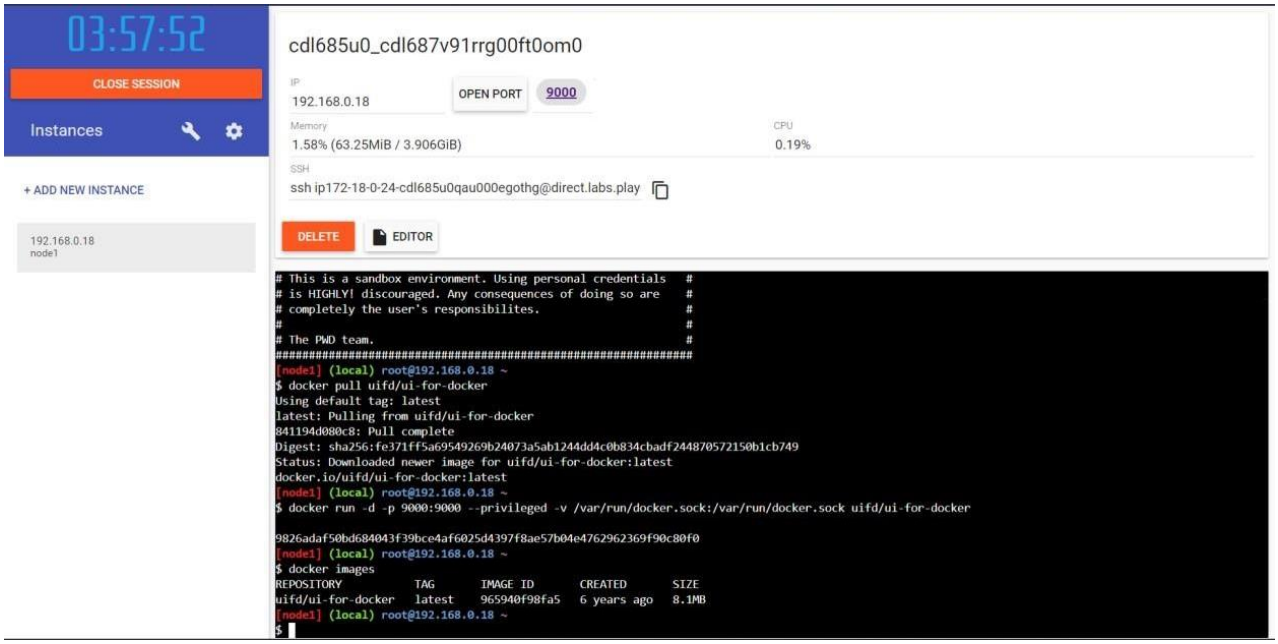
Assignment -4
Kubernetes / Docker

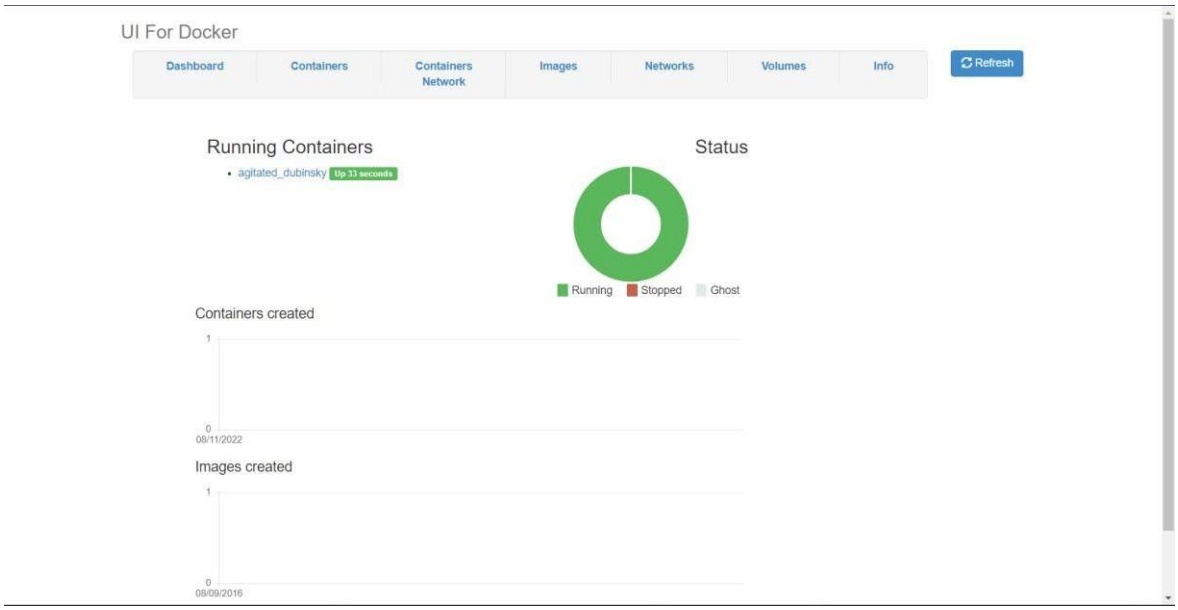
PROJECT NAME	Personal Expense Tracker Application
Team ID	PNT2022TMID31320
Student Name	HARIPRASAD R
Student Roll Number	710719104038

