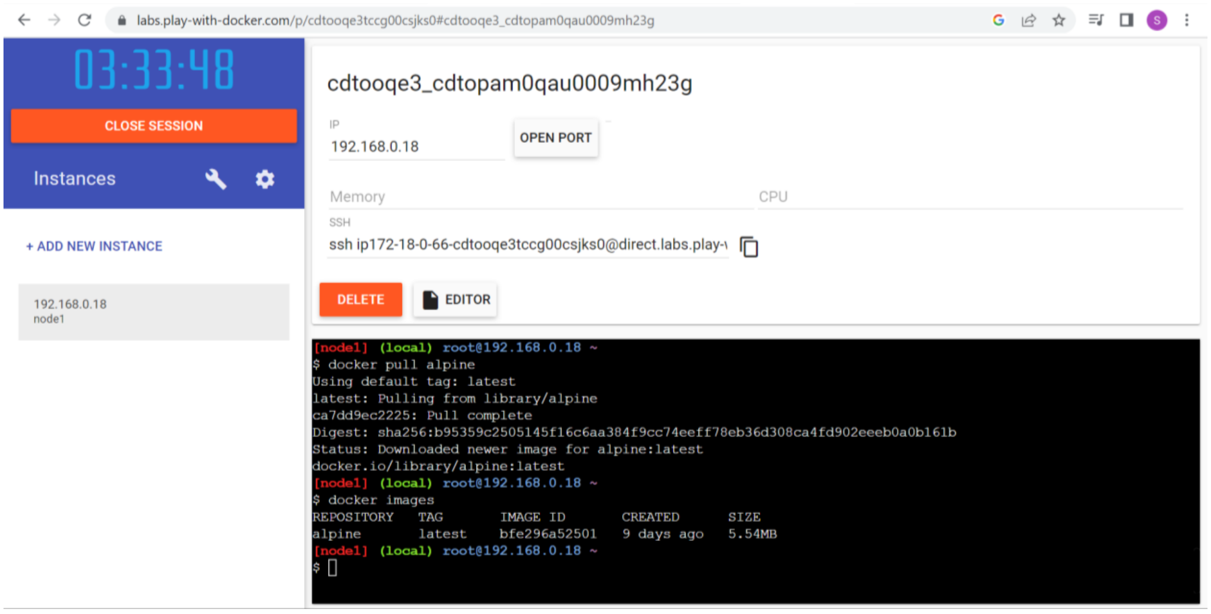
ASSIGNMENT 4

Assignment Date	27 October 2022
Student Name	Shashi D
Student Roll Number	2019103609
Maximum Marks	2 marks

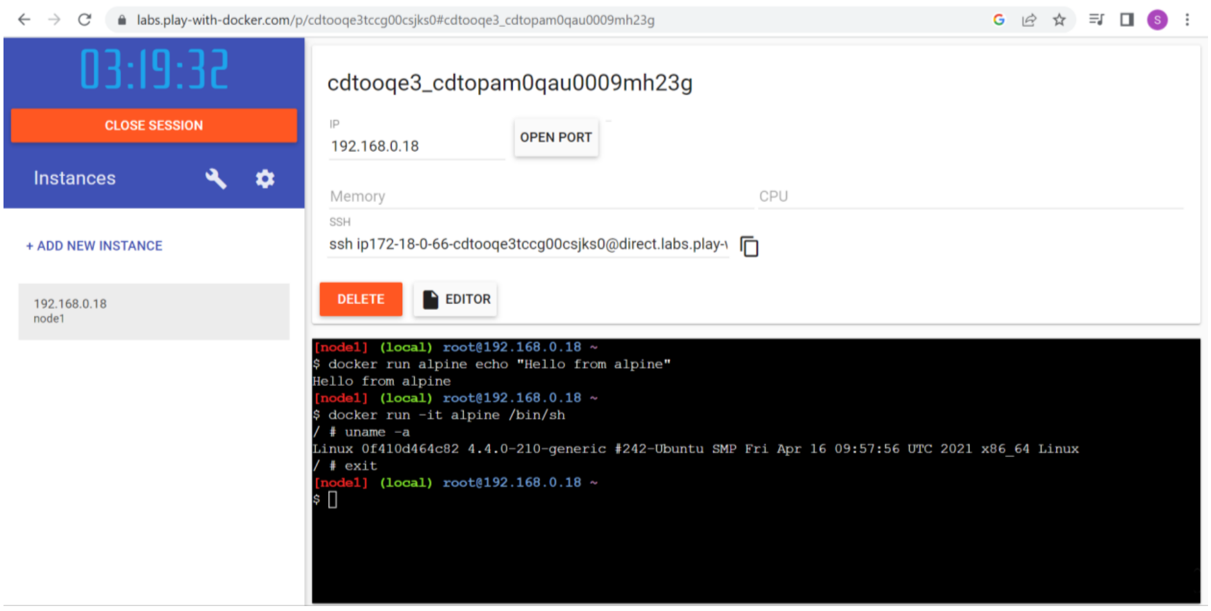
1. Pull an Image from docker hub and run it in docker playground

Pulling alpine


labs.play-with-docker.com/p/cdtooqe3tccg00csjks0#cdtooqe3_cdtopam0qau0009mh23g
03:33:48
CLOSE SESSION
Instances
+ ADD NEW INSTANCE
192.168.0.18
node1
cdtooqe3_cdtopam0qau0009mh23g
IP
192.168.0.18
OPEN PORT
Memory
CPU
SSH
ssh ip172-18-0-66-cdtooqe3tccg00csjks0@direct.labs.play-
DELETE
EDITOR

```
[node1] (local) root@192.168.0.18 ~
$ docker pull alpine
Using default tag: latest
latest: Pulling from library/alpine
ca7dd9ec2225: Pull complete
Digest: sha256:b95359c2505145f16c6aa384f9cc74eeff78eb36d308ca4fd902eeeb0a0b161b
Status: Downloaded newer image for alpine:latest
docker.io/library/alpine:latest
[node1] (local) root@192.168.0.18 ~
$ docker images
REPOSITORY   TAG       IMAGE ID       CREATED      SIZE
alpine       latest    bfe296a52501   9 days ago   5.54MB
[node1] (local) root@192.168.0.18 ~
$ 
```

