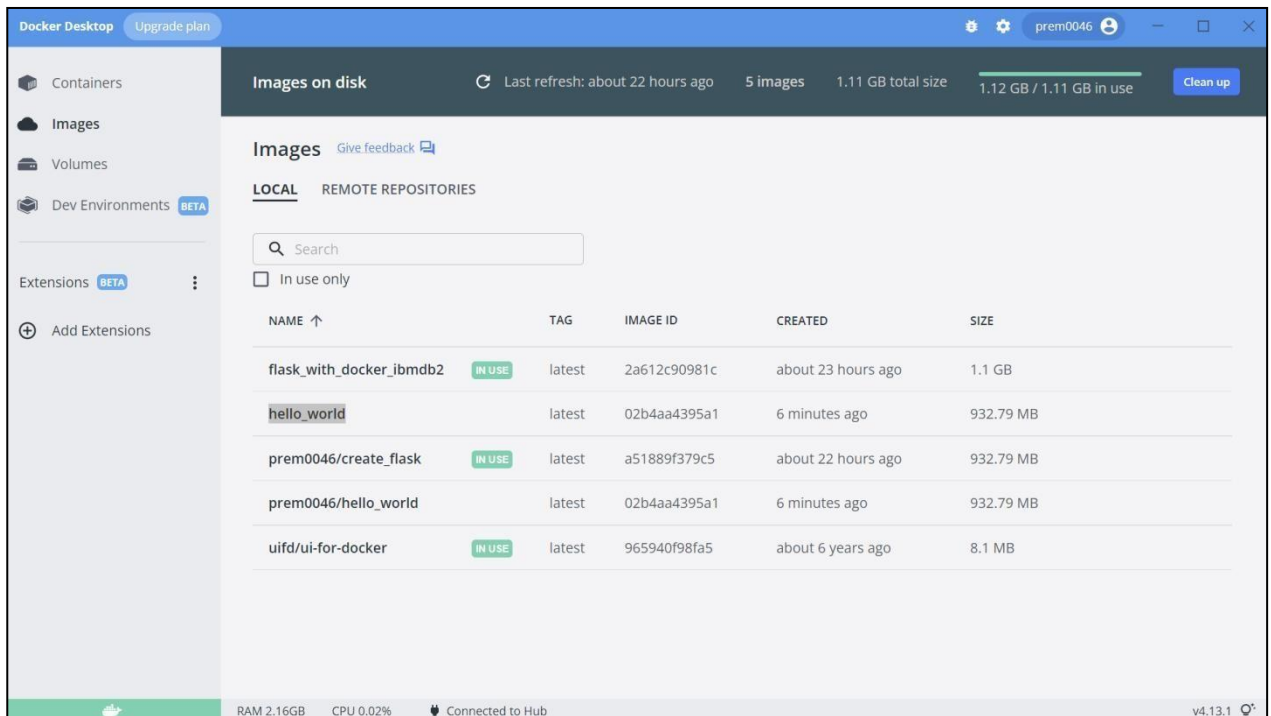
Pushing the image into repository in docker hub:

```
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

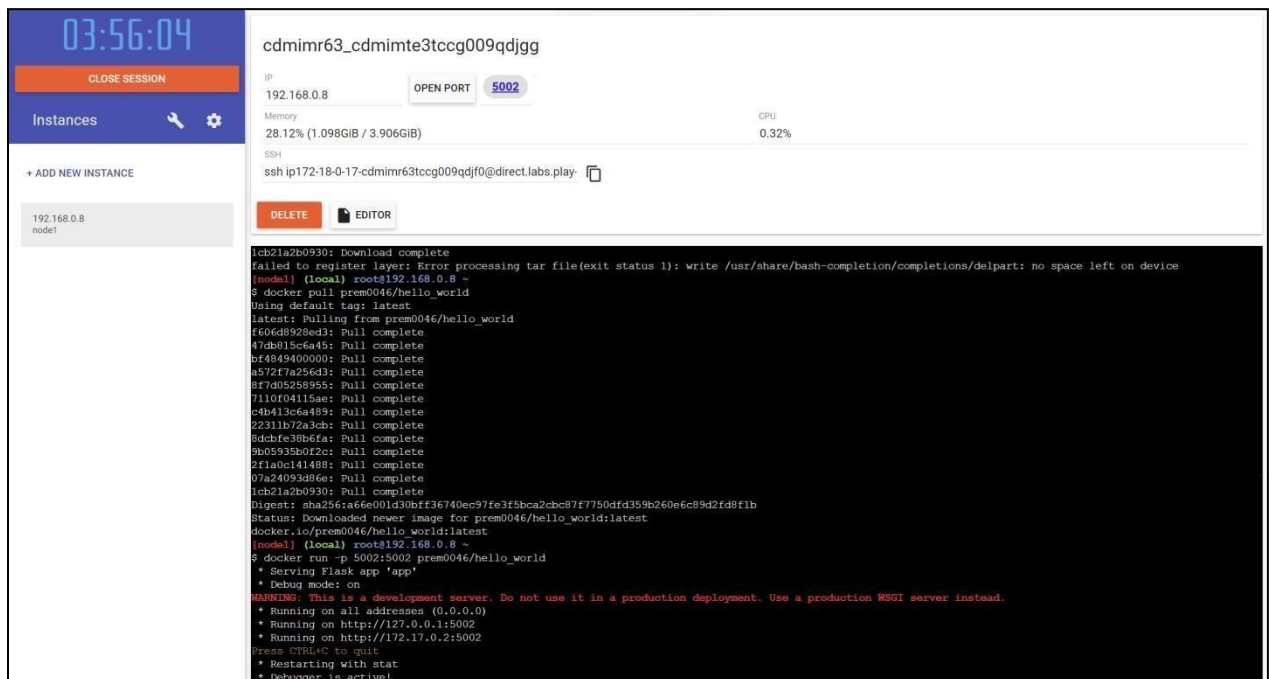
Logging in with your password grants your terminal complete access to your account.
For better security, log in with a limited-privilege personal access token. Learn more at https://docs.docker.com/go/access-tokens/

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
af399be408aa: 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
955c9335e0d1: Mounted from prem0046/create_flask
8e079fee2186: Mounted from prem0046/create_flask
latest: digest: sha256:a66e081d30bff36740ec97fe3f5bca2cbc87f7750dfd359b260e6c89d2fd8f1b size: 3050

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



Testing it using docker playground:




```
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
90b70bc0510f: Pushed
cf399be408ea: Pushed
793b971cc099: Pushed
d172a9e6f9e6: Pushed
0c7daf9a72c8: Pushed
75ba02937496: Pushed
288cf3a46e32: Pushed
186da837555d: Pushed
955c9335e041: Pushed
8e079fee2186: Pushed
latest: digest: sha256:a66e01d30bff36740ec97fe3f5bca2cbc87f7750dfd359b260e6c89d2fd8f1b size: 3050

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

Repository      Created      Size      Tag      Digest      Namespace      Security status
icr.io/create_flask/hello_world  latest      a66e01d30bf  create_flask  19 hours ago  356 MB  -

OK
```

IBM Cloud

Search resources and products...

Container Registry

Quick start

Namespaces 1

Repositories 1

Images 1

Trash 0

Settings

Repositories

Location: Global

Search

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

Items per page: 25 1-1 of 1 item

Create +

```
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

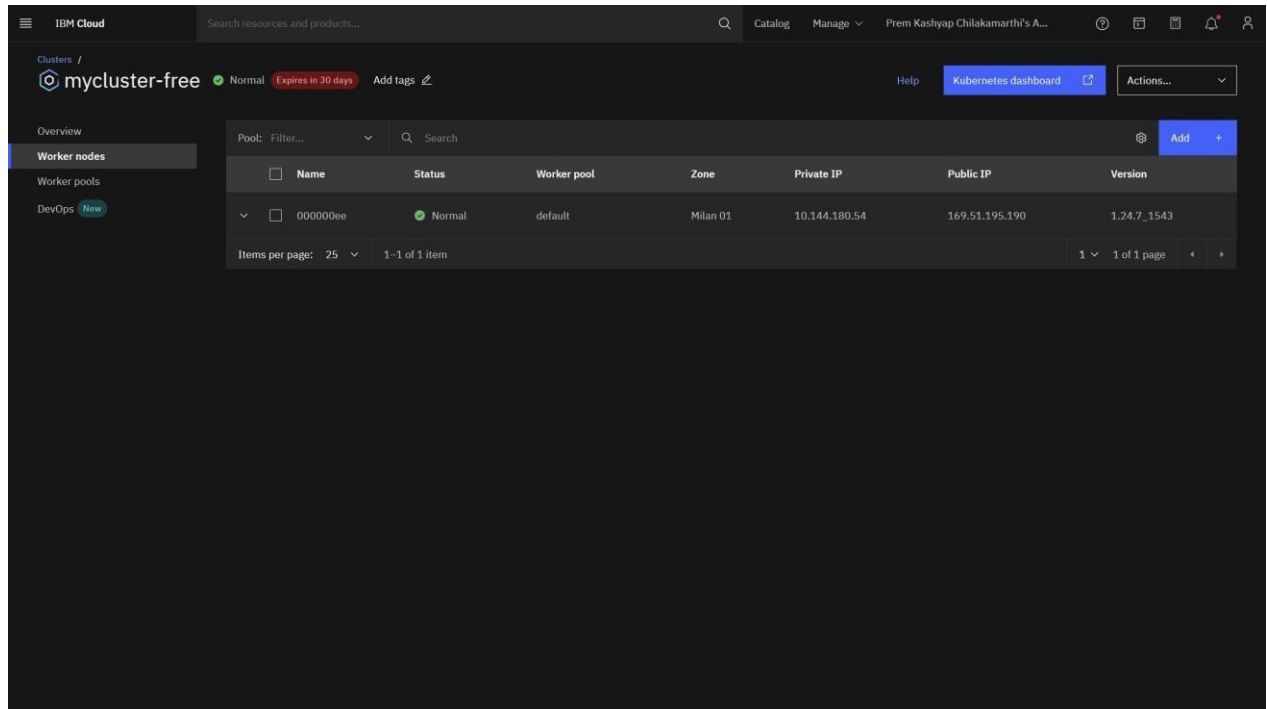
127.0.0.1:5002

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



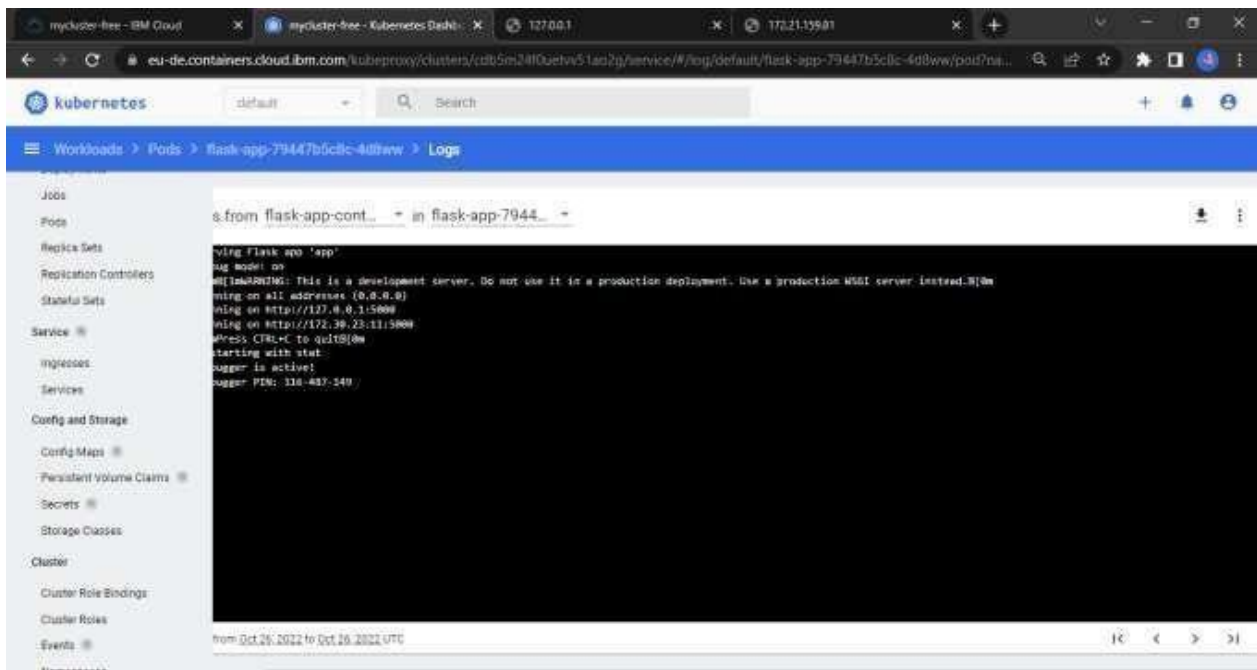
```
C:\Users\gani\Desktop>cd deploy
The system cannot find the path specified.

C:\Users\gani\Desktop>kubect1 apply -f kubernetes/depoly.yaml
error: the path "kubernetes/depoly.yaml" does not exist

C:\Users\gani\Desktop>kubect1 apply -f depoly.yaml
error: the path "depoly.yaml" does not exist

C:\Users\gani\Desktop>kubect1 apply -f C:\Users\gani\Desktop\deploy.yaml
deployment.apps/flask-app created

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

```

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 kubernetesh-dashboard get deploy
No resources found in kubernetesh-dashboard namespace.
C:\Windows\system32>kubectl -n kubernetesh-dashboard get deploy
No resources found in kubernetesh-dashboard namespace.
C:\Windows\system32>kubectl proxy
Starting to serve on 127.0.0.1:8081
C:\Windows\system32>kubectl -n kubernetesh-dashboard get deploy
No resources found in kubernetesh-dashboard namespace.
C:\Windows\system32>kubectl -n kubernetesh-dashboard get pods
No resources found in kubernetesh-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

```