Question-1:

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

Solution:





Question-2:

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

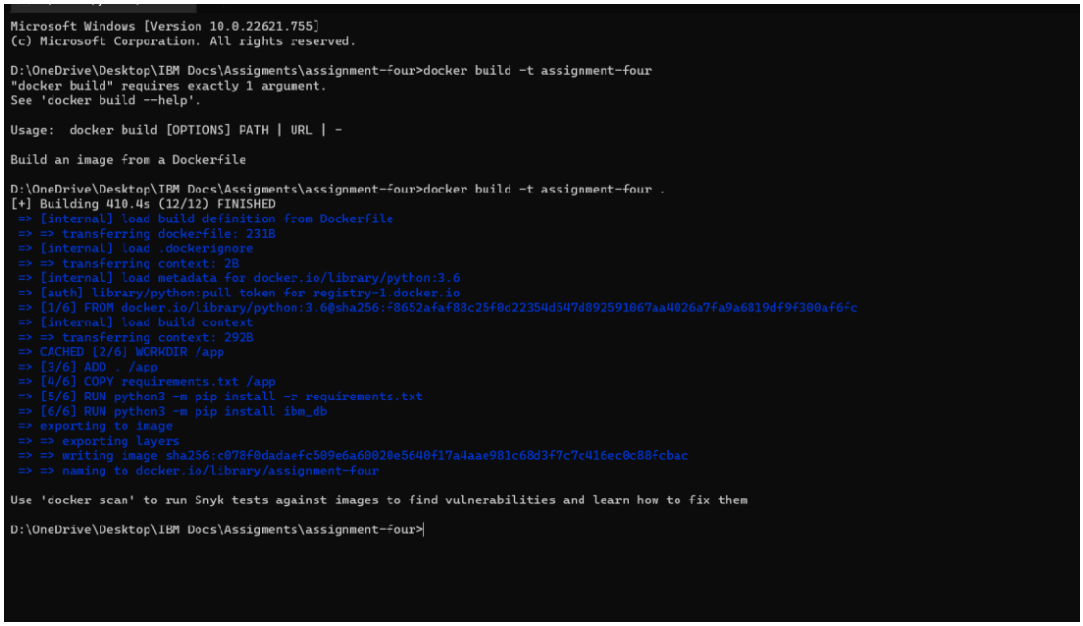
Solution:

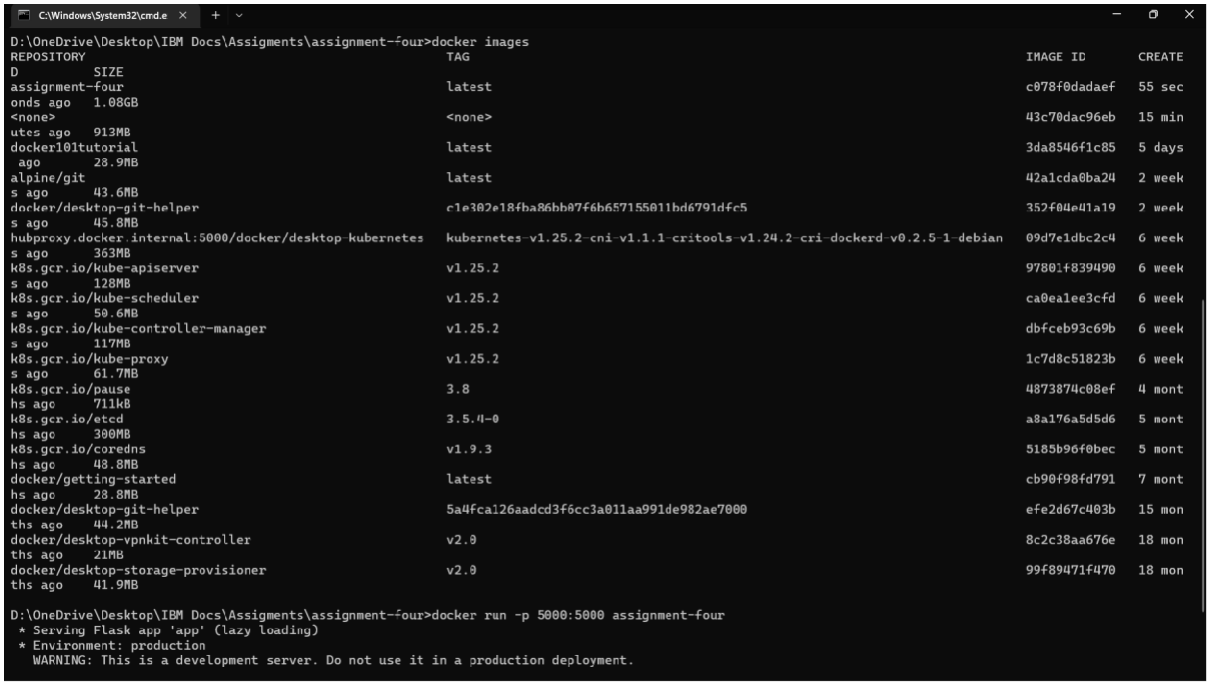
app.py

```
from flask import *

app = Flask(__name__)

@app.route("/")

def home():

        return "Hello World"

if__name___== "__main__":

        app.run(debug=True)
```

