Assignment -4

Kubernetes / Docker

Assignment Date	19 September 2022
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Maximum Marks	2 Marks

Question-1:

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

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

Code:

app.py

```
from flask import Flask

app = Flask(__name__)
@app.route('/')
def hello_world():
   return 'Hello World'

if __name__ == '__main__':
   app.run(debug=True,host="0.0.0.0")
```

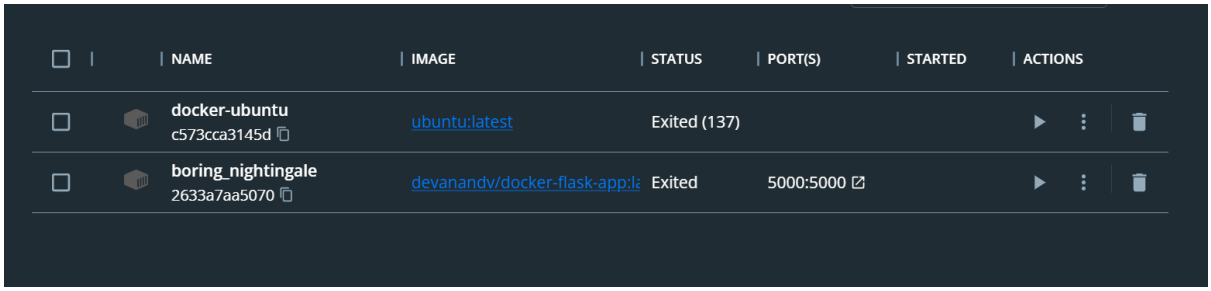
DockerFile

```
FROM python:3.10.7
RUN mkdir /app
WORKDIR /app
ADD  . /app
COPY . /app
RUN python3 -m pip install -r requirements.txt
EXPOSE 5000
CMD [ "python3", "./app.py" ]
```

Docker images

```
(venv) D:\Project submission\IBM\docker-flask-app>docker images
REPOSITORY                  TAG       IMAGE ID       CREATED        SIZE
devanandv/docker-flask-app  latest    39a320be08d8   2 hours ago    973MB
docker-flask-app            latest    39a320be08d8   2 hours ago    973MB
ubuntu                      latest    a8780b506fa4   40 hours ago   77.8MB
```

Docker containers



Docker playground:

Pulled the repository in docker playground.

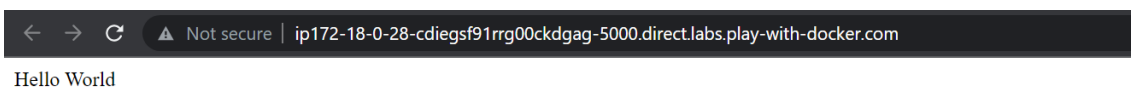
```
[node1] (local) root@192.168.0.13 ~
$ docker pull devanandv/docker-flask-app:latest
latest: Pulling from devanandv/docker-flask-app
f606d8928ed3: Pull complete
47db815c6a45: Pull complete
bf4849400000: Pull complete
a572f7a256d3: Pull complete
```

```
Digest: sha256:3e5554718487551e1ae1db29542870fa2c8ae82713637ae0a1d9e4f6d0f1bf1e
Status: Downloaded newer image for devanandv/docker-flask-app:latest
docker.io/devanandv/docker-flask-app:latest
[node1] (local) root@192.168.0.13 ~
$ docker images
REPOSITORY                  TAG       IMAGE ID       CREATED        SIZE
devanandv/docker-flask-app  latest    39a320be08d8   2 hours ago    973MB
[node1] (local) root@192.168.0.13 ~
$
```

