

Assignment -4

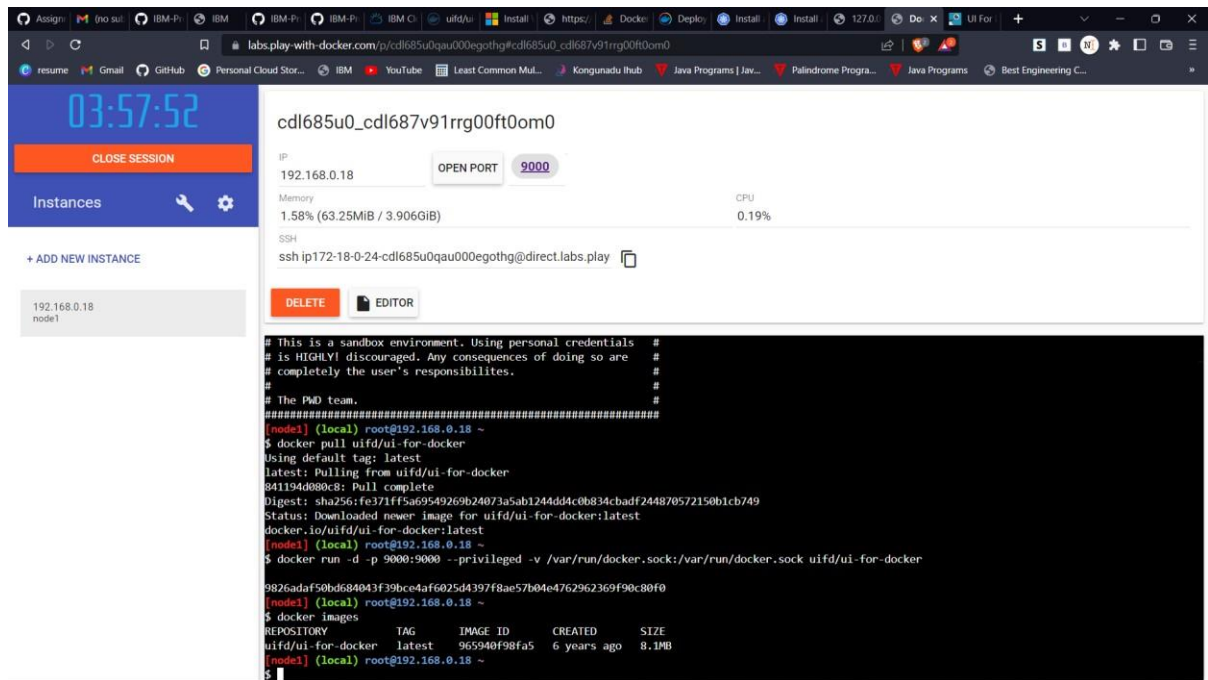
Kubernetes / Docker

PROJECT NAME	Personal Expense Tracker Application
Team ID	PNT2022TMID03044
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Student Roll Number	727719EUEC003

Question-1:

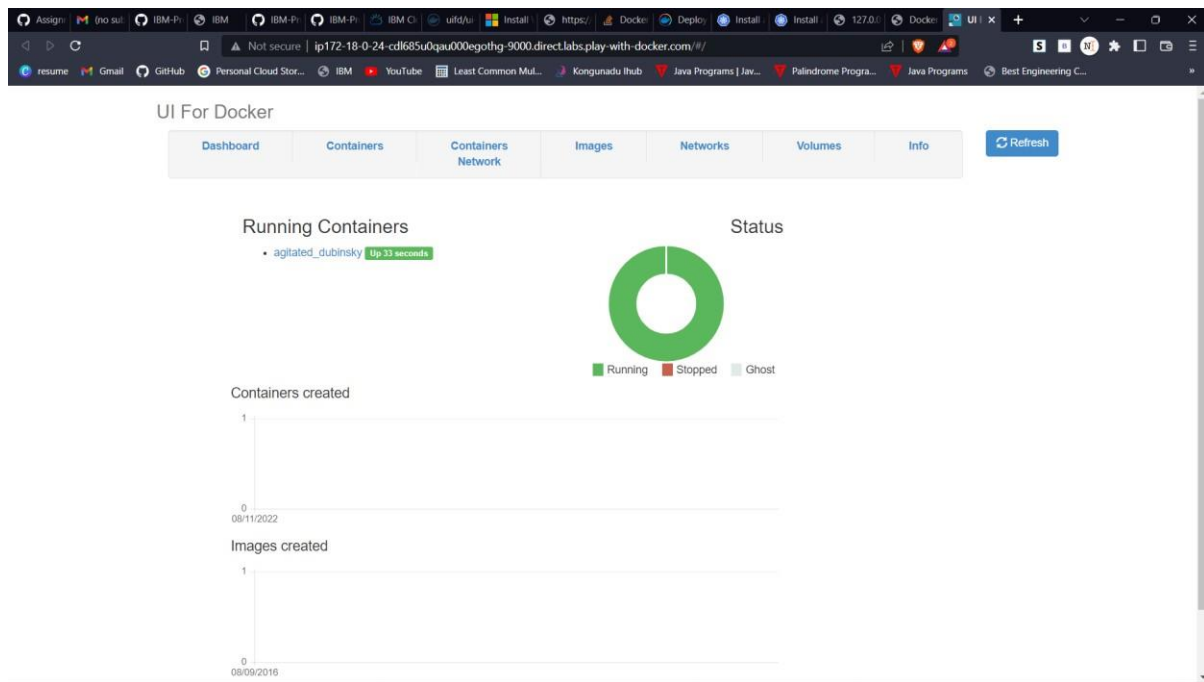
Pull an Image from docker hub and run it in docker playground.

Solution:



The screenshot shows the Docker Playground interface. On the left, there's a sidebar with a clock showing 03:57:52, a 'CLOSE SESSION' button, and a list of instances. The main area displays the details of an instance named 'cdl685u0_cdl687v91rrg00ft0m0'. It shows the IP address 192.168.0.18, an open port 9000, and memory usage of 1.58% (63.25MiB / 3.906GiB). Below this, there's a terminal window showing the following commands and output:

```
# This is a sandbox environment. Using personal credentials #
# is HIGHLY discouraged. Any consequences of doing so are #
# completely the user's responsibilities. #
#
# The PMO team.
#####
[node1] (local) root@192.168.0.18 ~
$ docker pull uifd/ui-for-docker
Using default tag: latest
latest: Pulling from uifd/ui-for-docker
841194d080c8: Pull complete
Digest: sha256:fe371ff5a69549269b24073a5ab1244dd4c0b834cbadf244870572150b1cb749
Status: Downloaded newer image for uifd/ui-for-docker:latest
docker.io/uifd/ui-for-docker:latest
[node1] (local) root@192.168.0.18 ~
$ docker run -d -p 9000:9000 --privileged -v /var/run/docker.sock:/var/run/docker.sock uifd/ui-for-docker
9826ada50bd684043f39bce4af6025d4397f8ae57b04e4762962369f90c80f0
[node1] (local) root@192.168.0.18 ~
$ docker images
REPOSITORY          TAG         IMAGE ID      CREATED      SIZE
uifd/ui-for-docker  latest     965940f98fa5  6 years ago  8.1MB
[node1] (local) root@192.168.0.18 ~
$
```



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.exe x + v
Microsoft Windows [Version 10.0.22621.755]
(c) Microsoft Corporation. All rights reserved.

D:\OneDrive\Desktop\IBM Docs\Assignments\assignment-four>docker build -t assignment-four
"docker build" requires exactly 1 argument.
See 'docker build --help'.