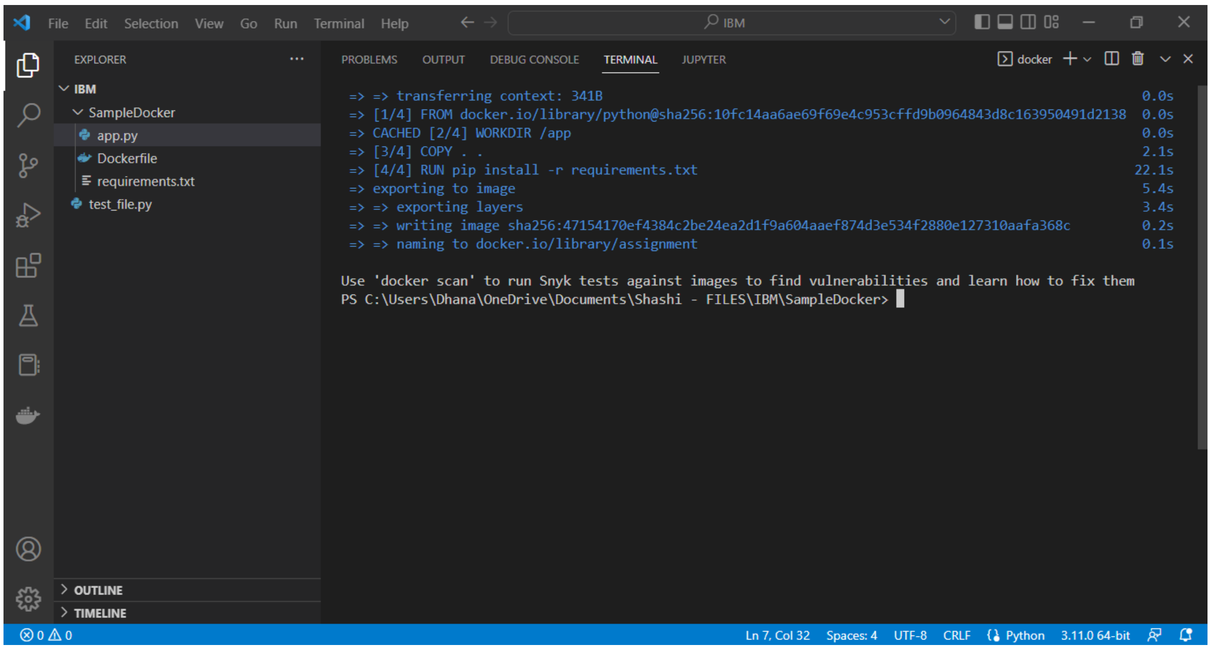
Running alpine on docker playground


labs.play-with-docker.com/p/cdtooqe3tccg00csjks0#cdtooqe3_cdtopam0qau0009mh23g
03:19:32
CLOSE SESSION
Instances
+ ADD NEW INSTANCE
192.168.0.18
node1
cdtooqe3_cdtopam0qau0009mh23g
IP
192.168.0.18
OPEN PORT
Memory
CPU
SSH
ssh ip172-18-0-66-cdtooqe3tccg00csjks0@direct.labs.play-
DELETE
EDITOR

```
[node1] (local) root@192.168.0.18 ~
$ docker run alpine echo "Hello from alpine"
Hello from alpine
[node1] (local) root@192.168.0.18 ~
$ docker run -it alpine /bin/sh
/ # uname -a
Linux 0f410d464c82 4.4.0-210-generic #242-Ubuntu SMP Fri Apr 16 09:57:56 UTC 2021 x86_64 Linux
/ # exit
[node1] (local) root@192.168.0.18 ~
$ 
```

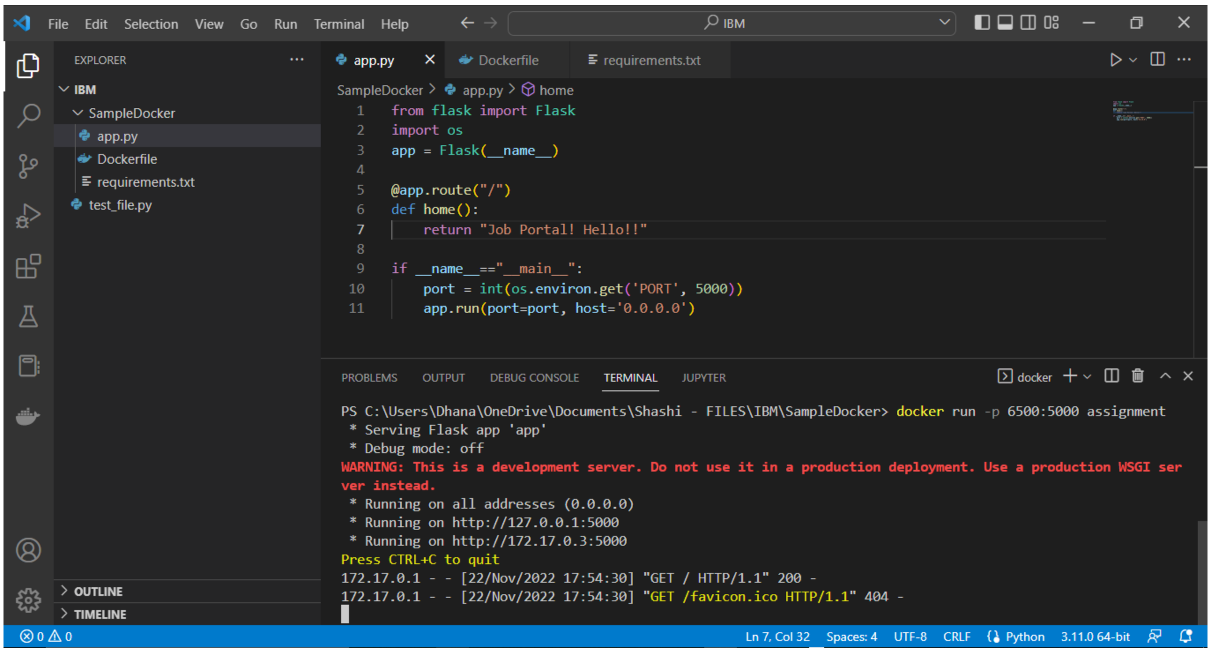
2. Create a docker file for the jobportal or hello world application and deploy it in Docker desktop application.

Build Docker Images from docker file



```
 => => transferring context: 341B                                                                   0.0s
 => [1/4] FROM docker.io/library/python@sha256:10fc14aa6ae69f69e4c953cffd9b0964843d8c163950491d2138  0.0s
 => CACHED [2/4] WORKDIR /app                                                                       0.0s
 => [3/4] COPY . .                                                                                  2.1s
 => [4/4] RUN pip install -r requirements.txt                                                      22.1s
 => exporting to image                                                                              5.4s
 => => exporting layers                                                                             3.4s
 => => writing image sha256:47154170ef4384c2be24ea2d1f9a604aaef874d3e534f2880e127310aafa368c        0.2s
 => => naming to docker.io/library/assignment                                                       0.1s

Use 'docker scan' to run Snyk tests against images to find vulnerabilities and learn how to fix them
PS C:\Users\Dhana\OneDrive\Documents\Shashi - FILES\IBM\SampleDocker>
```

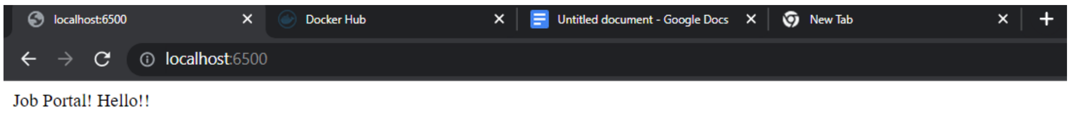
Run container



```python
from flask import Flask
import os
app = Flask(__name__)

@app.route("/")
def home():
    return "Job Portal! Hello!!"

if __name__=="__main__":
    port = int(os.environ.get('PORT', 5000))
    app.run(port=port, host='0.0.0.0')
```

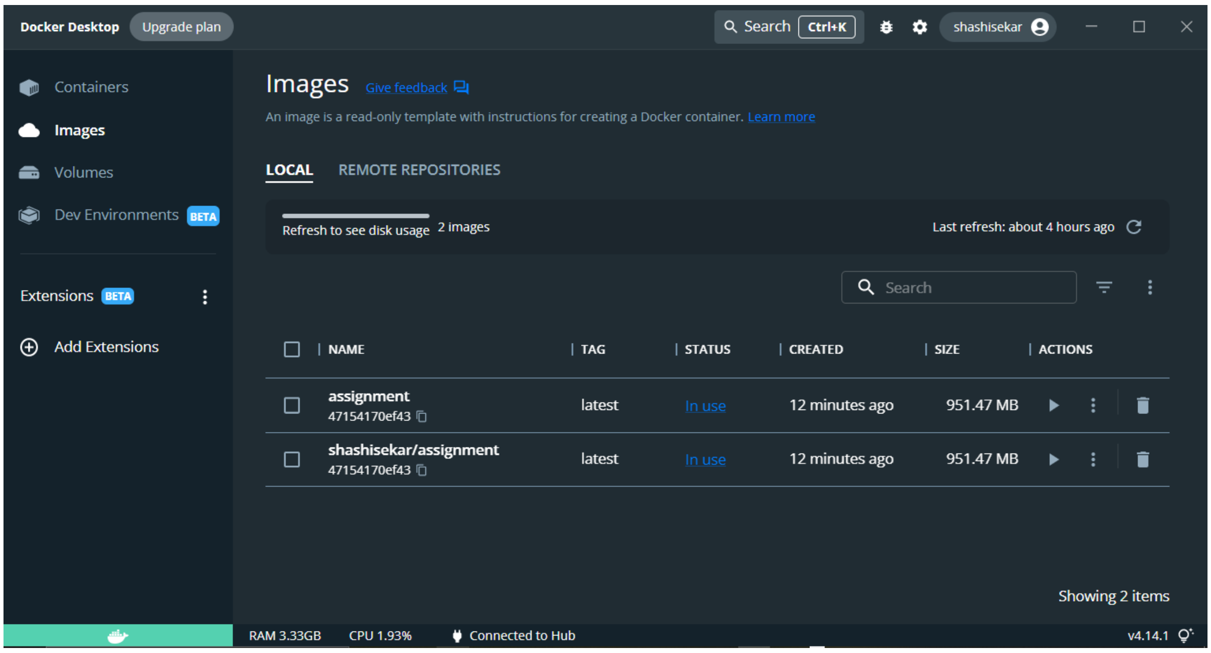
```
PS C:\Users\Dhana\OneDrive\Documents\Shashi - FILES\IBM\SampleDocker> docker run -p 6500:5000 assignment
 * Serving Flask app 'app'
 * Debug mode: off
WARNING: This is a development server. Do not use it in a production deployment. Use a production WSGI ser
ver instead.
 * Running on all addresses (0.0.0.0)
 * Running on http://127.0.0.1:5000
 * Running on http://172.17.0.3:5000
Press CTRL+C to quit
172.17.0.1 - - [22/Nov/2022 17:54:30] "GET / HTTP/1.1" 200 -
172.17.0.1 - - [22/Nov/2022 17:54:30] "GET /favicon.ico HTTP/1.1" 404 -
```

