

## Assignment 4

Assignment date	25 october 2022
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Maximum Marks	2 Marks

### Question 1:

Pull an image from docker hub and run it on docker playground.

### Solution 1:

```
docker pull uifd/ui-for-docker
```

```
docker run -d -p 9000:9000 --privileged -v /var/run/docker.sock:/var/run/docker.sock uifd/ui-for-docker
```

The screenshot shows the Docker Hub interface for the repository `uifd/ui-for-docker`. The page includes a search bar, navigation links (Explore, Repositories, Organizations, Help), and a user profile (priyadharshini1632). The repository page features a blue cube icon, the name `uifd/ui-for-docker`, and a star icon. It notes that the repository is deprecated and points to `portainer/portainer` for development. A section titled "UI For Docker" explains that it is a web interface for the Docker Remote API. A "chat on gitter" button is present. A "Docker Pull Command" box displays the command `docker pull uifd/ui-for-docker`. The Windows taskbar at the bottom shows the search bar, task view, and various application icons, with the system clock indicating 21:21 on 04-11-2022.

## Docker playground:

The screenshot shows the Docker Playground interface in a web browser. The top navigation bar includes links to IBM, WhatsApp, IBM-Project-22133-1659805, uifd/ui-for-docker - Docker, and Docker Playground. The URL bar shows the address: labs.play-with-docker.com/p/cdijgm3tccg00a7r71g#cdijgm3\_cdihlm3tccg00a7r74g.

On the left sidebar, there is a clock showing 03:45:22, a 'CLOSE SESSION' button, and an 'Instances' section with a '+ ADD NEW INSTANCE' button. Below this, a list of instances shows '192.168.0.18 node1'.

The main content area displays the instance details for 'cdijgm3\_cdihlm3tccg00a7r74g'. It shows the IP address '192.168.0.18', a memory usage of '1.63% (65.11MiB / 3.906GiB)', and a CPU usage of '0.51%'. There is an 'OPEN PORT' button set to '9000'. Below this, an SSH command is provided: 'ssh ip172-18-0-26-cdijgm3tccg00a7r71g@direct.labs.play-'. There are 'DELETE' and 'EDITOR' buttons.

The terminal window shows the following commands and output:

```
# The FWD team.
#####
[node1] (local) root@192.168.0.18 ~
$ docker pull uifd/ui-for-docker
bash: $: command not found
[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
unknown flag: --privileged
See 'docker run --help'.
[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
78ab97261cc11c0d591eal7aca7505d9b1538af8f0e882f34eb334ba4657ba04
[node1] (local) root@192.168.0.18 ~
$
```

## Docker UI:

The screenshot shows the Docker UI interface in a web browser. The top navigation bar includes links to Docker Hub, Docker Playground, and UI For Docker. The URL bar shows the address: ip172-18-0-40-cdi0ji60qau0008f9u80-9000.direct.labs.play-with-docker.com/#/.

The main content area displays the 'UI For Docker' dashboard. It has a navigation bar with tabs: Dashboard, Containers, Containers Network, Images, Networks, Volumes, and Info. There is a 'Refresh' button.

The 'Running Containers' section shows a list of containers with the name 'serene\_keller' and a status of 'Up 17 seconds'. Below this, there is a donut chart showing the status of containers: Running (green), Stopped (red), and Ghost (grey). The chart shows that all containers are running.

The 'Containers created' section shows a line graph with the y-axis labeled '1' and the x-axis labeled '04/11/2022'. The graph shows a single data point at the value of 1.

The 'Images created' section shows a line graph with the y-axis labeled '1' and the x-axis labeled '04/11/2022'. The graph shows a single data point at the value of 1.

## Question 2:

Create a docker file for the job portal app or hello world app and deploy it in docker desktop app.

