

Assignment -4
Kubernetes / Docker

Assignment Date	19 September 2022
Student Name	DEVANAND V
Student Roll Number	7376192IT192
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

<input type="checkbox"/>	NAME	IMAGE	STATUS	PORT(S)	STARTED	ACTIONS
<input type="checkbox"/>	 docker-ubuntu c573cca3145d 	ubuntu:latest	Exited (137)			  
<input type="checkbox"/>	 boring_nightingale 2633a7aa5070 	devanandv/docker-flask-app:latest	Exited	5000:5000 		  

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 ~
$
```

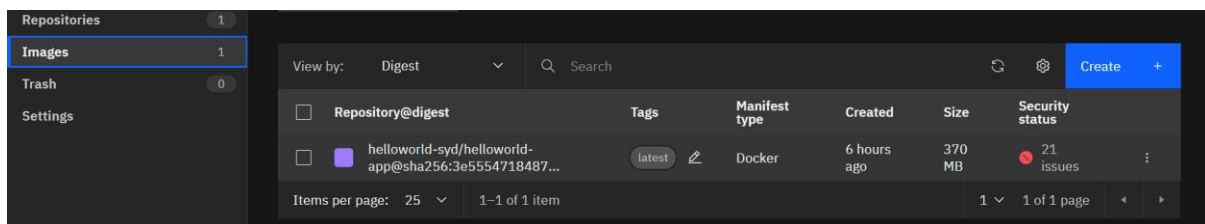
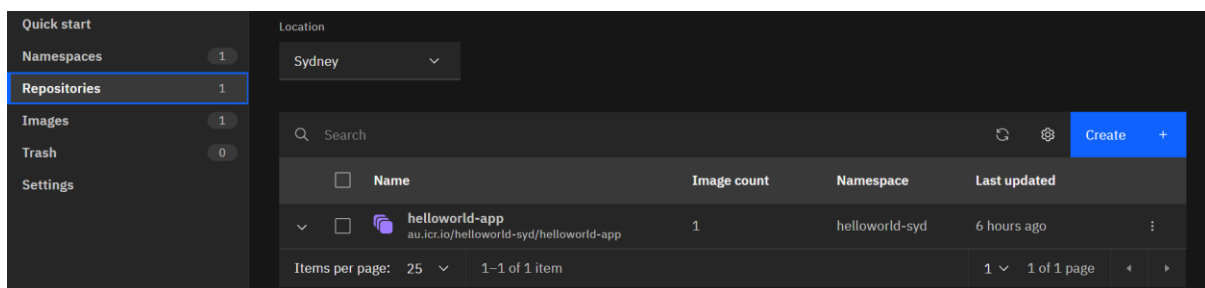
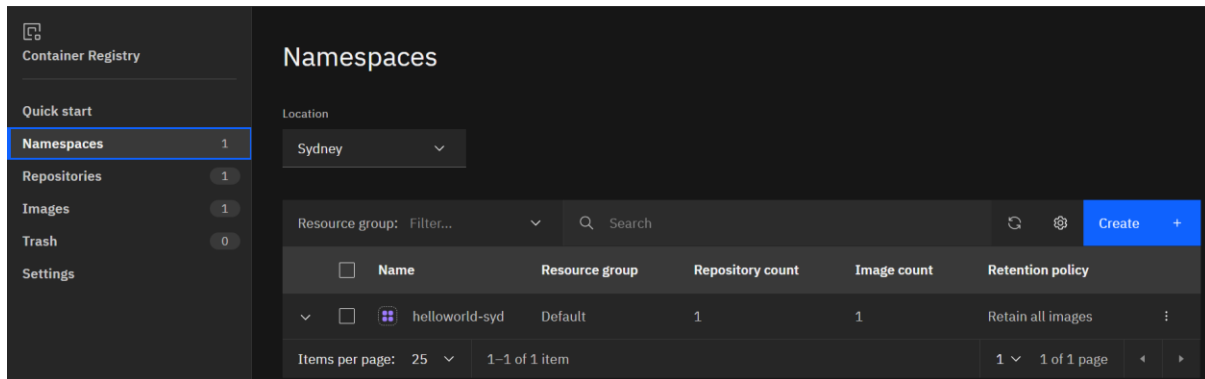
Running on the docker play ground

```
^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 production
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
```

Output:

```
← → ↻ ⚠ Not secure | ip172-18-0-28-cdiegsf91rrg00ckdgag-5000.direct.labs.play-with-docker.com
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.

cloud.ibm.com/kubernetes/catalog/create

IBM Cloud

Search resources and products...

Catalog Manage SUVETHA S's Account

Kubernetes cluster

Author: IBM • Docs • API docs

Create About

Deliver your apps quicker across clouds with Red Hat OpenShift

Plan details

Learn more about the differences between plans in our docs.

Pricing plan

Free

Summary

United States

Kubernetes cluster

1 Worker node Free

Free - 2 vCPUs 4GB RAM
Virtual - shared
Ubuntu 18

Total estimated cost Free/mo

Additional charges for networking and bandwidth might apply.
Actual monthly total will vary with tiered pricing.
Estimate does not include costs for integrations.

Create

Add to estimate

Kuberneters cluster:

mycluster-free

Normal Expires in 30 days Add tags

Help Kubernetes dashboard Actions...

Overview

Worker nodes

Worker pools

DevOps New

Expires in 30 days: Be sure to back up your data, your cluster will be deleted in 30 days. To access the full capabilities of the service, try out a standard cluster.

Node status

1 of 1 Normal

Details

Add-on status

0 of 0 Normal

Details

Master status

Normal

Docs

Ingress status

Unknown

Docs

Worker nodes:

Pool: Filter...		Search						Add	
<input type="checkbox"/>	Name	Status	Worker pool	Zone	Private IP	Public IP	Version		
<input type="checkbox"/>	0000006b	Normal	default	Milan 01	10.144.51.83	159.122.181.3	1.24.6_1541		
Items per page: 25		1-1 of 1 item				1	1 of 1 page		

```
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-deployment
```

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 instead.
* 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 PTN: 271-855-817
```