Viewing the Output at PORT 6500 local host



Job Portal! Hello!!

Docker Images



Images

An image is a read-only template with instructions for creating a Docker container. Learn more

Refresh to see disk usage 2 images

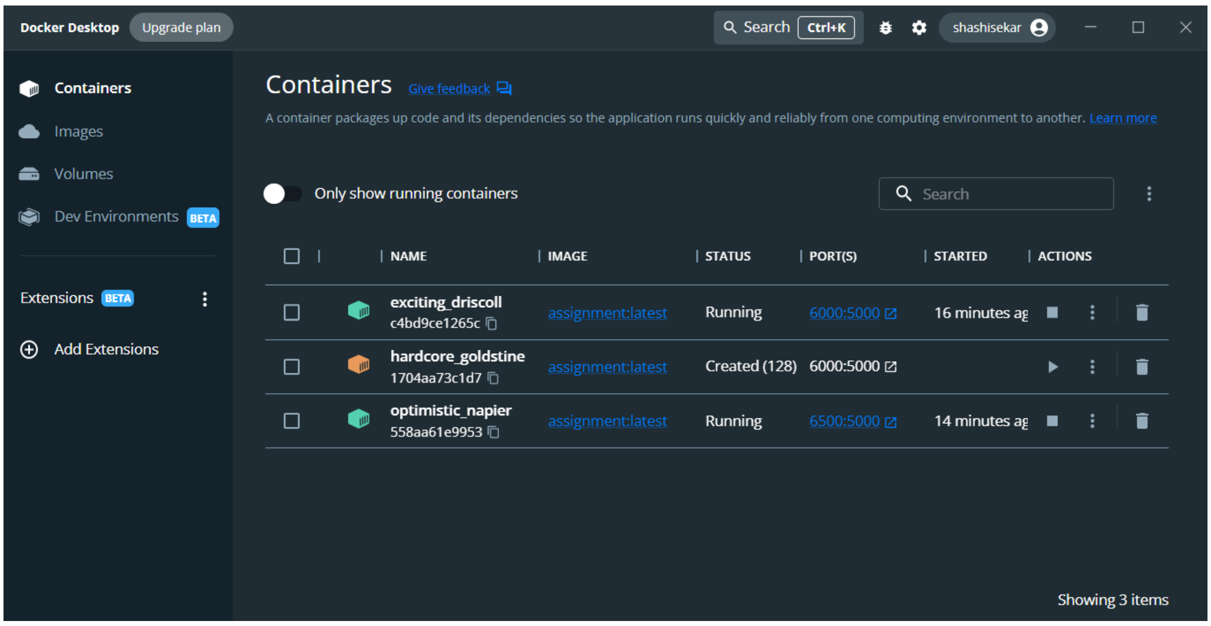
Last refresh: about 4 hours ago

NAME	TAG	STATUS	CREATED	SIZE	ACTIONS
assignment 47154170ef43	latest	In use	12 minutes ago	951.47 MB	
shashisekar/assignment 47154170ef43	latest	In use	12 minutes ago	951.47 MB	

Showing 2 items

RAM 3.33GB CPU 1.93% Connected to Hub v4.14.1

Docker Containers



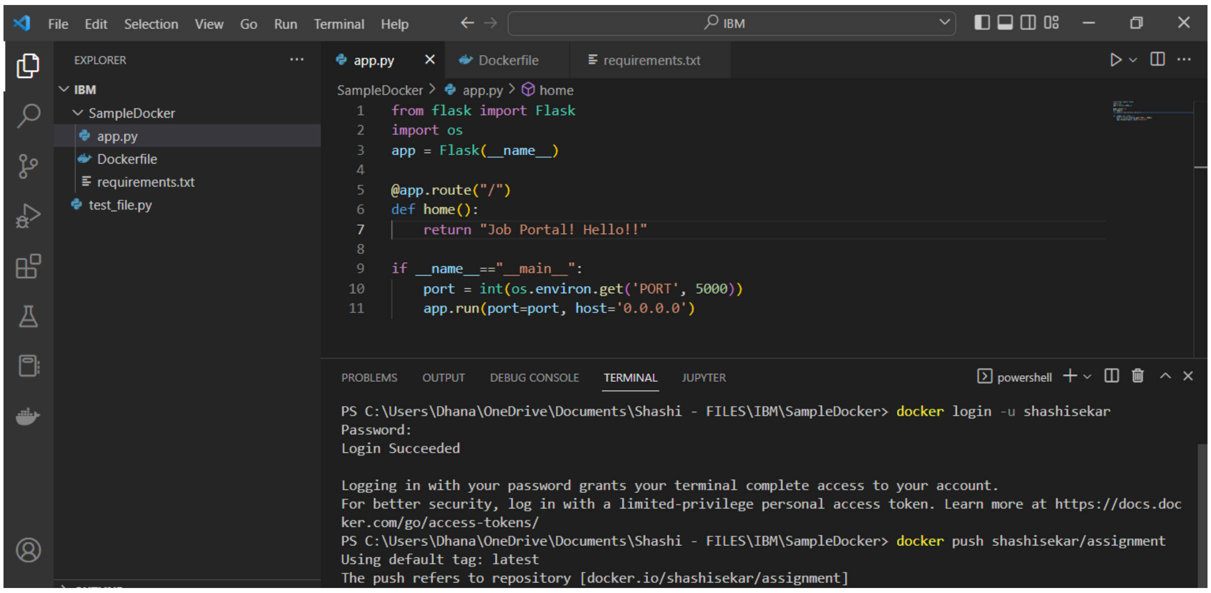
Containers

A container packages up code and its dependencies so the application runs quickly and reliably from one computing environment to another. Learn more

NAME	IMAGE	STATUS	PORT(S)	STARTED	ACTIONS
exciting_driscoll c4bd9ce1265c	assignment:latest	Running	6000:5000	16 minutes ag	
hardcore_goldstine 1704aa73c1d7	assignment:latest	Created (128)	6000:5000		
optimistic_napier 558aa61e9953	assignment:latest	Running	6500:5000	14 minutes ag	