## Solution 2:

### DockerFile

Dockerfile - Notepad

File Edit Format View Help

```
FROM python:3.8
WORKDIR /app
ADD . /app
COPY requirements.txt /app
RUN python3 -m pip install -r requirements.txt
EXPOSE 5000
CMD ["python", "app.py"]
```

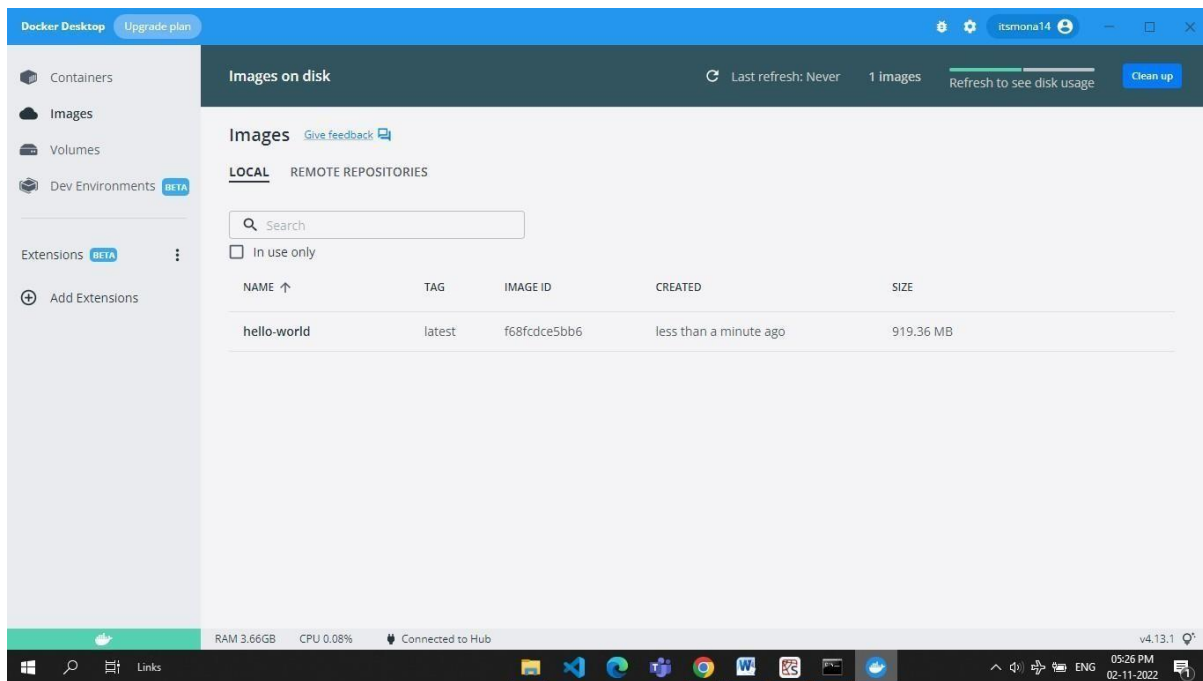
### Bulid Docker image

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

E:\Study materials\Sem 7\IBM\Exercise\Assignment4>docker build -t hello-world .
[+] Building 160.4s (10/10) FINISHED
-> [internal] load build definition from Dockerfile 0.0s
-> [internal] load dockerfile: 1948 0.0s
-> [internal] load .dockerignore 0.0s
-> [internal] transfer context: 2B 0.0s
-> [internal] load metadata for docker.io/library/python:3.8 5.0s
[1/5] FROM docker.io/library/python:3.8@sha256:089d758211770a2dd03ecc4b10a8d851f6f77af3f1e3f3620d8519190b8aa1d5 149.9s
-> resolve docker.io/library/python:3.8@sha256:089d758211770a2dd03ecc4b10a8d851f6f77af3f1e3f3620d8519190b8aa1d5 0.0s
-> sha256:90e072f7e9cd8c17c25b21573681051f052e054f57cc07eb42937a1a47114408 8.56kB / 8.56kB 0.0s
-> sha256:17c9e0141fdb3307e5a1c07d4f0be4e0ac1a89e0e29f3a0e5570d4504f7770 55.05MB / 55.05MB 65.2s
-> sha256:4a4ce0d8587edc18412817019074f5e84a8ede4e3f89006af13df3f80b78a70d 10.89MB / 10.89MB 8.7s
-> sha256:089d758211770a2dd03ecc4b10a8d851f6f77af3f1e3f3620d8519190b8aa1d5 1.86kB / 1.86kB 0.0s
-> sha256:254101fcf737ef08a912ce9ad7488801a01e0a35bfff1cc5e7d0bb86d0b6e1c3f 2.22kB / 2.22kB 0.0s
-> sha256:de4a4c6ceaa8801bb0b7377e10220e914da403bc93fa79663cbf2dcf1800b6f1 5.16MB / 5.16MB 18.3s
-> sha256:a7069cfcfb4e0ea91291fd70b19ecbe93c03ea4ded0d14842a6cb4c0c4211a43 54.59MB / 54.59MB 47.5s
