

## Assignment 4

Assignment date	05 November 2022
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Student roll no	951319104035
Maximum Marks	2 Marks

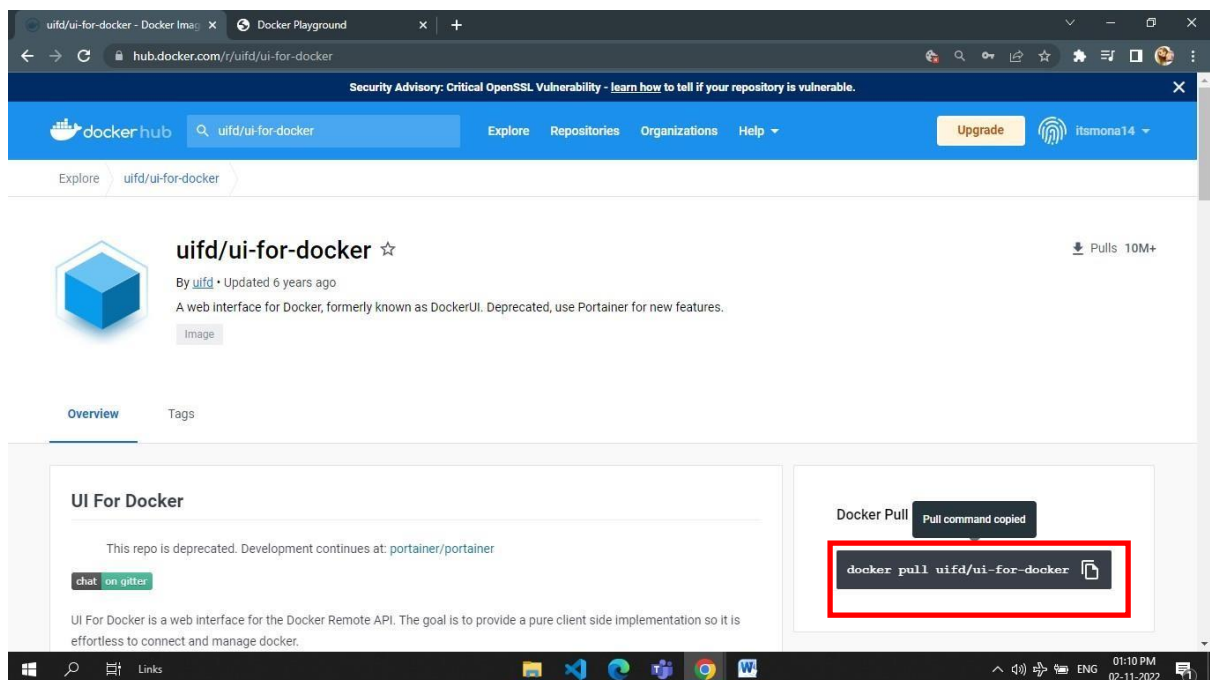
### Question 1:

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
```



## Docker playground:

The screenshot shows the Docker Playground interface. On the left, there's a sidebar with a clock showing 03:57:05, a 'CLOSE SESSION' button, and a list of instances. The main area displays details for a container named 'cdi0ji60\_cdi0jpe0qau0008f9u8g'. It shows the IP address 192.168.0.13, an open port 9000, memory usage of 1.59% (63.77MiB / 3.906GiB), and CPU usage of 0.45%. Below this, there's an SSH command: 'ssh ip172-18-0-40-cdi0ji60qau0008f9u80@direct.labs.play-with-docker.com'. There are 'DELETE' and 'EDITOR' buttons. At the bottom, a terminal window shows 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 FWD team.
#####
[node1] (local) root@192.168.0.13 ~
$ 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@192.168.0.13 ~
$ docker run -d -p 9000:9000 --privileged -v /var/run/docker.sock:/var/run/docker.sock uifd/ui-for-docker
c2537355d58010b2607d19372fd954a94b3f2c922d1c5377d8458ff941cb2cab
[node1] (local) root@192.168.0.13 ~
$
```

## Docker UI:

The screenshot shows the Docker UI interface. At the top, there's a navigation bar with tabs for Dashboard, Containers, Containers Network, Images, Networks, Volumes, and Info. A 'Refresh' button is on the right. Below the navigation bar, the 'Running Containers' section shows a list of containers, including 'serene\_keller' which is 'Up 17 seconds'. To the right, the 'Status' section features a donut chart showing the status of containers: Running (green), Stopped (red), and Ghost (grey). Below this, there are two line graphs: 'Containers created' and 'Images created', both showing a count of 1 over time. The bottom of the interface shows a Windows taskbar with various application icons and a system clock showing 12:08 AM on 04-11-2022.