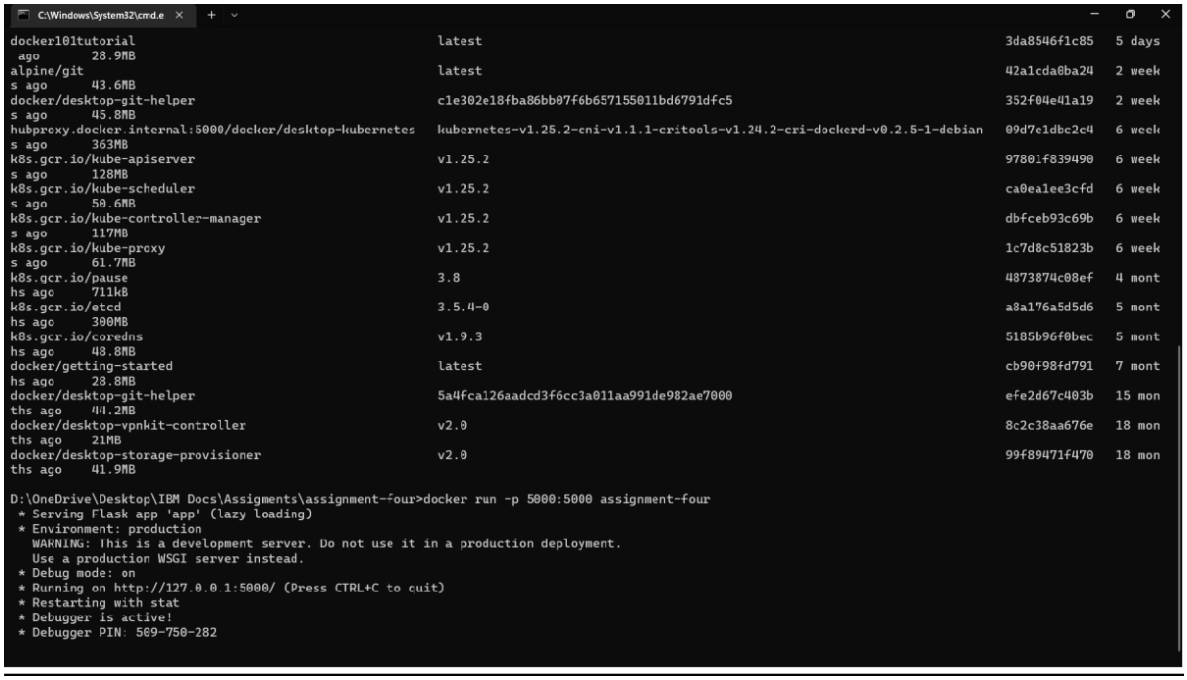
Dockerfile:

```
FROM python:3.6

WORKDIR /app

ADD . /app

COPY requirements.txt /app

RUN python3 -m pip install -r requirements.txt

RUN python3 -m pip install ibm_db

EXPOSE 5000

CMD ["python","app.py"]
```