-> sha256:74bfdbef91271f1b08f0a1716224dce5c0beead36099437929cdda4a46d3d 186.07MB / 186.07MB 133.3s
-> sha256:16fe51aed899f36017fe42b590b1a622b29eb0c3622e92e13df14578825eb37 6.29MB / 6.29MB 53.8s
-> sha256:2b979a71384cf50dac9fd25d381b70028d67b60b45c1a2bec3ea10b92636d4 17.39MB / 17.39MB 68.0s
-> sha256:aa3c4359fdb43308669ae8ba78b2eb713221ef3a3ec97f93590500f1506de1 234B / 234B 67.3s
-> extracting sha256:17c9e0141fdb3387e5a1c07d4f0be4e0ac1a89e0e29f3a0e5570d4504f7770 10.3s
-> sha256:58700bfcfa0c82e5d24a9f76ba7748a194c4fd7312a397860b463772ce91b6 2.89MB / 2.89MB 70.7s
-> extracting sha256:de4a4c6ceaa8801bb0b7377e10220e914da403bc93fa79663cbf2dcf1800b6f1 1.3s
-> extracting sha256:4edced8587e6c18412817019074f5e84a8ede4e3f89006af13df3f80b78a70d 1.0s
-> extracting sha256:a7960c9ffb46e6a91291fd76b19ecbe93c03ea4ded0d14842a6cb4c0c4211a43 13.1s
-> extracting sha256:74bfdbef91271f1b08f0a1716224dce5c0beead36099437929cdda4a46d3d 13.6s
-> extracting sha256:16fe51aed899f36017fe42b590b1a622b29eb0c3622e92e13df14578825eb37 0.4s
-> extracting sha256:2b979a71384cf50dac9fd25d381b70028d67b60b45c1a2bec3ea10b92636d4 1.1s
-> extracting sha256:aa3c4359fdb43308669ae8ba78b2eb713221ef3a3ec97f93590500f1506de1 0.0s
-> extracting sha256:58700bfcfa0c82e5d24a9f76ba7748a194c4fd7312a397860b463772ce91b6 0.4s
-> [internal] load build context 0.0s
-> transferring context: 1.15kB 0.0s
-> [2/5] WORKDIR /app 0.4s
-> [3/5] ADD . /app 0.1s
-> [4/5] COPY requirements.txt /app 0.0s
-> [5/5] RUN python3 -m pip install -r requirements.txt 3.0s
-> exporting to image 0.2s
-> exporting layers 0.2s
-> writing image sha256:f08fcdce5bb665f00ebf47bc4d137a4f7e0533348402c5bfdd71121d7da3f63 0.0s
-> naming to docker.io/library/hello-world 0.0s