Running on the docker play ground

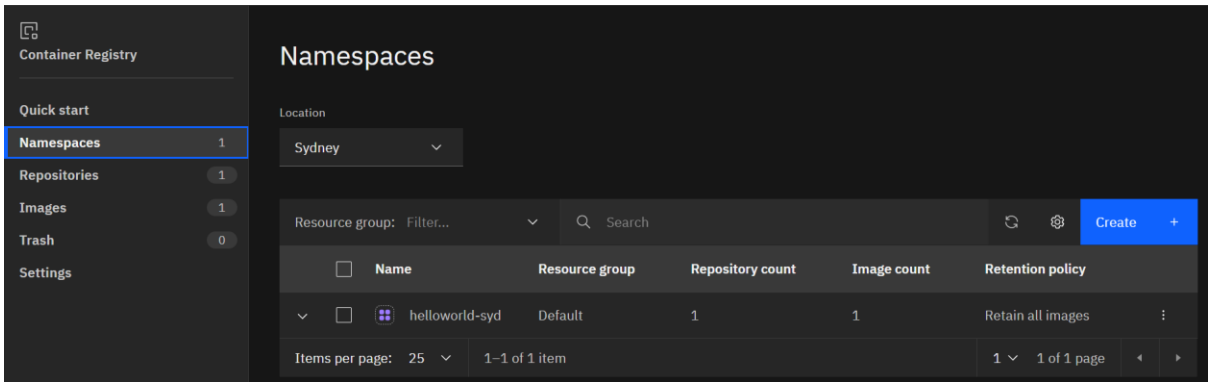
```
^C[node1] (local) root@192.168.0.13 ~
$ docker run -p 5000:5000 devanandv/docker-flask-app
 * Serving Flask app 'app'
 * Debug mode: on
WARNING: This is a development server. Do not use it in a producti
er instead.
 * Running on all addresses (0.0.0.0)
 * Running on http://127.0.0.1:5000
 * Running on http://172.17.0.2:5000
Press CTRL+C to quit
 * Restarting with stat
 * Debugger is active!
 * Debugger PIN: 621-054-813
```

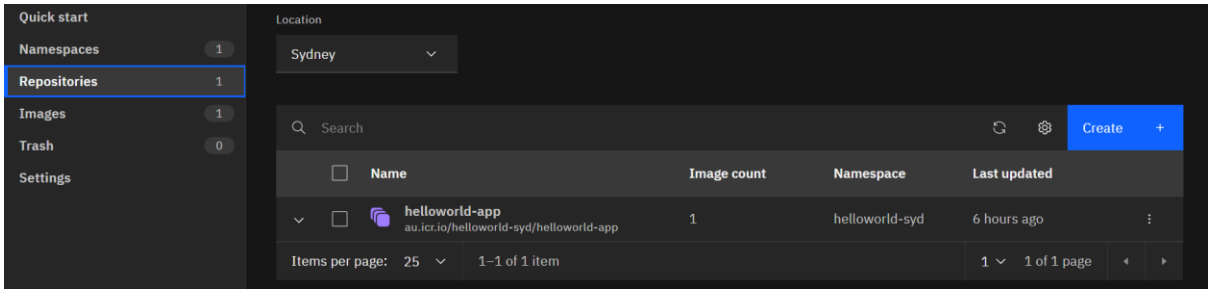
Outpu:

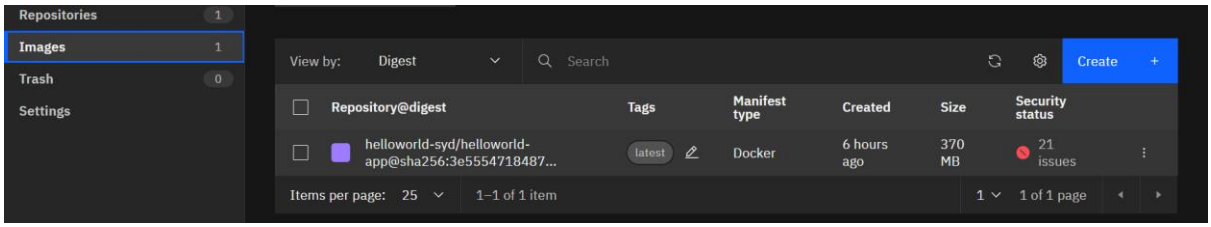


Hello World

3.Create a IBM container registry and deploy helloworld app or jobportalapp.