## Question 2:

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

## Solution 2:

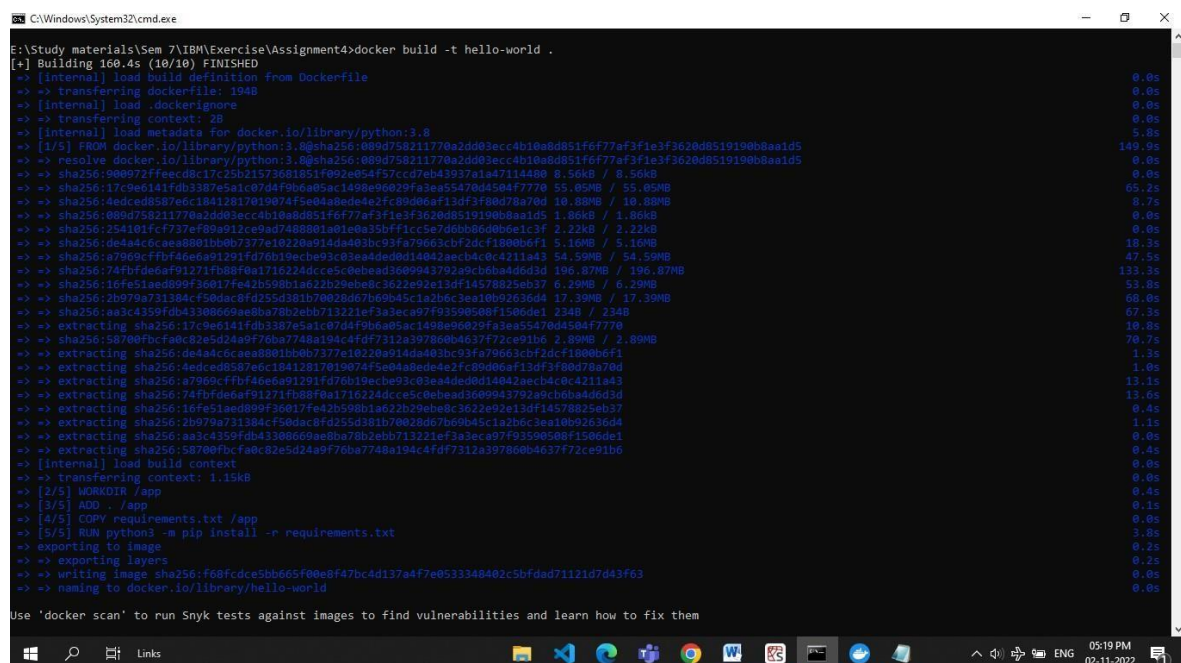
### DockerFile

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"]
```

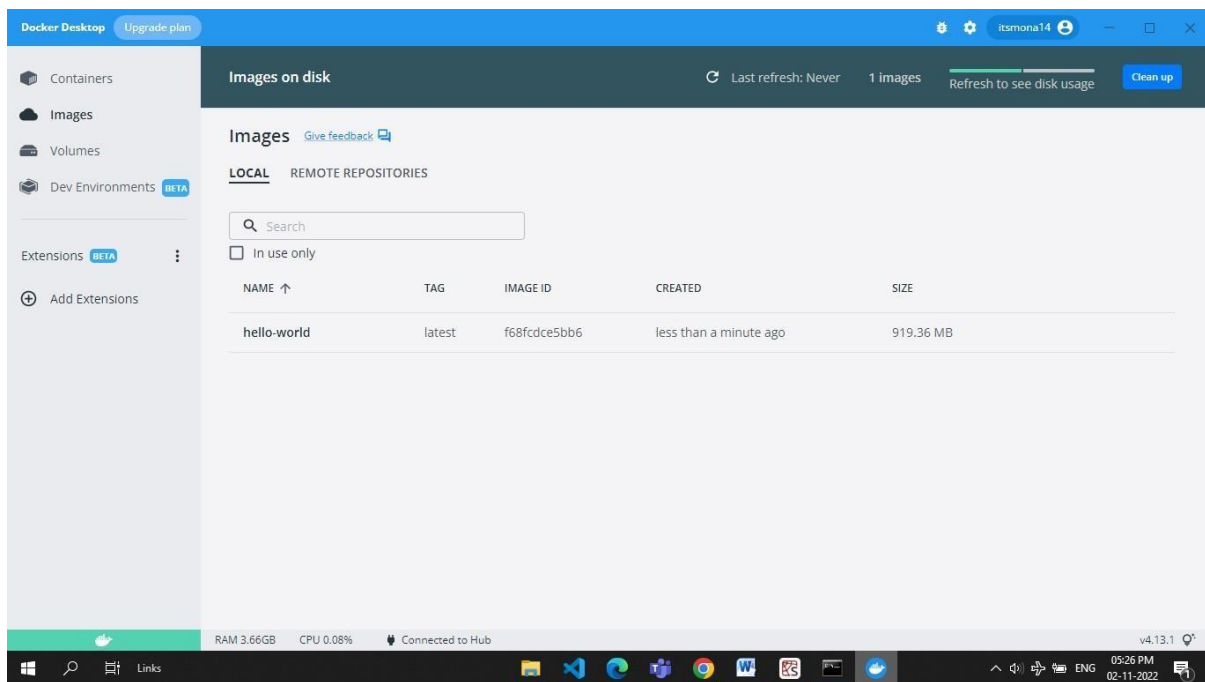
### Bulid Docker image



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

E:\Study materials\Sem 7\IBM\Exercise\Assignment4>docker build -t hello-world .
(a) Building 160.4s (18/10) FINISHED
-> [internal] load build definition from Dockerfile
-> >> transferring dockerfile: 194B
-> [internal] load .dockerignore
-> >> transferring context: 2B
-> [internal] load metadata for docker.io/library/python:3.8
-> [1/1] FROM docker.io/library/python:3.8@sha256:089d750211770a2d0d3ecc4b10a0d851f6f77ef3f1e3f3620d8519190b8aa1d5
-> resolve docker.io/library/python:3.8@sha256:089d750211770a2d0d3ecc4b10a0d851f6f77ef3f1e3f3620d8519190b8aa1d5
-> sha256:989972f5eed8c17c25b21573681851f992e054f57cc07eb43937a1a47114480 8.56kB / 8.56kB
-> sha256:17c9e6141fdb3307e5a1c07d4f9b6a05ac1498e96029fa3ea55470d4504f7770 55.05MB / 55.05MB
-> sha256:4edcd8587e0c10412017019074f5e04a8ede4e2fc89d06af13df3f80d78a70d 10.88MB / 10.88MB
-> sha256:089d750211770a2d0d3ecc4b10a0d851f6f77ef3f1e3f3620d8519190b8aa1d5 1.06kB / 1.06kB
-> sha256:254101fc737ef89e912ce9ad748801a01e0a35b5ff1cc5e7d0b086d0b6e1c3f 2.22kB / 2.22kB