Showing 3 items

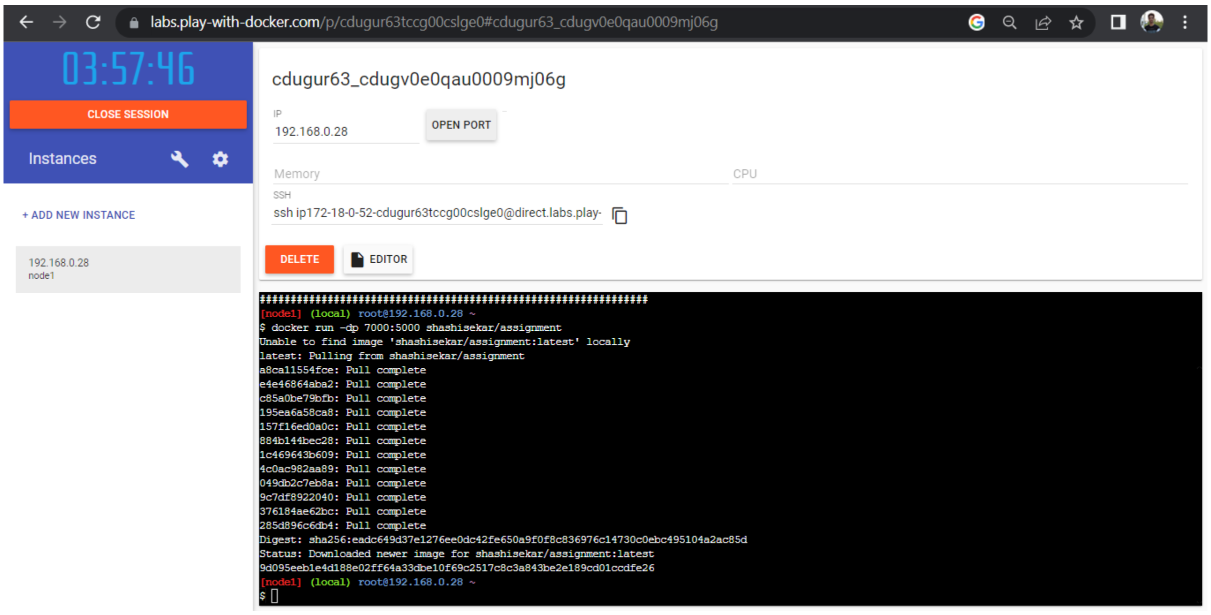
Deploying Docker images on Docker Hub



```python
from flask import Flask
import os
app = Flask(__name__)

@app.route("/")
def home():
    return "Job Portal! Hello!!"

if __name__=="__main__":
    port = int(os.environ.get('PORT', 5000))
    app.run(port=port, host='0.0.0.0')
```

```
PS C:\Users\Dhana\OneDrive\Documents\Shashi - FILES\IBM\SampleDocker> docker login -u shashisekar
Password:
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.doc
ker.com/go/access-tokens/
PS C:\Users\Dhana\OneDrive\Documents\Shashi - FILES\IBM\SampleDocker> docker push shashisekar/assignment
Using default tag: latest
The push refers to repository [docker.io/shashisekar/assignment]
```

Using Docker Play ground to pull the image and run it



labs.play-with-docker.com/p/cdugur63tccg00cslge0#cdugur63_cdugv0e0qau0009mj06g

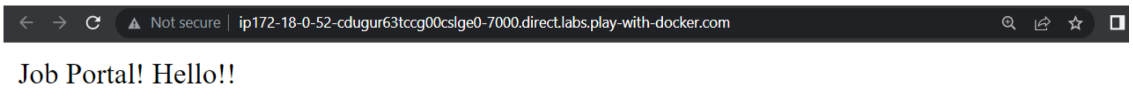
cdugur63_cdugv0e0qau0009mj06g

IP: 192.168.0.28

SSH: ssh ip172-18-0-52-cdugur63tccg00cslge0@direct.labs.play-

```
###############################################################
[node1] (local) root@192.168.0.28 ~
$ docker run -dp 7000:5000 shashisekar/assignment
Unable to find image 'shashisekar/assignment:latest' locally
latest: Pulling from shashisekar/assignment
a8ca11554fce: Pull complete
e4e46864aba2: Pull complete
c85a0be79bfb: Pull complete
195ea6a58ca8: Pull complete
157f16ed0a0c: Pull complete
884b144bec28: Pull complete
1c469643b609: Pull complete
4c0ac982aa89: Pull complete
049db2c7eb8a: Pull complete
9c7df8922040: Pull complete
376184ae62bc: Pull complete
285d896c6db4: Pull complete
Digest: sha256:eadc649d37e1276ee0dc42fe650a9f0f8c836976c14730c0ebc495104a2ac85d
Status: Downloaded newer image for shashisekar/assignment:latest
9d095eeb1e4d188e02ff64a33dbe10f69c2517c8c3a843be2e189cd01ccdfe26
[node1] (local) root@192.168.0.28 ~
$
```

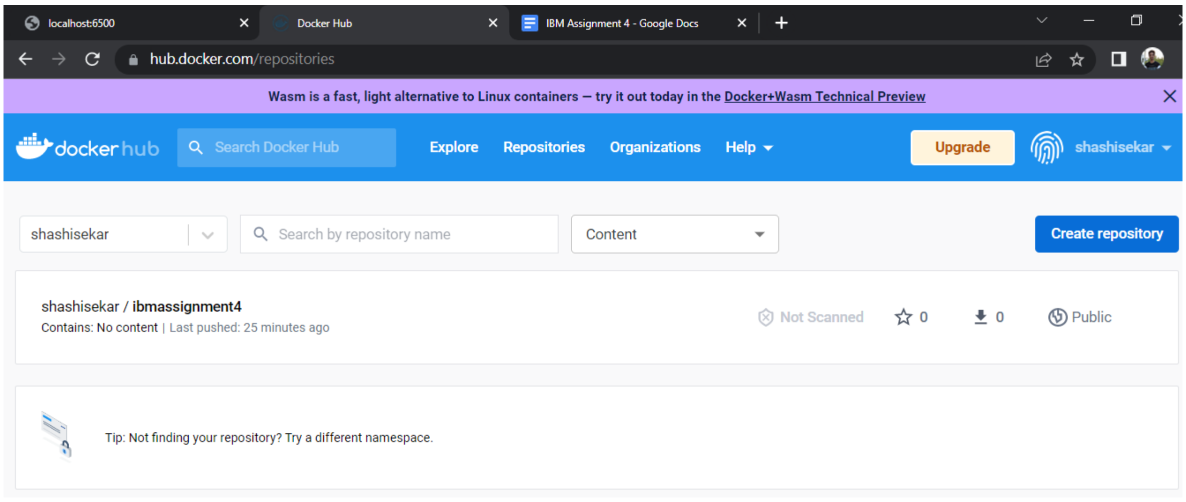
Testing the Output on PORT 7000



Not secure | ip172-18-0-52-cdugur63tccg00cslge0-7000.direct.labs.play-with-docker.com

Job Portal! Hello!!

Docker Hub Repository



Wasm is a fast, light alternative to Linux containers — try it out today in the Docker+Wasm Technical Preview

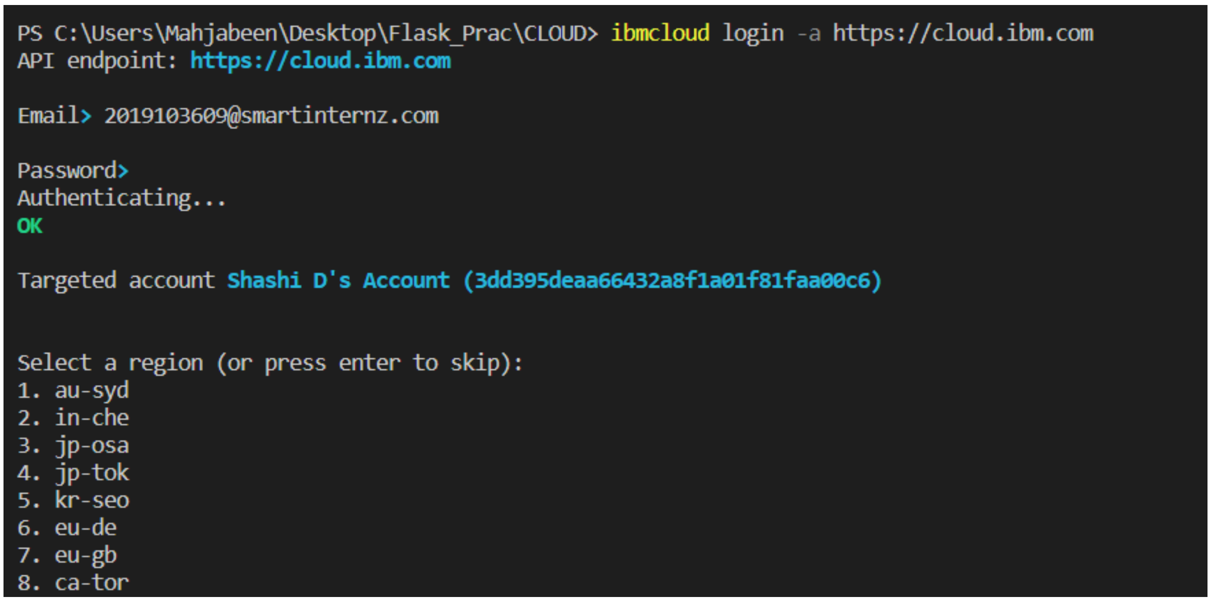
shashisekar | Search by repository name

shashisekar / ibmassignment4
Contains: No content | Last pushed: 25 minutes ago
Not Scanned ☆ 0 ⬇ 0 Public