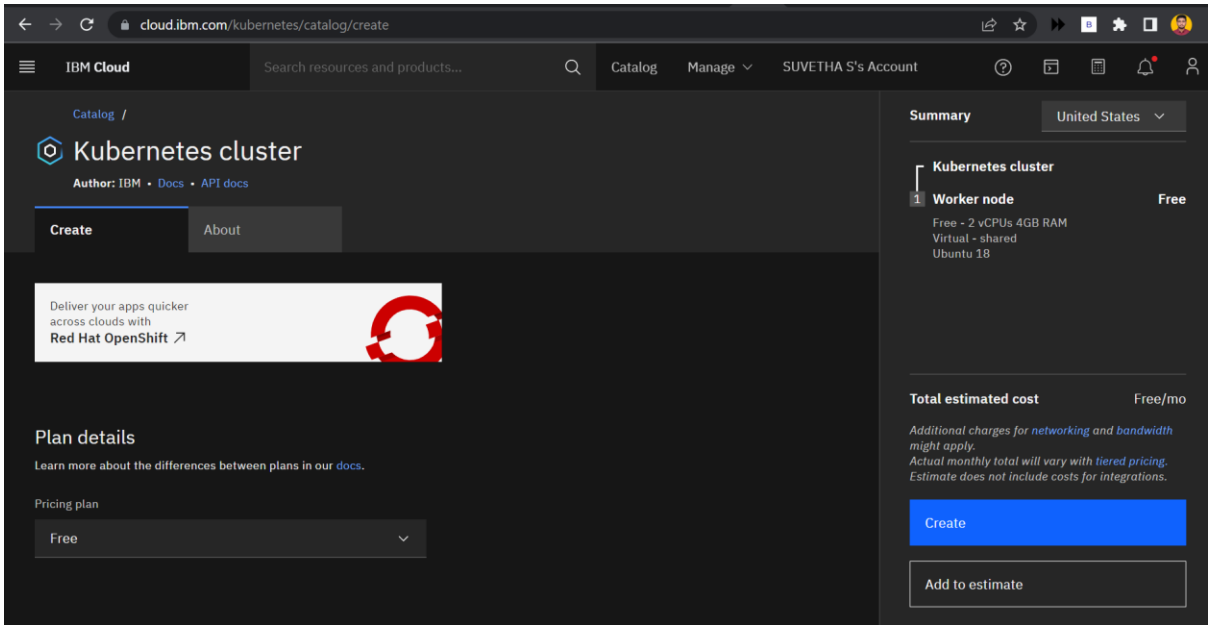




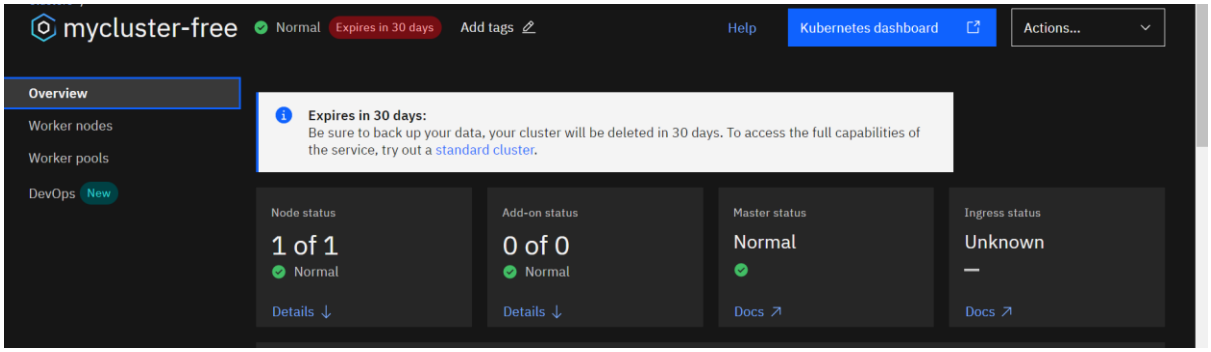

```
(venv) D:\Project submission\IBM\docker-flask-app>docker run -p 5000:5000 au.icr.io/helloworld-syd/helloworld-app
 * Serving Flask app 'app'
 * Debug mode: on
WARNING: This is a development server. Do not use it in a production deployment. Use a production WSGI server instead.
 * Running on all addresses (0.0.0.0)
 * Running on http://127.0.0.1:5000
 * Running on http://172.17.0.2:5000
Press CTRL+C to quit
 * Restarting with stat
 * Debugger is active!
 * Debugger PIN: 105-209-076
172.17.0.1 - - [04/Nov/2022 14:34:06] "GET / HTTP/1.1" 200 -
172.17.0.1 - - [04/Nov/2022 14:34:07] "GET /favicon.ico HTTP/1.1" 404 -
172.17.0.1 - - [04/Nov/2022 14:34:22] "GET / HTTP/1.1" 200 -
```