Usage:  docker build [OPTIONS] PATH | URL | -

Build an image from a Dockerfile

D:\OneDrive\Desktop\IBM Docs\Assignments\assignment-four>docker build -t assignment-four .
[+] Building 410.4s (12/12) FINISHED
=> [internal] load build definition from Dockerfile                                0.0s
=> => transferring dockerfile: 231B                                              0.0s
=> [internal] load .dockerignore                                                  0.0s
=> => transferring context: 2B                                                    0.0s
=> [internal] load metadata for docker.io/library/python:3.6                    3.1s
=> [auth] library/python:pull token for registry-1.docker.io                   0.0s
=> [1/6] FROM docker.io/library/python:3.6@sha256:f8652aafa83c25f8c22354d547d892591067aa4026a7fa9a6819df9f300af6fc  0.0s
=> [internal] load build context                                                 0.0s
=> => transferring context: 292B                                                  0.0s
=> CACHED [2/6] WORKDIR /app                                                      0.0s
=> [3/6] ADD . /app                                                              0.0s
=> [4/6] COPY requirements.txt /app                                              0.0s
=> [5/6] RUN python3 -m pip install -r requirements.txt                          5.7s
=> [6/6] RUN python3 -m pip install ibm_db                                      400.6s
=> exporting to image                                                            0.0s
=> => exporting layers                                                            0.7s
=> => writing image sha256:c078f0dadaefc509e6a60020e5640f17a4aae981c68d3f7c7c416ec0c88fcbac  0.0s
=> => naming to docker.io/library/assignment-four                             0.0s

Use 'docker scan' to run Snyk tests against images to find vulnerabilities and learn how to fix them

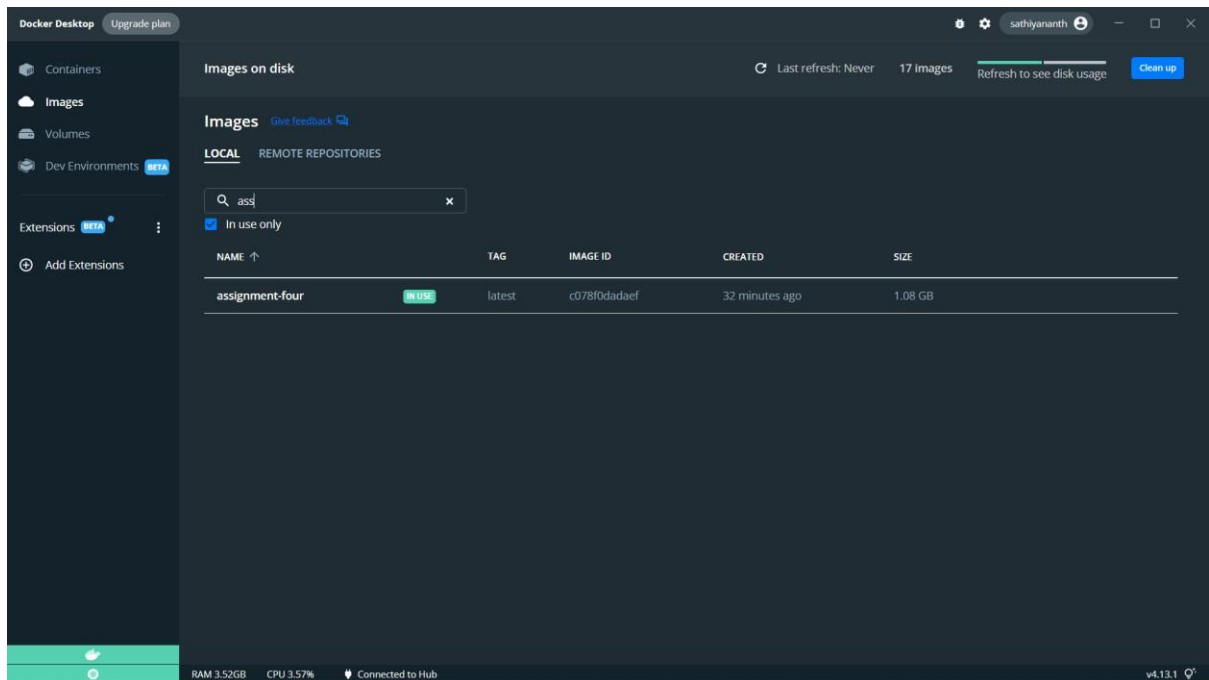
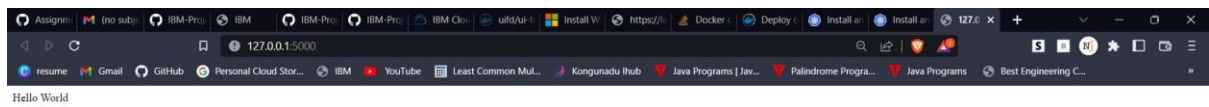
D:\OneDrive\Desktop\IBM Docs\Assignments\assignment-four>
```