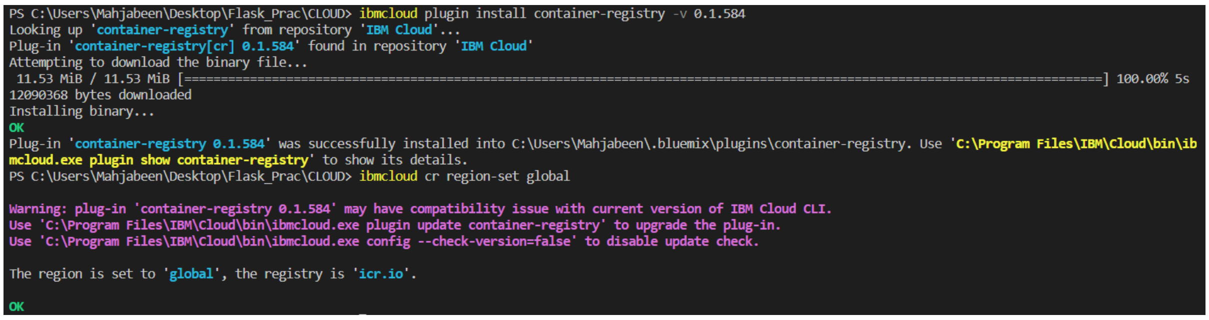
Tip: Not finding your repository? Try a different namespace.

3. Create an IBM container registry and deploy helloworld app on jobportalapp

Login to IBM Cloud

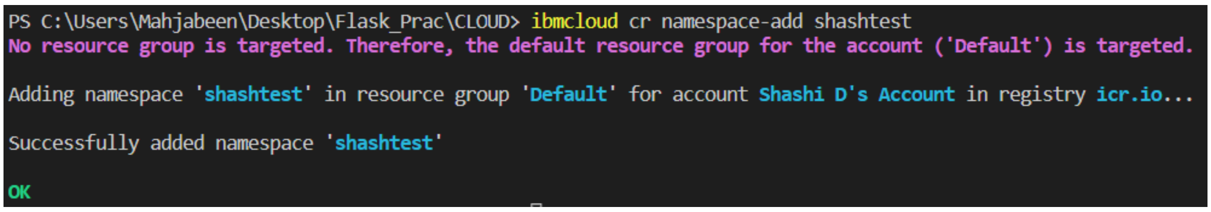


```
PS C:\Users\Mahjabeen\Desktop\Flask_Prac\CLOUD> ibmcloud login -a https://cloud.ibm.com
API endpoint: https://cloud.ibm.com

Email> 2019103609@smartinternz.com

Password>
Authenticating...
OK

Targeted account Shashi D's Account (3dd395deaa66432a8f1a01f81faa00c6)


Select a region (or press enter to skip):
1. au-syd
2. in-che
3. jp-osa
4. jp-tok
5. kr-seo
6. eu-de
7. eu-gb
8. ca-tor
```



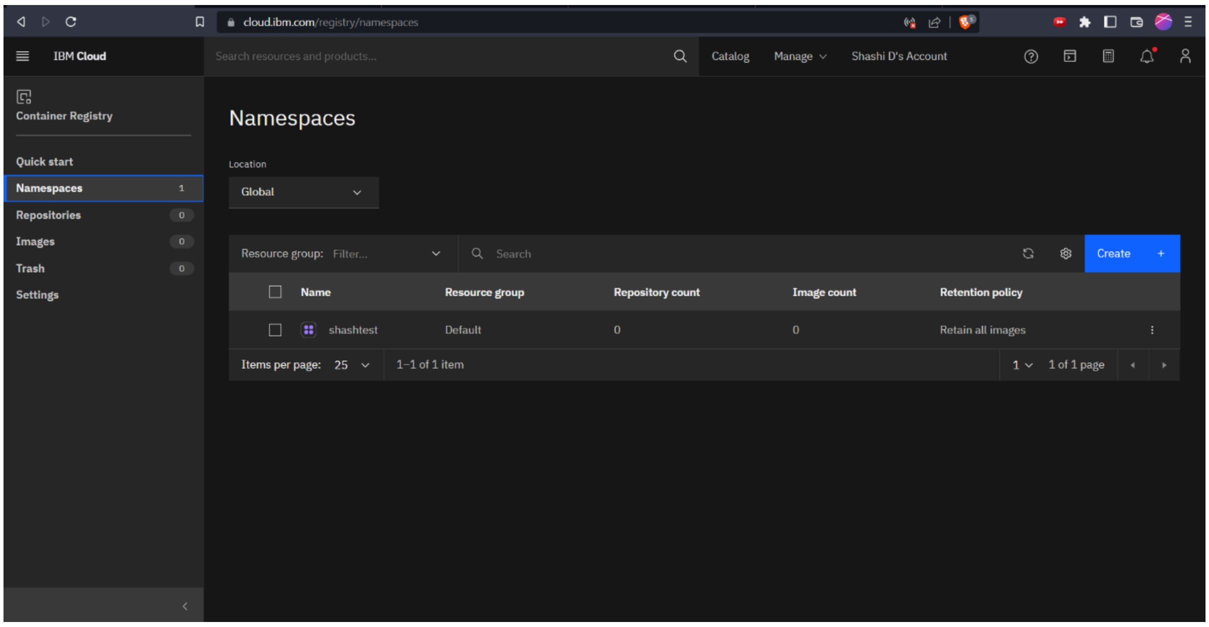
```
PS C:\Users\Mahjabeen\Desktop\Flask_Prac\CLOUD> ibmcloud plugin install container-registry -v 0.1.584
Looking up 'container-registry' from repository 'IBM Cloud'...
Plug-in 'container-registry[cr] 0.1.584' found in repository 'IBM Cloud'
Attempting to download the binary file...
 11.53 MiB / 11.53 MiB [=========================================================================================================================] 100.00% 5s
12090368 bytes downloaded
Installing binary...
OK
Plug-in 'container-registry 0.1.584' was successfully installed into C:\Users\Mahjabeen\.bluemix\plugins\container-registry. Use 'C:\Program Files\IBM\Cloud\bin\ib
mcloud.exe plugin show container-registry' to show its details.
PS C:\Users\Mahjabeen\Desktop\Flask_Prac\CLOUD> ibmcloud cr region-set global

Warning: plug-in 'container-registry 0.1.584' may have compatibility issue with current version of IBM Cloud CLI.
Use 'C:\Program Files\IBM\Cloud\bin\ibmcloud.exe plugin update container-registry' to upgrade the plug-in.
Use 'C:\Program Files\IBM\Cloud\bin\ibmcloud.exe config --check-version=false' to disable update check.

The region is set to 'global', the registry is 'icr.io'.

OK
```