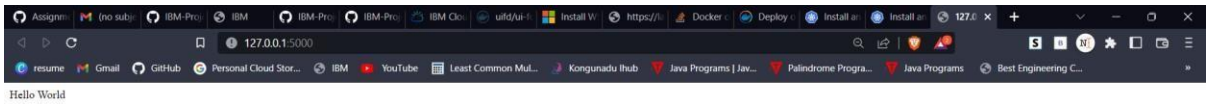


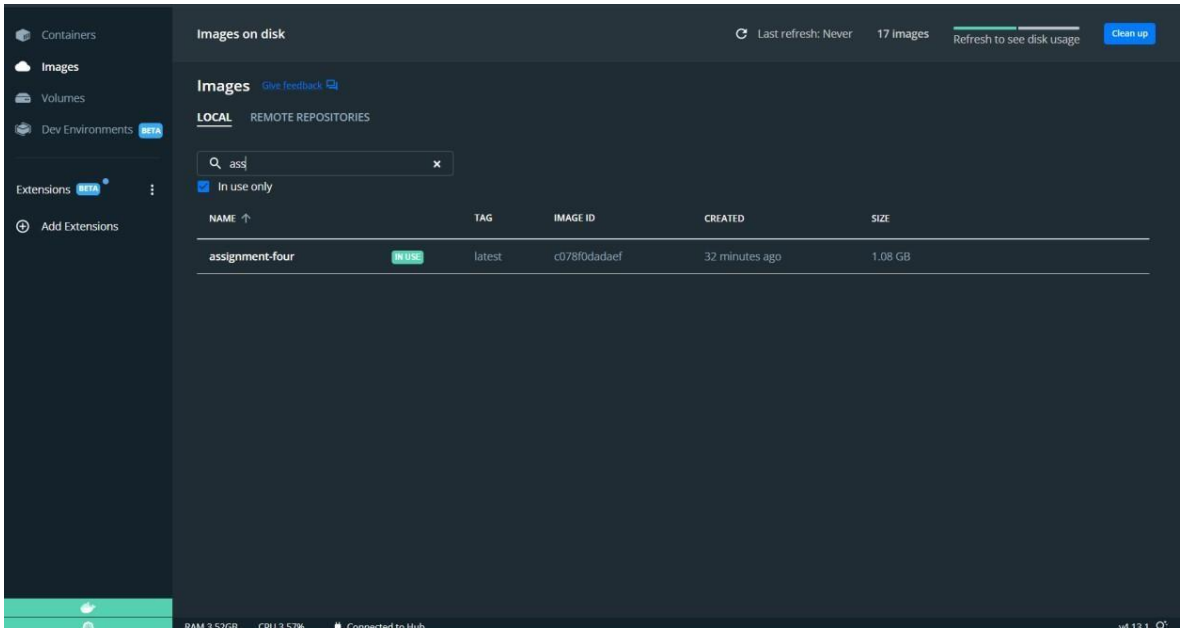


```
C:\Windows\System32\cmd.e

D:\OneDrive\Desktop\IBM Docs\Assigments\assignment-four>docker images
REPOSITORY                                                TAG                                                                IMAGE ID       CREATE
D          SIZE
assignment-four                                           latest                                                             c078f0dadaef   55 sec
onds ago   1.08GB
<none>                                                    <none>                                                             43c70dac96eb   15 min
utes ago   913MB
docker101tutorial                                         latest                                                             3da8546f1c85   5 days
 ago       28.9MB
alpine/git                                                latest                                                             42a1cda0ba24   2 week
s ago      43.6MB
docker/desktop-git-helper                                 c1e302e18fba86bb07f6b657155011bd6791dfc5                           352f04e41a19   2 week
s ago      45.8MB
hubproxy.docker.internal:5000/docker/desktop-kubernetes   kubernetes-v1.25.2-cni-v1.1.1-critools-v1.24.2-cri-dockerd-v0.2.5-1-debian   09d7e1dbc2c4   6 week
s ago      363MB
k8s.gcr.io/kube-apiserver                                 v1.25.2                                                            97801f839490   6 week
s ago      128MB
k8s.gcr.io/kube-scheduler                                 v1.25.2                                                            ca0ea1ee3cfd   6 week
s ago      50.6MB
k8s.gcr.io/kube-controller-manager                        v1.25.2                                                            dbfceb93c69b   6 week
s ago      117MB
k8s.gcr.io/kube-proxy                                     v1.25.2                                                            1c7d8c51823b   6 week
s ago      61.7MB
k8s.gcr.io/pause                                          3.8                                                                4873874c08ef   4 mont
hs ago     711kB
k8s.gcr.io/etcd                                           3.5.4-0                                                            a8a176a5d5d6   5 mont
hs ago     300MB
k8s.gcr.io/coredns                                        v1.9.3                                                             5185b96f0bec   5 mont
hs ago     48.8MB
docker/getting-started                                    latest                                                             cb90f98fd791   7 mont
hs ago     28.8MB
docker/desktop-git-helper                                 5a4fca126aadcd3f6cc3a011aa991de982ae7000                           efe2d67c403b   15 mon
ths ago    44.2MB
docker/desktop-vpnkit-controller                          v2.0                                                               8c2c38aa676e   18 mon
ths ago    21MB
docker/desktop-storage-provisioner                        v2.0                                                               99f89471f470   18 mon
ths ago    41.9MB

D:\OneDrive\Desktop\IBM Docs\Assigments\assignment-four>docker run -p 5000:5000 assignment-four
 * Serving Flask app 'app' (lazy loading)
 * Environment: production
   WARNING: This is a development server. Do not use it in a production deployment.
```



```
C:\Windows\System32\cmd.e

docker101tutorial                                         latest                                                             3da8546f1c85   5 days
 ago       28.9MB
alpine/git                                                latest                                                             42a1cda0ba24   2 week
s ago      43.6MB
docker/desktop-git-helper                                 c1e302e18fba86bb07f6b657155011bd6791dfc5                           352f04e41a19   2 week
s ago      45.8MB
hubproxy.docker.internal:5000/docker/desktop-kubernetes   kubernetes-v1.25.2-cni-v1.1.1-critools-v1.24.2-cri-dockerd-v0.2.5-1-debian   09d7e1dbc2c4   6 week
s ago      363MB
k8s.gcr.io/kube-apiserver                                 v1.25.2                                                            97801f839490   6 week
s ago      128MB
k8s.gcr.io/kube-scheduler                                 v1.25.2                                                            ca0ea1ee3cfd   6 week
s ago      50.6MB
k8s.gcr.io/kube-controller-manager                        v1.25.2                                                            dbfceb93c69b   6 week
s ago      117MB
k8s.gcr.io/kube-proxy                                     v1.25.2                                                            1c7d8c51823b   6 week
s ago      61.7MB
k8s.gcr.io/pause                                          3.8                                                                4873874c08ef   4 mont
hs ago     711kB
k8s.gcr.io/etcd                                           3.5.4-0                                                            a8a176a5d5d6   5 mont
hs ago     300MB
k8s.gcr.io/coredns                                        v1.9.3                                                             5185b96f0bec   5 mont
hs ago     48.8MB
docker/getting-started                                    latest                                                             cb90f98fd791   7 mont
hs ago     28.8MB
docker/desktop-git-helper                                 5a4fca126aadcd3f6cc3a011aa991de982ae7000                           efe2d67c403b   15 mon
ths ago    44.2MB
docker/desktop-vpnkit-controller                          v2.0                                                               8c2c38aa676e   18 mon
ths ago    21MB
docker/desktop-storage-provisioner                        v2.0                                                               99f89471f470   18 mon
ths ago    41.9MB

D:\OneDrive\Desktop\IBM Docs\Assigments\assignment-four>docker run -p 5000:5000 assignment-four
 * Serving Flask app 'app' (lazy loading)
 * Environment: production
   WARNING: This is a development server. Do not use it in a production deployment.
   Use a production WSGI server instead.
 * Debug mode: on
 * Running on http://127.0.0.1:5000/ (Press CTRL+C to quit)
 * Restarting with stat
 * Debugger is active!
 * Debugger PIN: 509-750-282
```