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

## Deploy it on Docker hub



```
C:\Windows\System32\cmd.exe
Use 'docker scan' to run Snyk tests against images to find vulnerabilities and learn how to fix them

E:\Study materials\Sem 7\IBM\Exercise\Assignment4>docker images
REPOSITORY    TAG       IMAGE ID       CREATED        SIZE
hello-world    latest    f68fcdce5bb6   5 minutes ago  919MB

E:\Study materials\Sem 7\IBM\Exercise\Assignment4>docker login
Authenticating with existing credentials...
Login Succeeded

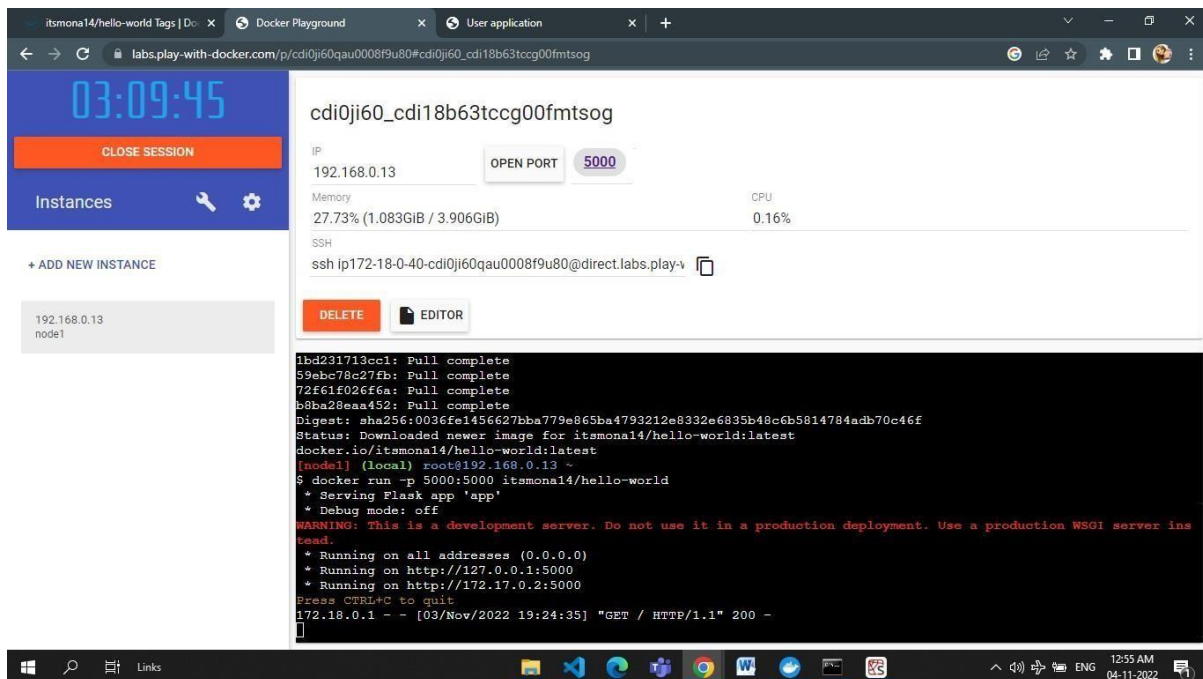
Logging in with your password grants your terminal complete access to your account.
For better security, log in with a limited-privilege personal access token. Learn more at https://docs.docker.com/go/access-tokens/

E:\Study materials\Sem 7\IBM\Exercise\Assignment4>docker tag hello-world itsmona14/hello-world

E:\Study materials\Sem 7\IBM\Exercise\Assignment4>docker push itsmona14/hello-world
Using default tag: latest
The push refers to repository [docker.io/itsmona14/hello-world]
373eb5cf4ceb: Pushed
1e505dc1de5e: Pushed
090c85cb75c5: Pushed
ded8299b8f1a: Pushed
1fe0699af9f7: Mounted from library/python
156568a71809: Mounted from library/python
5fca8a94d542: Mounted from library/python
6b183c62e3d7: Mounted from library/python
882fd36bfd35: Mounted from library/python
d1dec9917839: Mounted from library/python
e38adf39e1dd: Mounted from library/python
4ed121b04368: Mounted from library/python
99d07d703dd5: Mounted from library/python
latest: digest: sha256:46ff91edc98aaa5d7fff51ba708b6498af3c4f64612d9a990bf437497555fd82 size: 3049

E:\Study materials\Sem 7\IBM\Exercise\Assignment4>
```