Adding Namespace



```
PS C:\Users\Mahjabeen\Desktop\Flask_Prac\CLOUD> ibmcloud cr namespace-add shashtest
No resource group is targeted. Therefore, the default resource group for the account ('Default') is targeted.

Adding namespace 'shashtest' in resource group 'Default' for account Shashi D's Account in registry icr.io...

Successfully added namespace 'shashtest'

OK
```

Namespaces on Container Registry



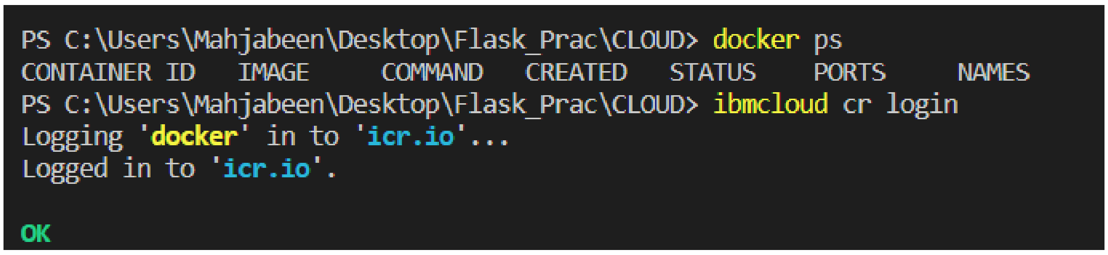
Namespaces

Location: Global

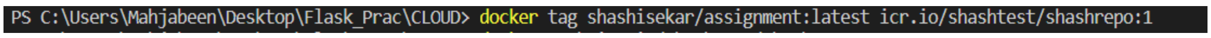
Resource group: Filter... Search Create +

Name	Resource group	Repository count	Image count	Retention policy
shashtest	Default	0	0	Retain all images

Items per page: 25 | 1–1 of 1 item | 1 | 1 of 1 page

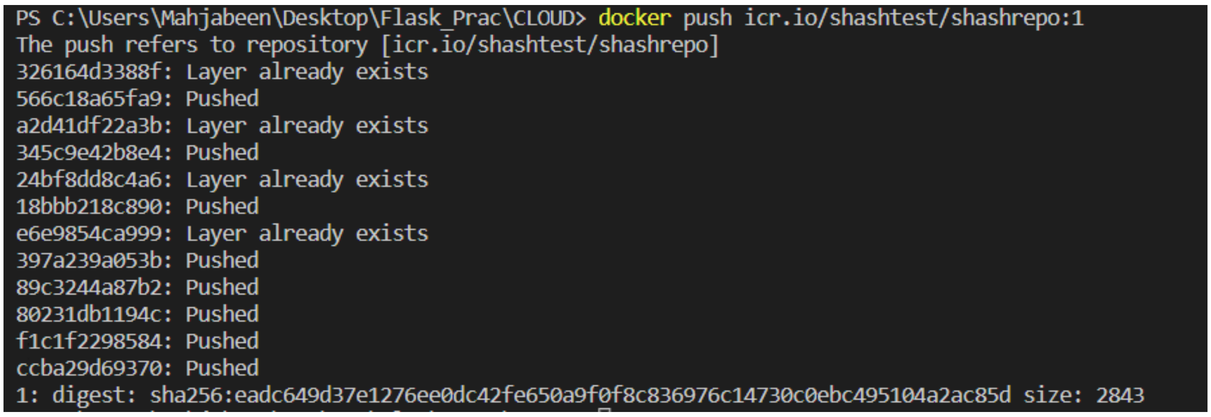


```
PS C:\Users\Mahjabeen\Desktop\Flask_Prac\CLOUD> docker ps
CONTAINER ID   IMAGE     COMMAND   CREATED   STATUS    PORTS     NAMES
PS C:\Users\Mahjabeen\Desktop\Flask_Prac\CLOUD> ibmcloud cr login
Logging 'docker' in to 'icr.io'...
Logged in to 'icr.io'.

OK
```



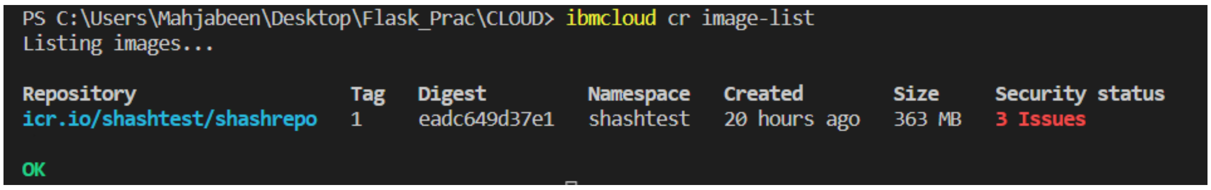
```
PS C:\Users\Mahjabeen\Desktop\Flask_Prac\CLOUD> docker tag shashisekar/assignment:latest icr.io/shashtest/shashrepo:1
```

Pushing the image into the repository



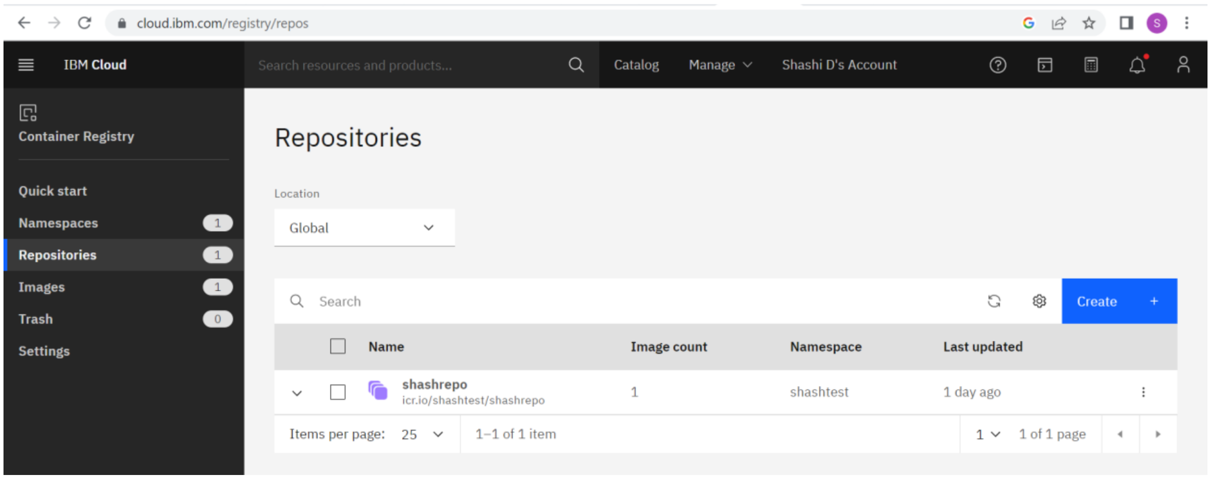
```
PS C:\Users\Mahjabeen\Desktop\Flask_Prac\CLOUD> docker push icr.io/shashtest/shashrepo:1
The push refers to repository [icr.io/shashtest/shashrepo]
326164d3388f: Layer already exists
566c18a65fa9: Pushed
a2d41df22a3b: Layer already exists
345c9e42b8e4: Pushed
24bf8dd8c4a6: Layer already exists
18bbb218c890: Pushed
e6e9854ca999: Layer already exists
397a239a053b: Pushed
89c3244a87b2: Pushed
80231db1194c: Pushed
f1c1f2298584: Pushed
ccba29d69370: Pushed
1: digest: sha256:eadc649d37e1276ee0dc42fe650a9f0f8c836976c14730c0ebc495104a2ac85d size: 2843
```

Image List



```
PS C:\Users\Mahjabeen\Desktop\Flask_Prac\CLOUD> ibmcloud cr image-list
Listing images...

Repository                   Tag   Digest         Namespace   Created        Size     Security status
icr.io/shashtest/shashrepo   1     eadc649d37e1   shashtest   20 hours ago   363 MB   3 Issues

OK
```