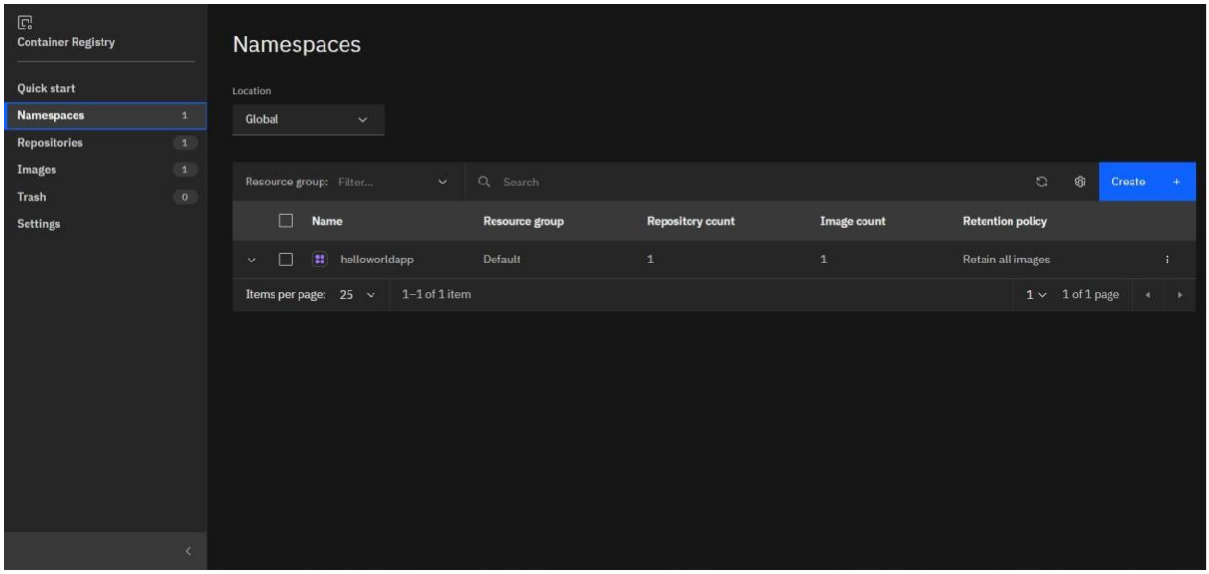

127.0.0.1:5000
resume
Gmail
GitHub
Personal Cloud Stor...
IBM
YouTube
Least Common Mul...
Kongunadu Ihub
Java Programs | Jav...
Palindrome Progra...
Java Programs
Best Engineering C...
Hello World


Containers
Images
Volumes
Dev Environments
BETA
Extensions
BETA
Add Extensions
Images on disk
Last refresh: Never
17 images
Refresh to see disk usage
Clean up
Images
Give feedback
LOCAL
REMOTE REPOSITORIES
ass
In use only
NAME
TAG
IMAGE ID
CREATED
SIZE
assignment-four
IN USE
latest
c078f0dadaef
32 minutes ago
1.08 GB