## Tested it using Docker playground



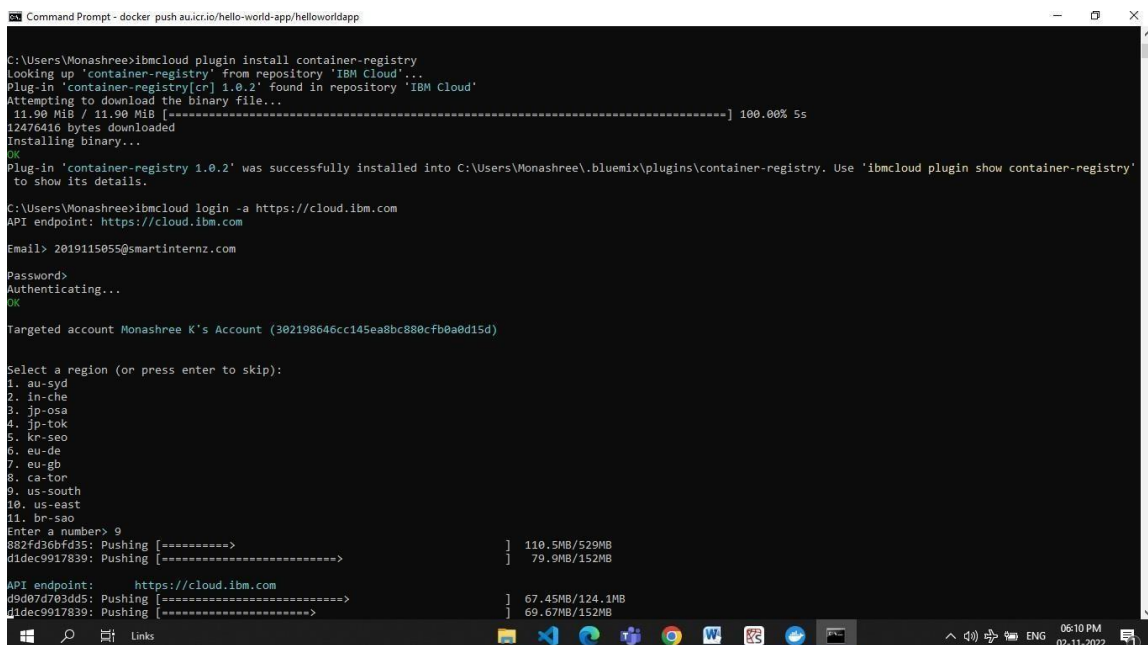
The screenshot shows the Docker Playground interface. On the left, there's a sidebar with a clock showing 03:09:45, a 'CLOSE SESSION' button, and a list of instances. The main panel displays the details of a container named 'cdi0ji60\_cdi18b63tccg00fmtsog'. It shows the IP address 192.168.0.13, memory usage at 27.73% (1.083GiB / 3.906GiB), and CPU usage at 0.16%. An SSH command is provided: 'ssh ip172-18-0-40-cdi0ji60qau0008f9u80@direct.labs.play-v'. Below this, a terminal window shows the output of a Docker run command, indicating that the 'hello-world' image was pulled and the container is running successfully.

### Question 3:

Create an IBM container registry and deploy helloworld app or job portal app.

### Solution 3:

My image link: [au.icr.io/hello-world-app/hello-world](https://au.icr.io/hello-world-app/hello-world)