Repositories - shashrepo



cloud.ibm.com/registry/repos

Repositories

Location

Global

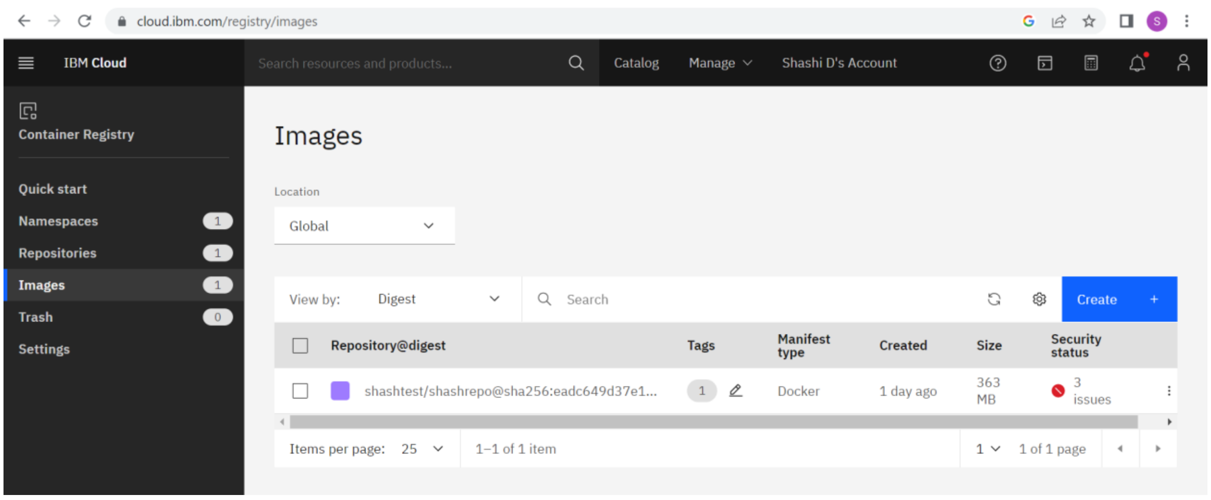
Search

Create +

Name	Image count	Namespace	Last updated
shashrepo icr.io/shashtest/shashrepo	1	shashtest	1 day ago

Items per page: 25 1–1 of 1 item 1 1 of 1 page

Images


cloud.ibm.com/registry/images

IBM Cloud | Search resources and products... | Catalog | Manage | Shashi D's Account

Container Registry

- Quick start
- Namespaces 1
- Repositories 1
- Images 1
- Trash 0
- Settings

Images

Location: Global

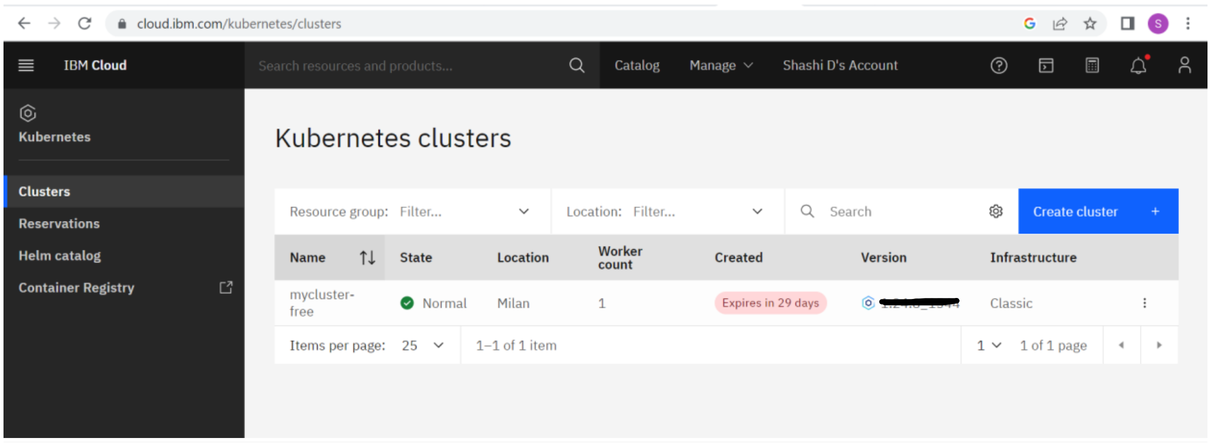
View by: Digest | Search | Create +

	Repository@digest	Tags	Manifest type	Created	Size	Security status
☐	shashtest/shashrepo@sha256:eadc649d37e1...	1	Docker	1 day ago	363 MB	3 issues

Items per page: 25 | 1–1 of 1 item | 1 | 1 of 1 page

4. **Create a Kubernetes cluster in IBM cloud and deploy the same app to run in nodeport.**

Kubernetes Cluster


cloud.ibm.com/kubernetes/clusters

IBM Cloud | Search resources and products... | Catalog | Manage | Shashi D's Account

Kubernetes

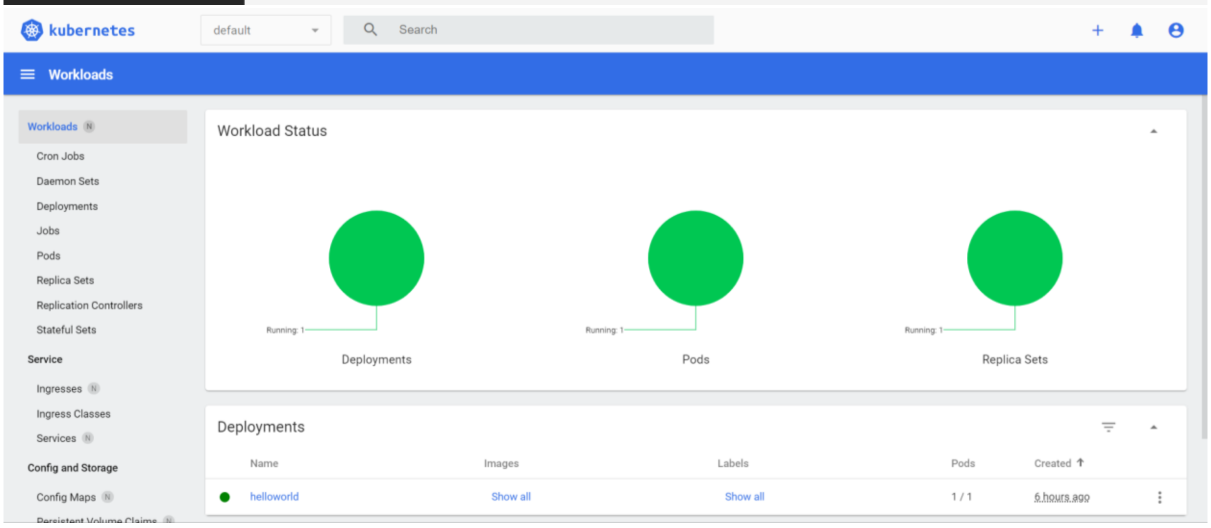
- Clusters
- Reservations
- Helm catalog
- Container Registry

Kubernetes clusters

Resource group: Filter... | Location: Filter... | Search | Create cluster +

Name	State	Location	Worker count	Created	Version	Infrastructure
mycluster-free	Normal	Milan	1	Expires in 29 days	[redacted]	Classic