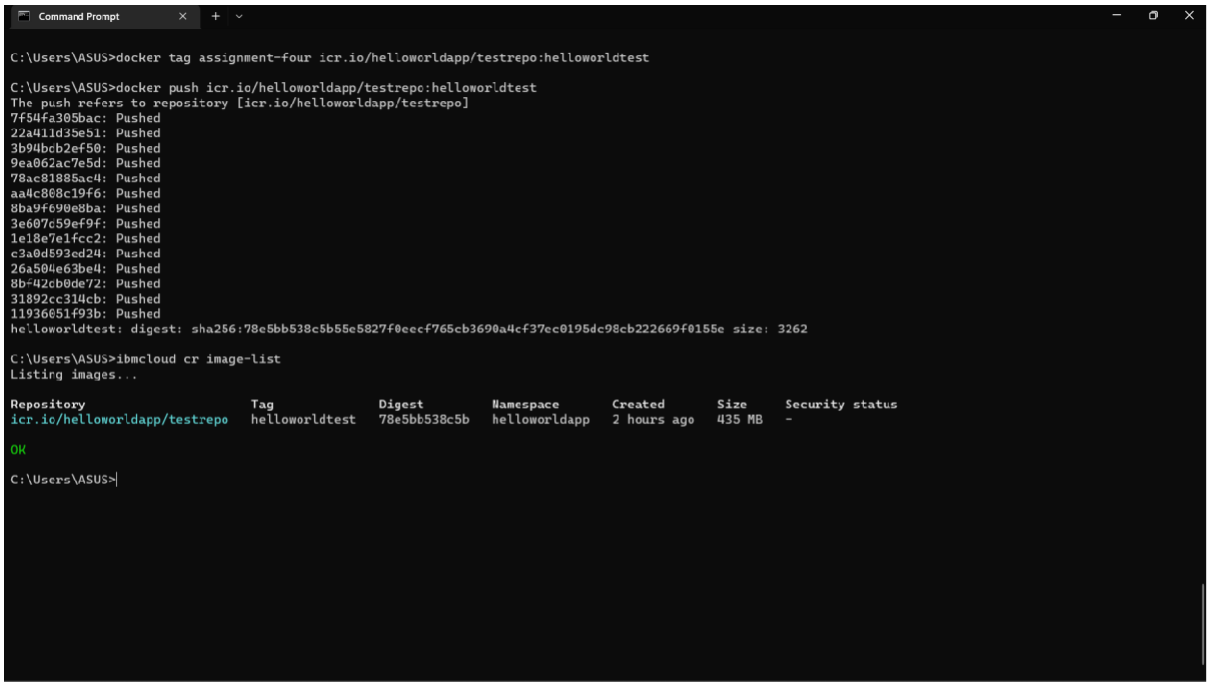
Question-3:

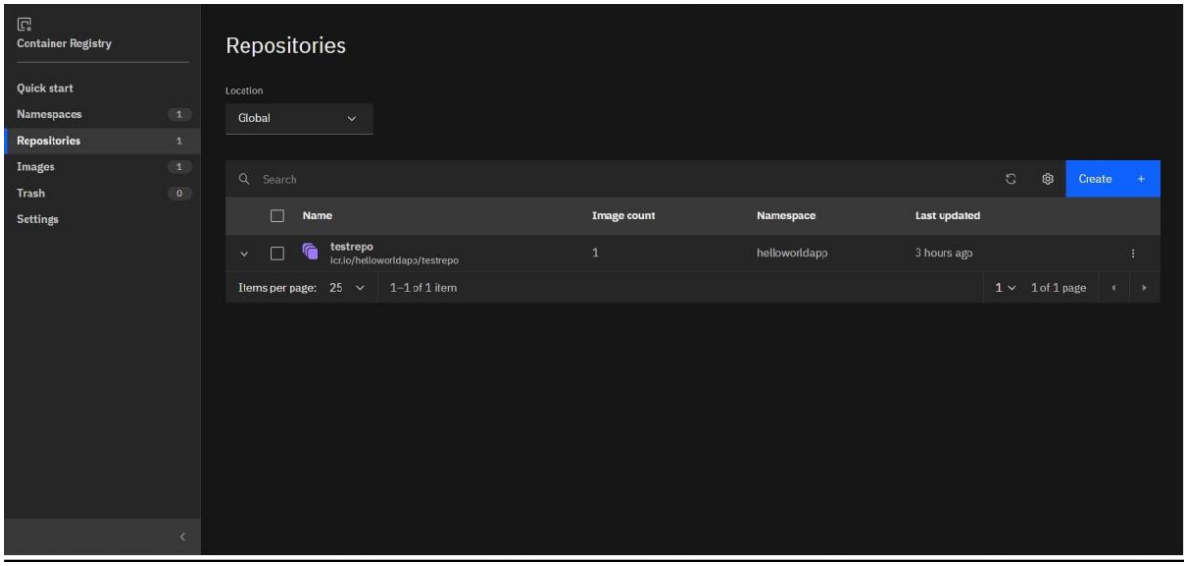
Create a IBM container registry and deploy helloworld app or jobportalapp.