```
C:\Windows\System32\cmd.exe
D:\OneDrive\Desktop\IBM Docs\Assignments\assignment-four>docker images
REPOSITORY              TAG                IMAGE ID           CREATE
D                        SIZE
assignment-four         latest            c078f0dadaef      55 sec
ons 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  kubernet...-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         ca0ealee3cfd       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\Assignments\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.exe
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  kubernet...-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         ca0ealee3cfd       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

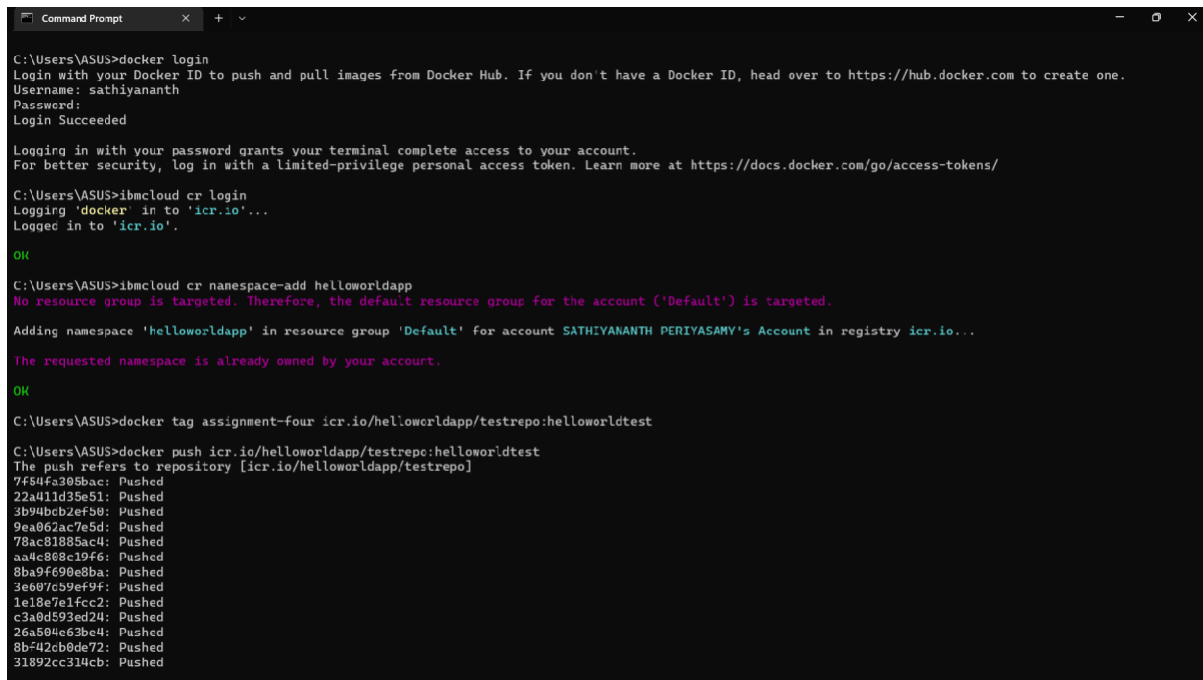
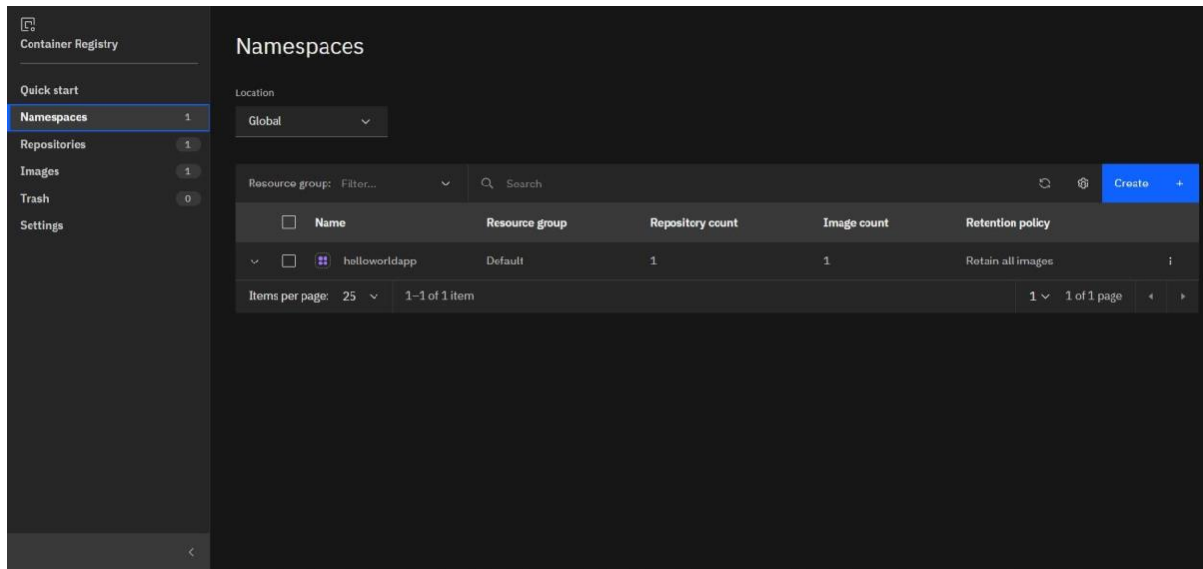
D:\OneDrive\Desktop\IBM Docs\Assignments\assignment-four>docker run -p 5000:5000 assignment-four
* Serving Flask app 'app' (lazy loading)
* Environment: production
WARNING: This is a development server. Do not use it in a production deployment.
Use a production WSGI server instead.
* Debug mode: on
* Running on http://127.0.0.1:5000/ (Press CTRL+C to quit)
* Restarting with stat
* Debugger is active!
* Debugger PIN: 569-750-282
```



Question-3:

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

Solution:



```
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]
7f54fa385bac: Pushed
22a411d35e51: Pushed
3b94bcb2ef50: Pushed
9ea062ac7e5d: Pushed
78ac81885ac4: Pushed
aa4c888c19f6: Pushed
8ba9f690e8ba: Pushed
3e607c59ef9f: Pushed
1e18e7e1fcc2: Pushed
c3a0d593ed24: Pushed
26a504e63be4: Pushed
8b442cb0de72: Pushed
31892cc31dcb: Pushed
11936651f93b: Pushed
helloworldtest: digest: sha256:78e5bb538c5b55e5827f0eecf765cb3690a4cf37ec0195dc98cb222669f0155e 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

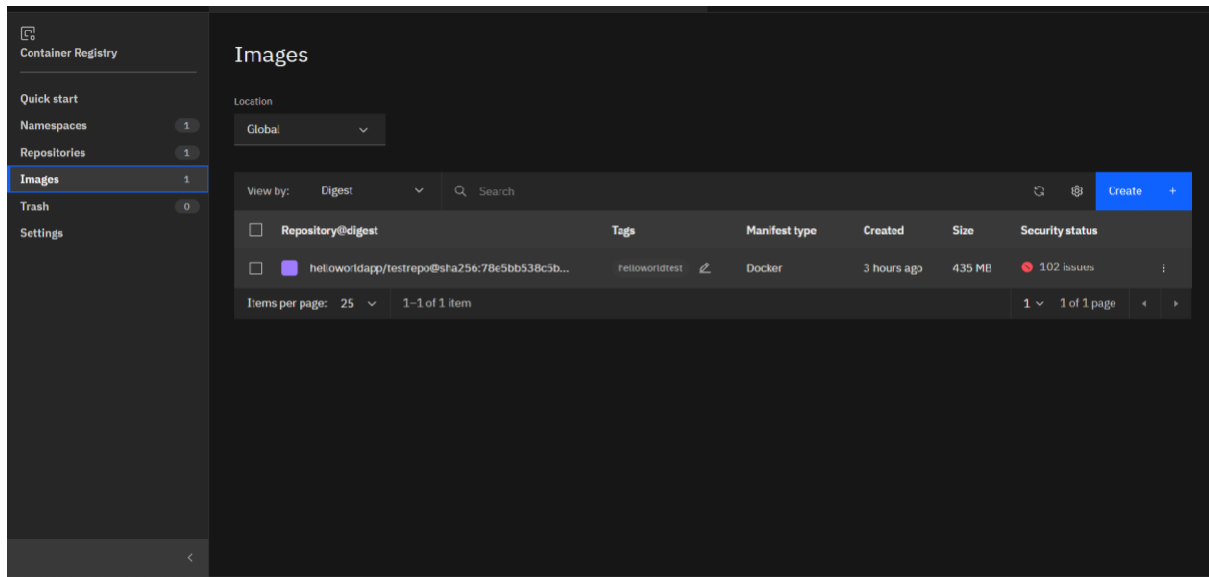
Location
Global

Search

Create +

Name	Image count	Namespace	Last updated
<div>testrepo</div> <div>icr.io/helloworldapp/testrepo</div>	1	helloworldapp	3 hours ago

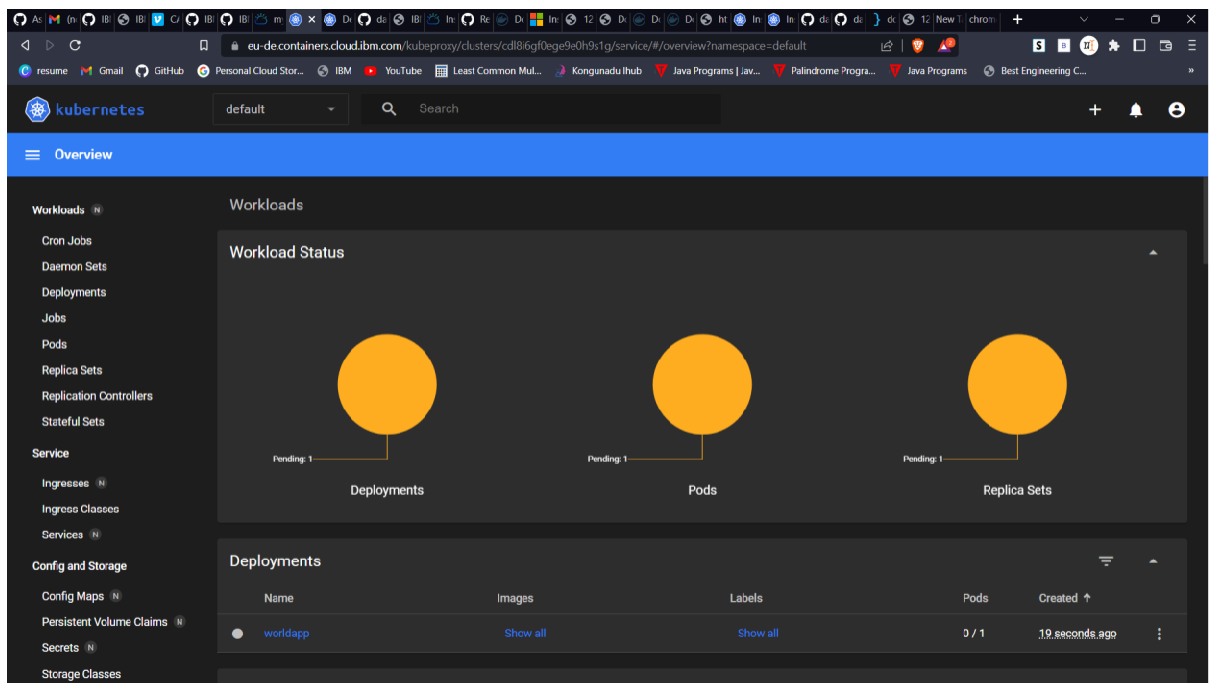
Items per page: 25 1-1 of 1 item 1 1 of 1 page



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%)	496.00m (25.94%)	1.92	724.52Mi (26.81%)	5.43Gi (205.90%)	2.64G	16 (14.55%)	an hour ago