Items per page: 25 | 1–1 of 1 item | 1 | 1 of 1 page


kubernetes | default | Search

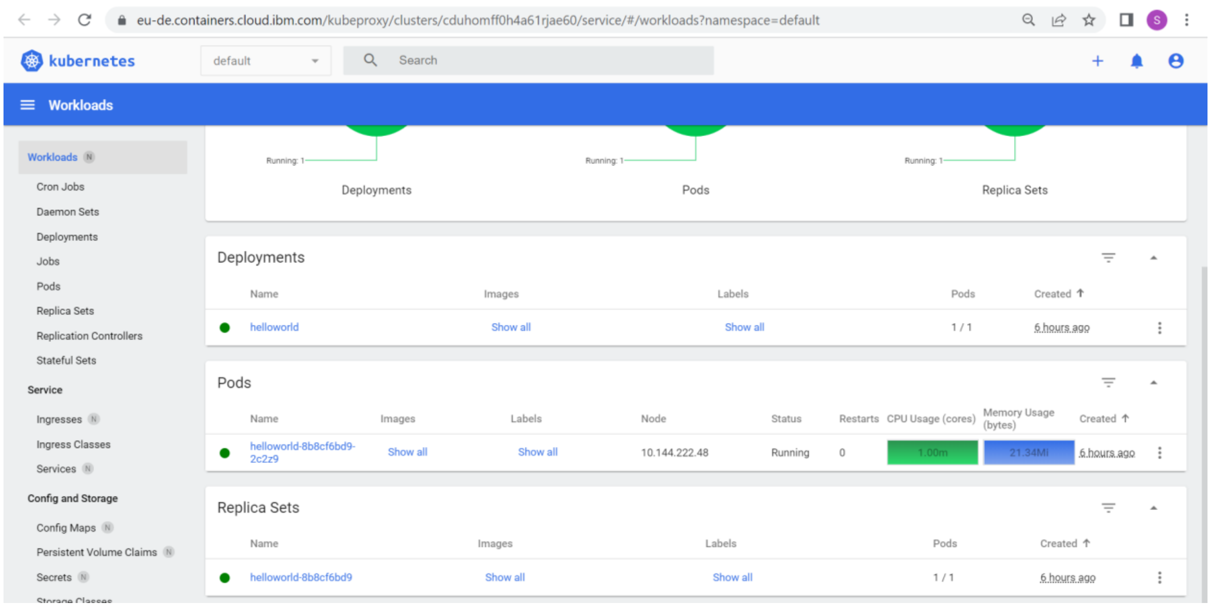
Workloads

- Workloads
  - Cron Jobs
  - Daemon Sets
  - Deployments
  - Jobs
  - Pods
  - Replica Sets
  - Replication Controllers
  - Stateful Sets
- Service
  - Ingresses
  - Ingress Classes
  - Services
- Config and Storage
  - Config Maps
  - Persistent Volume Claims

Workload Status

Deployments

	Name	Images	Labels	Pods	Created
●	helloworld	Show all	Show all	1 / 1	6 hours ago



eu-de.containers.cloud.ibm.com/kubeproxy/clusters/cduhomff0h4a61rjae60/service/#/workloads?namespace=default

Deployments

	Name	Images	Labels	Pods	Created ↑
●	helloworld	Show all	Show all	1 / 1	6 hours ago

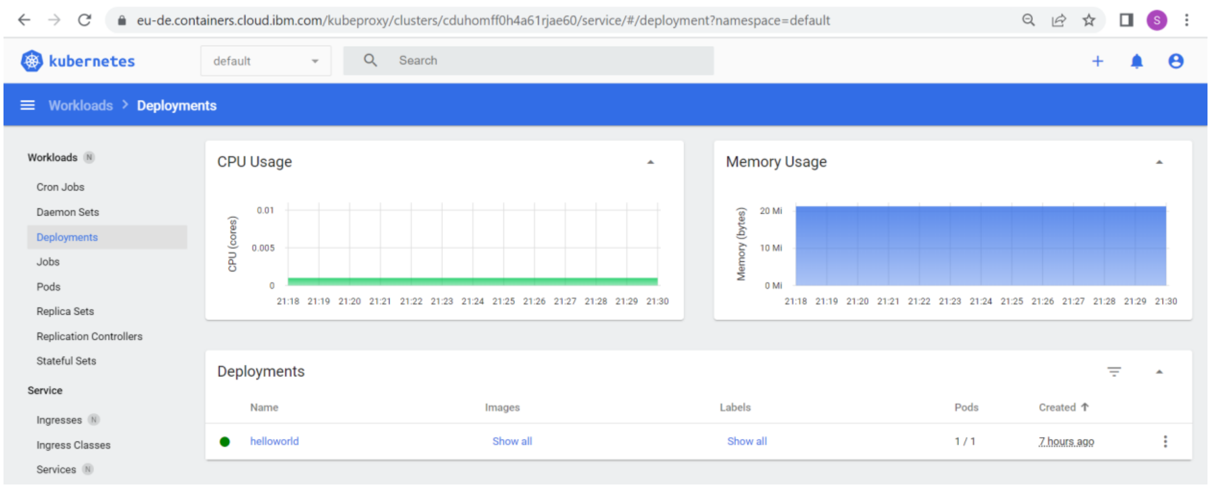
Pods

	Name	Images	Labels	Node	Status	Restarts	CPU Usage (cores)	Memory Usage (bytes)	Created ↑
●	helloworld-8b8cf6bd9-2c2z9	Show all	Show all	10.144.222.48	Running	0	1.00m	21.34Mi	6 hours ago

Replica Sets

	Name	Images	Labels	Pods	Created ↑
●	helloworld-8b8cf6bd9	Show all	Show all	1 / 1	6 hours ago

Deployments

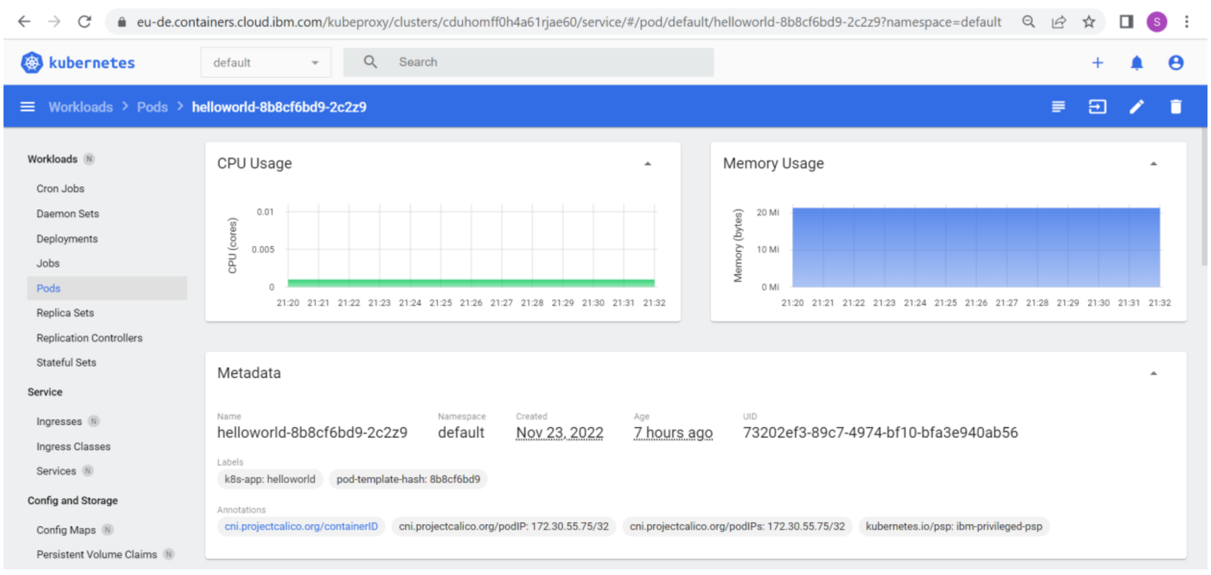


eu-de.containers.cloud.ibm.com/kubeproxy/clusters/cduhomff0h4a61rjae60/service/#/deployment?namespace=default

Deployments

	Name	Images	Labels	Pods	Created ↑
●	helloworld	Show all	Show all	1 / 1	7 hours ago

POD



eu-de.containers.cloud.ibm.com/kubeproxy/clusters/cduhomff0h4a61rjae60/service/#/pod/default/helloworld-8b8cf6bd9-2c2z9?namespace=default

Metadata

Name	Namespace	Created	Age	UID
helloworld-8b8cf6bd9-2c2z9	default	Nov 23, 2022	7 hours ago	73202ef3-89c7-4974-bf10-bfa3e940ab56

Labels
k8s-app: helloworld pod-template-hash: 8b8cf6bd9

Annotations
cni.projectcalico.org/containerID cni.projectcalico.org/podIP: 172.30.55.75/32 cni.projectcalico.org/podIPs: 172.30.55.75/32 kubernetes.io/psp: ibm-privileged-psp