-> sha256:de4a4ccae8081b007377e10220a914de403bc93fa796d0c0f2dcf1800b6f1 5.10MB / 5.10MB
-> sha256:a7909cfbf46e6a91291f070b19ecbe93c03ea4ded0d14042aecb4c0c4211a43 54.59MB / 54.59MB
-> sha256:74bf0de6af91271fb8f0a1716224dce5c0bead3609943792a9cb6ba4d6d3d 196.87MB / 196.87MB
-> sha256:16fe51aed099f36017fe42b598b1a622b29eb0c3622e92e13df14578025eb37 6.29MB / 6.29MB
-> sha256:2b979a731384cf50dac8fd255d301b70020d67b69b45c1a2b6c3ea10b02636d4 17.39MB / 17.39MB
-> sha256:aa3c4359fdb43308669ae8ba78b2ebb713221ef3a3eca97f93590508f1506de1 234B / 234B
-> extracting sha256:17c9e6141fdb3307e5a1c07d4f9b6a05ac1498e96029fa3ea55470d4504f7770
-> sha256:5b700fbcf0c82a5d2ae8f70a07748a184c44df7312a39780004637f72ce910b 2.89MB / 2.89MB
-> extracting sha256:de4a4ccae8081b007377e10220a914de403bc93fa796d0c0f2dcf1800b6f1
-> extracting sha256:4edcd8587e0c10412017019074f5e04a8ede4e2fc89d06af13df3f80d78a70d
-> extracting sha256:a7909cfbf46e6a91291f070b19ecbe93c03ea4ded0d14042aecb4c0c4211a43
-> extracting sha256:74bf0de6af91271fb8f0a1716224dce5c0bead3609943792a9cb6ba4d6d3d
-> extracting sha256:16fe51aed099f36017fe42b598b1a622b29eb0c3622e92e13df14578025eb37
-> extracting sha256:2b979a731384cf50dac8fd255d301b70020d67b69b45c1a2b6c3ea10b02636d4
-> extracting sha256:aa3c4359fdb43308669ae8ba78b2ebb713221ef3a3eca97f93590508f1506de1
-> [internal] load build context
-> >> transferring context: 1.15kB
-> [2/5] WORKDIR /app
-> [3/5] ADD . /app