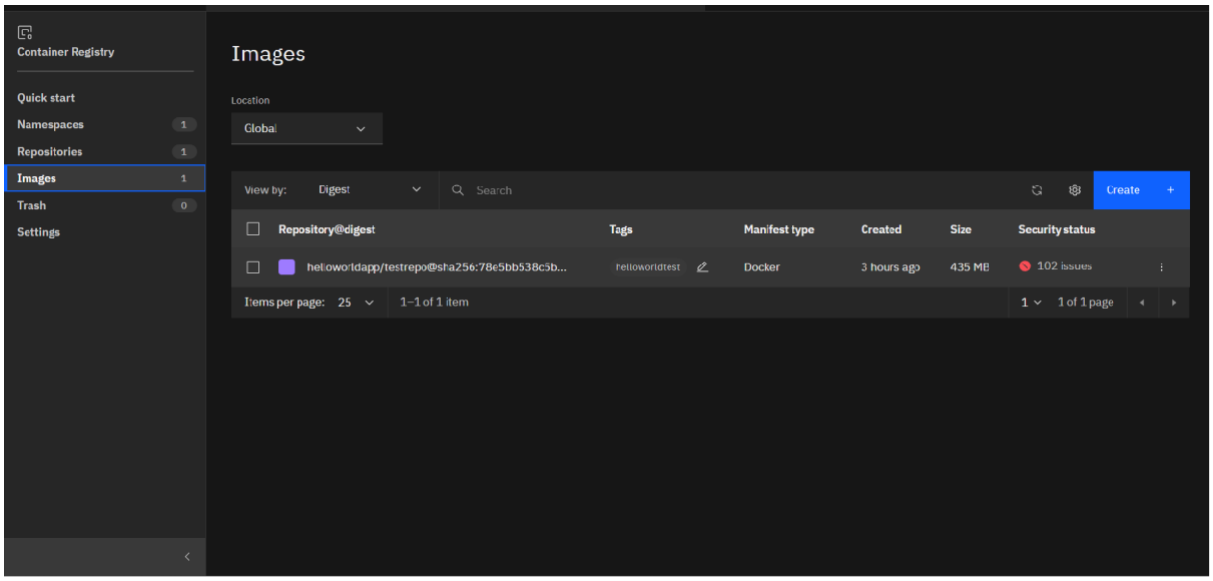
Solution:




```
OK

C:\Users\ASUS>docker tag assignment-four icr.io/helloworldapp/testrepo:helloworldtest

C:\Users\ASUS>docker push icr.io/helloworldapp/testrepo:helloworldtest
The push refers to repository [icr.io/helloworldapp/testrepo]
7f54fa305bac: Pushed
22a411d35e51: Pushed
3b94bcb2ef50: Pushed
9ea062ac7e5d: Pushed
78ac81885ac4: Pushed
aa4c868c19f6: Pushed
8ba9f690e8ba: Pushed
3e607c59ef9f: Pushed
1e18e7e1fcc2: Pushed
c3a0d593ed24: Pushed
26a504e63be4: Pushed
8b542cb0de72: Pushed
31892cc314cb: Pushed
```


Command Prompt
C:\Users\ASUS>docker tag assignment-four icr.io/helloworldapp/testrepo:helloworldtest
C:\Users\ASUS>docker push icr.io/helloworldapp/testrepo:helloworldtest
The push refers to repository [icr.io/helloworldapp/testrepo]
7f54fa305bac: Pushed
22a411d35e51: Pushed
3b94bcb2ef50: Pushed
9ea062ac7e5d: Pushed
78ac81885ac4: Pushed
aa4c808c19f6: Pushed
8ba9f690e8ba: Pushed
3e607c59ef9f: Pushed
1e18e7e1fcc2: Pushed
c3a0d593ed24: Pushed
26a504e63be4: Pushed
8bf42cb0de72: Pushed
31892cc314cb: Pushed
11936051f93b: Pushed
helloworldtest: digest: sha256:78e5bb538c5b55e5827f0eccf765cb3690a4cf37ec0195dc98cb222669f0155e size: 3262
C:\Users\ASUS>ibmcloud cr image-list
Listing images...
Repository Tag Digest Namespace Created Size Security status
icr.io/helloworldapp/testrepo helloworldtest 78e5bb538c5b helloworldapp 2 hours ago 435 MB -
OK
C:\Users\ASUS>