4.Create a Kubernetes cluster in IBM cloud and deploy helloworld image or

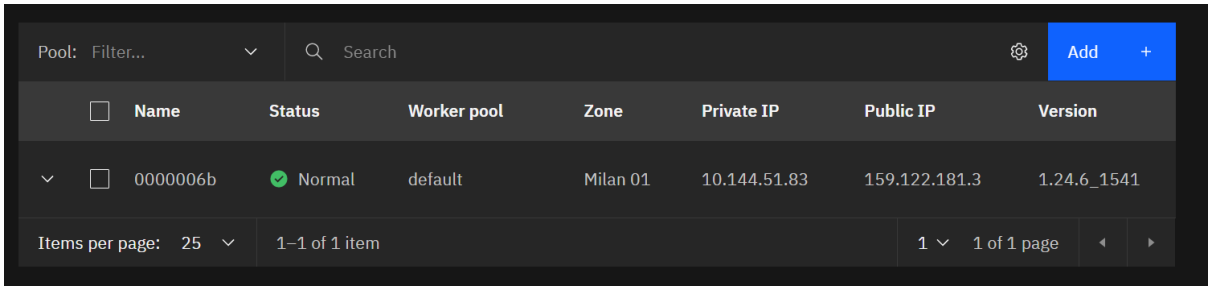
jobportal image and also expose the same app to run in nodeport.



Kuberneters cluster:



Worker nodes:




```
D:\Project submission\IBM\Dashboard\front-dashboard - Copy>kubectl get pods
NAME                                    READY   STATUS             RESTARTS   AGE
flask-node-deployment-6d95494f58-drc2c  0/1     ImagePullBackOff   0          25m
kubernetes-web-app-deployment           1/1     Running            0          30m

D:\Project submission\IBM\Dashboard\front-dashboard - Copy>kubectl logs kubernetes-web-app-depl
```

Services:

```
(venv) D:\Project submission\IBM\docker-flask-app>kubectl get services
NAME                            TYPE        CLUSTER-IP      EXTERNAL-IP   PORT(S)          AGE
flask-node-deployment           ClusterIP   172.21.235.94   <none>        5000/TCP         9m22s
flask-node-deployment-service   NodePort    172.21.251.53   <none>        5000:31760/TCP   25s
kubernetes                      ClusterIP   172.21.0.1      <none>        443/TCP          76m

(venv) D:\Project submission\IBM\docker-flask-app>kubectl describe flask-node-deployment-service
```

```
(venv) D:\Project submission\IBM\docker-flask-app>ibmcloud ks workers -c mycluster-free
OK
ID                                                  Public IP       Private IP     Flavor   State    Status
 Zone    Version
kube-cdj8ehvf0knfre1fitf0-myclusterfr-default-0000006b   159.122.181.3   10.144.51.83   free     normal   Ready
 mil01   1.24.6_1541

(venv) D:\Project submission\IBM\docker-flask-app>
```

```
(venv) D:\Project submission\IBM\docker-flask-app>kubectl logs kubernetes-web-app-deployment
 * 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 inst
ead.
 * Running on all addresses (0.0.0.0)
 * Running on http://127.0.0.1:5000
 * Running on http://172.30.237.139:5000
Press CTRL+C to quit
 * Restarting with stat
 * Debugger is active!
 * Debugger PIN: 271-855-817
```