-> [4/5] COPY requirements.txt /app
-> [5/5] RUN python3 -m pip install -r requirements.txt
-> exporting to image
-> exporting layers
-> writing image sha256:f68fcdce5bb665f0e09f47bc4d137a4f7e053348402c5bfdd71121d7d43f63
-> naming to docker.io/library/hello-world
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

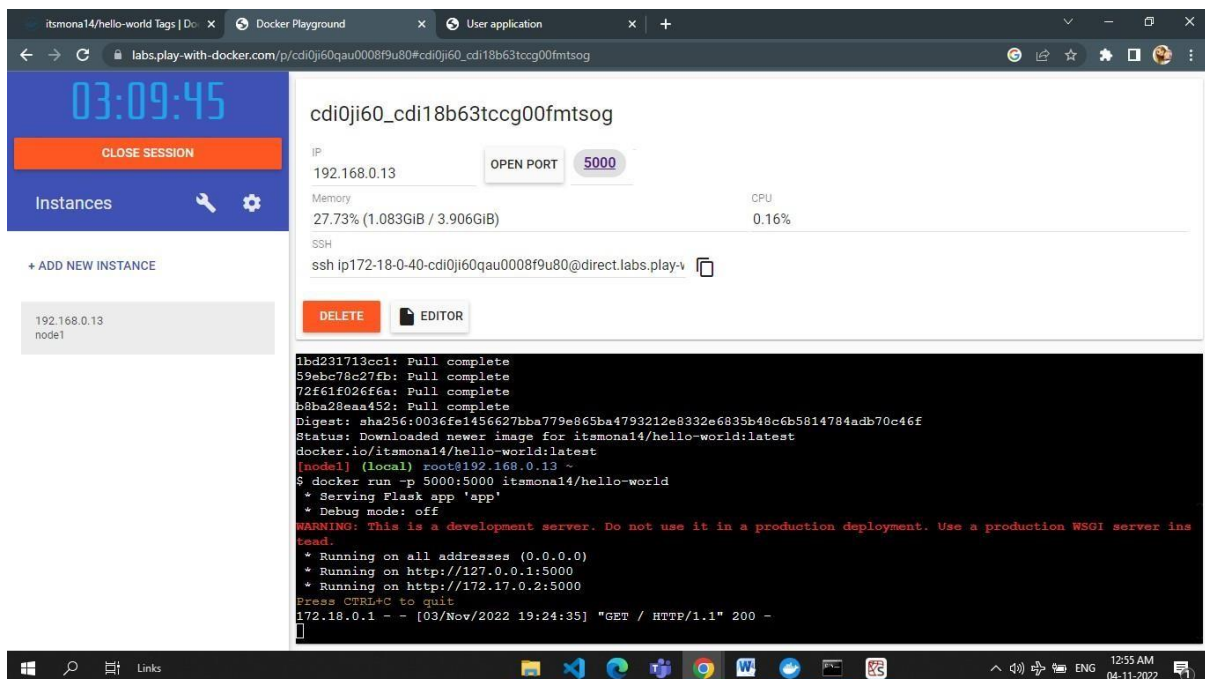
Logging in with your password grants your terminal complete access to your account.
For better security, log in with a limited-privilege personal access token. Learn more at https://docs.docker.com/go/access-tokens/

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
1a585de1de5e: Pushed
090c85cb75c5: Pushed
ded8299bb8f1a: Pushed
1fe0699af9f7: Mounted from library/python
156568a71809: Mounted from library/python
5fca8a94d542: Mounted from library/python
6b183c2e3d7: Mounted from library/python
802fd36bfdd3: Mounted from library/python
d1dec9817839: Mounted from library/python
d38adf39e1dd: Mounted from library/python
4ed121b04368: Mounted from library/python
d9d07d703dd5: Mounted from library/python
latest: digest: sha256:46ff91edc98aaa5d7fff51ba708b6498af3c4f64612d9a990bf437497555fd82 size: 3049

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

## Tested it using Docker playground

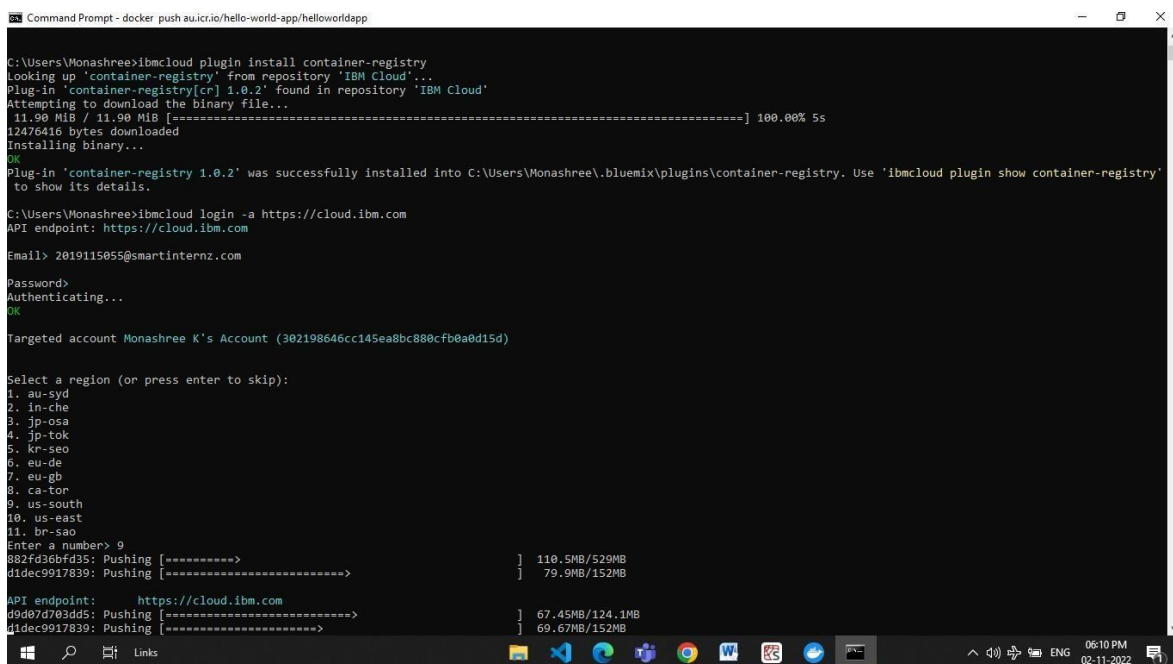


### Question 3:

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)



```
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
f5d161bbai39: Pushed
1569e0e95cac: Pushed
90e08da1508c: 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
99d07d703dd5: Mounted from hello-world-app/hello-world-app
latest: digest: sha256:0036fe1456627bba779e865ba4793212e8332e6835b48c6b5814784adb70c46f 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 -
```

Docker Hub

IBM Cloud Container Registry

cloud.ibm.com/registry/repos

IBM Cloud

Search resources and products...

Catalog

Manage

Monashree K's Account

Container Registry

Quick start

Namespaces 1

Repositories 1

Images 1

Trash 1

Settings

## Repositories

Location

Sydney

Search

Create

Name	Image count	Namespace	Last updated
hello-world au.icr.io/hello-world-app/hello-world	1	hello-world-app	15 minutes 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 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/cd11j33f0a6mchav5kig/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: cd11j33f0a6mchav5kig

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/cd11j33f0a6mchav5kig/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/cdi1j33f0a6mchav5kig/service/#/log/default/hello-world-deployment-6c75b9c898-p4ntv/pod?namespace=...

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/cdi1j33f0a6mchav5kig/.../ser...

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