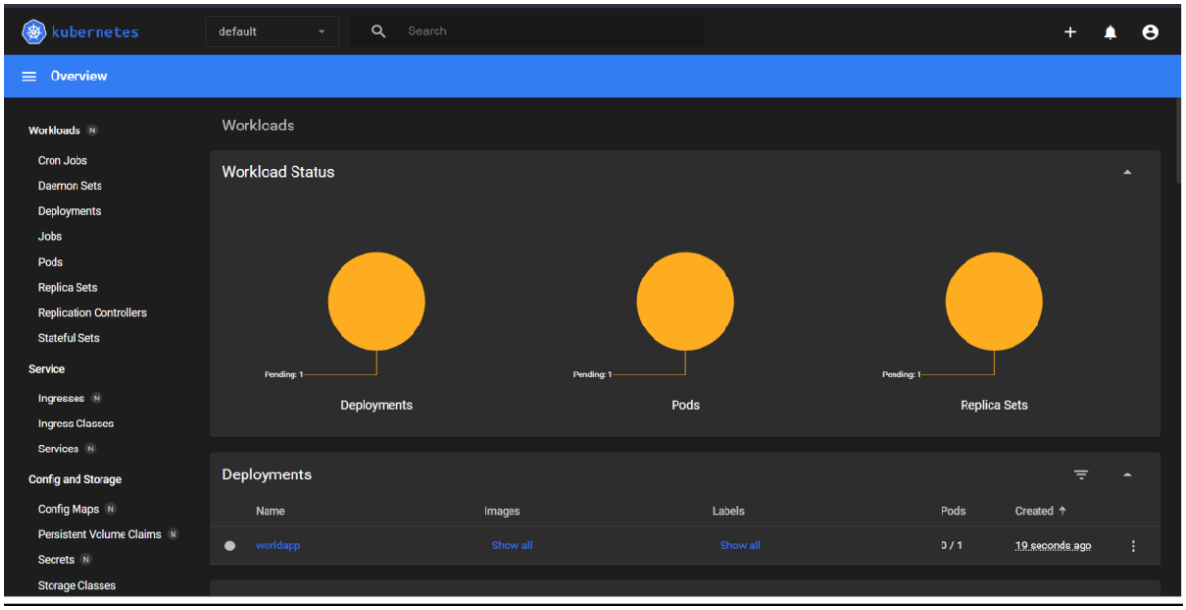

Container Registry
Quick start
Namespaces 1
Repositories 1
Images 1
Trash 0
Settings
Repositories
Location
Global
Search
Create
Name
Image count
Namespace
Last updated
testrepo
icr.io/helloworldapp/testrepo
1
helloworldapp
3 hours ago
Items per page: 25
1–1 of 1 item
1
1 of 1 page

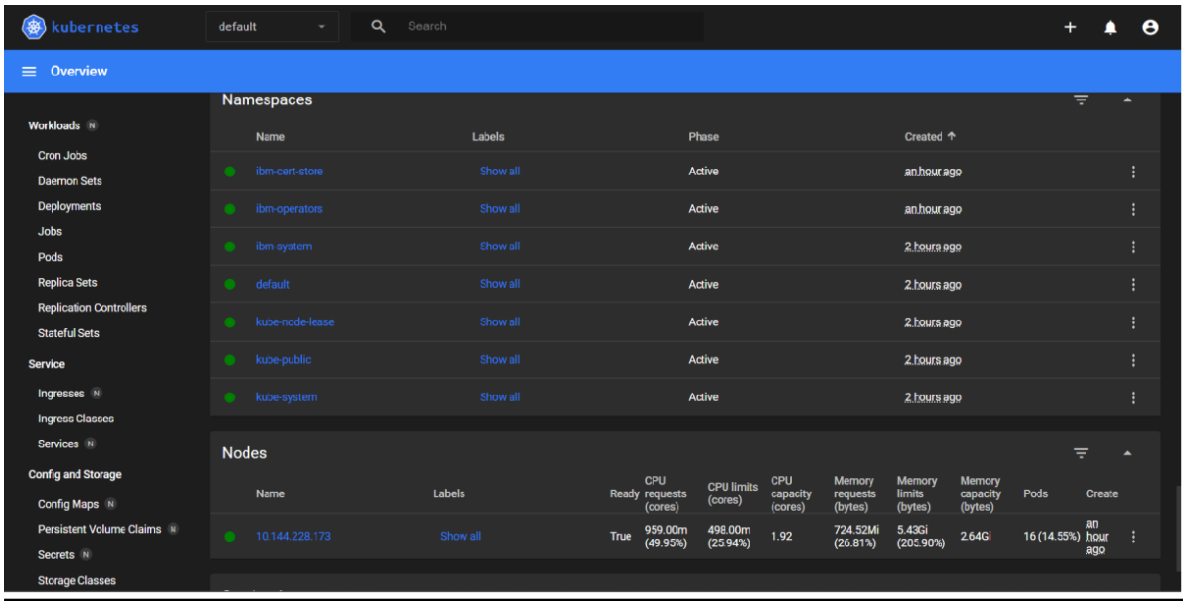


Question-4:

Create a Kubernetes cluster in IBM cloud and deploy helloworld image or jobportal image and also expose the same app to run in nodeport.

Solution:




kubernetes
default
Search
Overview
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
Secrets
Storage Classes
Namespaces
Name
Labels
Phase
Created
ibm-cert-store
Show all
Active
an hour ago
ibm-operators
Show all
Active
an hour ago
ibm-system
Show all
Active
2 hours ago
default
Show all
Active
2 hours ago
kube-node-lease
Show all
Active
2 hours ago
kube-public
Show all
Active
2 hours ago
kube-system
Show all
Active
2 hours ago
Nodes
Name
Labels
Ready
CPU requests (cores)
CPU limits (cores)
CPU capacity (cores)
Memory requests (bytes)
Memory limits (bytes)
Memory capacity (bytes)
Pods
Create
10.144.228.173
Show all
True
959.00m (49.95%)
498.00m (25.94%)
1.92
724.52Mi (26.81%)
5.43Gi (205.90%)
2.64Gi
16 (14.55%)
an hour ago