The screenshot shows a Windows Command Prompt window with the following commands and output:

```
C:\Users\Monashree>ibmcloud plugin install container-registry
Looking up 'container-registry' from repository 'IBM Cloud'...
Plug-in 'container-registry[cr] 1.0.2' found in repository 'IBM Cloud'
Attempting to download the binary file...
11.90 MiB / 11.90 MiB [=====] 100.00% 5s
12476416 bytes downloaded
Installing binary...
OK
Plug-in 'container-registry 1.0.2' was successfully installed into C:\Users\Monashree\bluemix\plugins\container-registry. Use 'ibmcloud plugin show container-registry' to show its details.

C:\Users\Monashree>ibmcloud login -a https://cloud.ibm.com
API endpoint: https://cloud.ibm.com

Email> 2019115055@smartinternz.com

Password>
Authenticating...
OK

Targeted account Monashree K's Account (302198646cc145ea8bc880cfb0a0d15d)

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
9. us-south
10. us-east
11. br-sao
Enter a number> 0
882fd36bfd35: Pushing [=====] 110.5MB/529MB
d1dec9917839: Pushing [=====] 79.9MB/152MB

API endpoint: https://cloud.ibm.com
49d07d093dd5: Pushing [=====] 67.45MB/124.1MB
d1dec9917839: Pushing [=====] 69.67MB/152MB
```

```
C:\Windows\System32\cmd.exe - docker run -p 5000:5000 au.icr.io/hello-world-app/hello-world

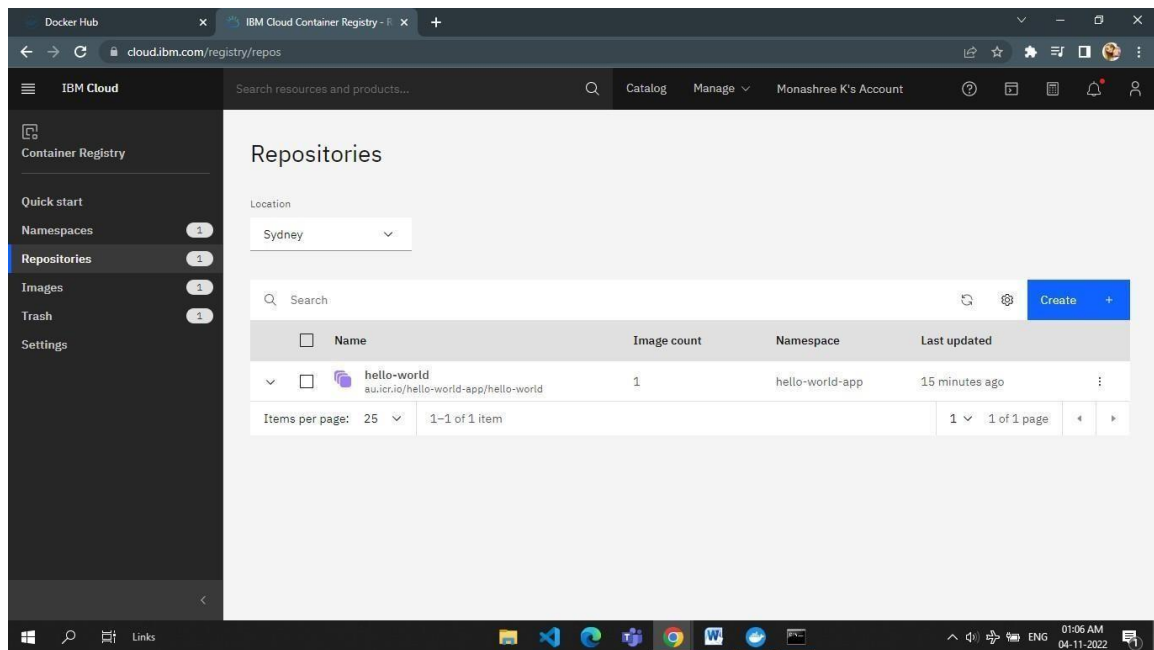
E:\Study materials\Sem 7\IBM\Exercise\Assignment4>docker tag hello-world au.icr.io/hello-world-app/hello-world
E:\Study materials\Sem 7\IBM\Exercise\Assignment4>docker push au.icr.io/hello-world-app/hello-world
Using default tag: latest
The push refers to repository [au.icr.io/hello-world-app/hello-world]
492bcd5cc069: Pushed
006e0938fc5e: Pushed
4bb20ce8724f: Pushed
402dea3c8533: Pushed
f5d161bba139: Pushed
1569e0d95ce6: Pushed
d9e08da15d0c: Pushed
6b183c62e3d7: Mounted from hello-world-app/hello-world-app
882fd36bfd35: Mounted from hello-world-app/hello-world-app
d1dec9917839: Mounted from hello-world-app/hello-world-app
d38adf39e1dd: Mounted from hello-world-app/hello-world-app
4ed121b04368: Mounted from hello-world-app/hello-world-app
09d07d703add: Mounted from hello-world-app/hello-world-app
latest: digest: sha256:0036fe1456627bba779e065ba4793212e8332e6835b48c6b5814784adb70c46f size: 3049

E:\Study materials\Sem 7\IBM\Exercise\Assignment4>ibmcloud cr image-list
Listing images...

Repository          Tag      Digest          Namespace        Created      Size      Security status
au.icr.io/hello-world-app/hello-world  latest  0036fe145662    hello-world-app  12 minutes ago  356 MB    -

OK

E:\Study materials\Sem 7\IBM\Exercise\Assignment4>docker run -p 5000:5000 au.icr.io/hello-world-app/hello-world
* 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 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
172.17.0.1 - - [03/Nov/2022 19:35:58] "GET / HTTP/1.1" 200 -
```



**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 4:**

<https://raw.githubusercontent.com/itsmona14/IBM-Assignment-cloud/main/deployment.yaml>

```
apiVersion: v1
kind: Service
metadata:
  name: hello-world-deployment
spec:
  ports:
    - port: 5000
      targetPort: 5000
  selector:
    app: hello-world
---
apiVersion: apps/v1
kind: Deployment
metadata:
  name: hello-world-deployment
spec:
  replicas: 1
  selector:
    matchLabels:
      app: hello-world
  template:
    metadata:
      labels:
        app: hello-world
    spec:
      containers:
        - name: hello-world
          image: au.icr.io/hello-world-app/hello-world
          imagePullPolicy: Always
          ports:
            - containerPort: 5000
```



mycluster-free - IBM Cloud

cloud.ibm.com/kubernetes/clusters/cd1j33f0a6mchav5kig/overview

IBM Cloud Search resources and products... Catalog Manage Monashree K's Account

Clusters / mycluster-free Normal Expires in 29 days Add tags Help Kubernetes dashboard Actions...

Overview

Worker nodes

Worker pools

DevOps New

**Expires in 29 days:**  
Be sure to back up your data, your cluster will be deleted in 29 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

Details

Cluster ID: cd1j33f0a6mchav5kig

Version: 1.24.7\_1542

Infrastructure: Classic

Zones: Milan 01

Created: 04/11/2022, 01:12

Resource group: Default

Image security enforcement: Enable

mycluster-free - Kubernetes Dashboard

eu-de.containers.cloud.ibm.com/kubeproxy/clusters/cd1j33f0a6mchav5kig/service/#/deployment?namespace=default

kubernetes default Search

Workloads > Deployments

Workloads

Cron Jobs

Daemon Sets

Deployments

Jobs

Pods

Replica Sets

Replication Controllers

Stateful Sets

Service

Ingresses

Ingress Classes

Services

Config and Storage

Config Maps

CPU Usage

Memory Usage

Deployments

Name	Images	Labels	Pods	Created
hello-world-deployment	Show all		1 / 1	34 minutes ago



mycluster-free - Kubernetes Dashboard

eu-de.containers.cloud.ibm.com/kubeproxy/clusters/cd1j33f0a6mchav5kig/service/#/log/default/hello-world-deployment-6c75b9c898-p4ntv/pod?namespac...

kubernetes default Search

Workloads > Pods > hello-world-deployment-6c75b9c898-p4ntv > Logs

Workloads <sup>N</sup>

- Cron Jobs
- Daemon Sets
- Deployments
- Jobs
- Pods
- Replica Sets
- Replication Controllers
- Stateful Sets

Service

- Ingresses <sup>N</sup>
- Ingress Classes
- Services <sup>N</sup>

Config and Storage

Logs from hello-world in hello-world-dep...

```
* 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 server instead.
* Running on http://127.0.0.1:5000
* Running on http://172.30.82.142:5000
Press CTRL+C to quit
```

Logs from Nov 4, 2022 to Nov 4, 2022 UTC

eu-de.containers.cloud.ibm.com/kubeproxy/clusters/cd1j33f0a6mchav5kig/ser...

Windows taskbar: 03:49 PM 04-11-2022