

Assignment 4

Assignment date	5 November 2022
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Student roll no	951319104036
Maximum Marks	2 Marks

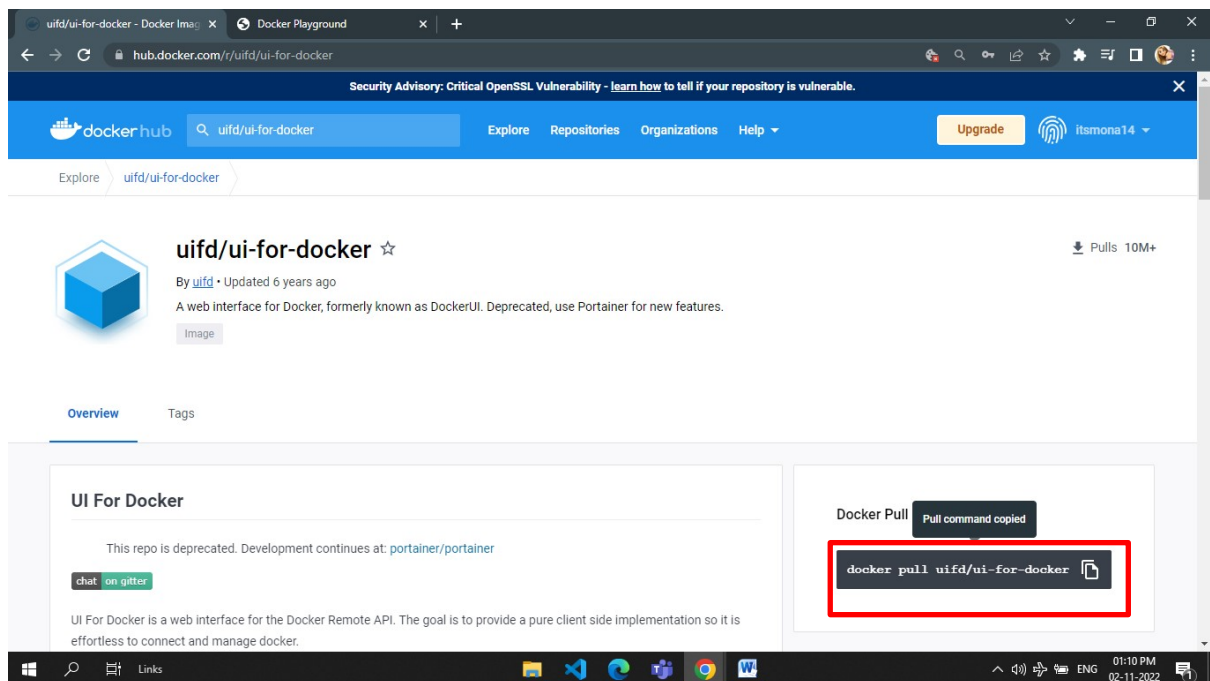
Question 1:

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 timer at 03:57:05, a 'CLOSE SESSION' button, and a list of instances. The main panel displays details for a container named 'cdi0ji60_cdi0jpe0qau0008f9u8g', including its IP (192.168.0.13), memory usage (1.59%), CPU usage (0.45%), and an SSH command. Below this is 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 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
641194d080c8: Pull complete
Digest: sha256:fc371ff5a69849269b24073a5ab1244dd4c0b834cbadf244870572150b1cb749
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
c2557355d58010b2607d19372fd4954a94b3f2c922d1c5377d8458ff941cb2cab
[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'. The 'Containers' tab is selected. Below the navigation bar, there's a 'Running Containers' section showing a container named 'serene_keller' with a status of 'Up 17 seconds'. To the right of this is a 'Status' section with a donut chart showing the status of containers: Running (green), Stopped (red), and Ghost (grey). Below the chart are two line graphs for 'Containers created' and 'Images created' over time.

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\ITBM\Exercise\Assignment4>docker build -t hello-world .
[+] Building 160.4s (10/10) FINISHED
-> [internal] load build definition from Dockerfile 0.0s
-> > transferring dockerfile: 194B 0.0s
-> [internal] load .dockerignore 0.0s
-> > transferring context: 2B 0.0s
-> [internal] load metadata for docker.io/library/python:3.8 5.8s
-> [1/5] FROM docker.io/library/python:3.8sha256:089d758211770a2dd83ecc4b10a8d851f6f77af3f1e3f3620d8519190b8aa1d5 149.9s
-> > resolve docker.io/library/python:3.8sha256:089d758211770a2dd83ecc4b10a8d851f6f77af3f1e3f3620d8519190b8aa1d5 0.0s
-> > sha256:900072f7ecc0b17c25b21573681831f002e054f57ccd70b4303721a47114400 8.56kB / 8.56kB 0.0s
-> > sha256:17c9e6141fdb3387e5a1c07d4f9b6a05ac1498e96029fa3ea55470d4504f770 55.05MB / 55.05MB 65.2s
-> > sha256:4edced8587e6c18412817019074f5e04a8ede4e2fc89d06af13df3f80d78a70d 10.88MB / 10.88MB 8.7s
-> > sha256:089d758211770a2dd83ecc4b10a8d851f6f77af3f1e3f3620d8519190b8aa1d5 1.86kB / 1.86kB 0.0s
-> > sha256:254101fcf737ef89a912ce9ad7488801a01e0a35bfff1cc5e7d6bb86d0b6e1c3f 2.22kB / 2.22kB 0.0s
-> > sha256:de4a4c6caea8801bb0b7377e10220a914da403bc93fa79663cbf2dcf1800b6f1 5.16MB / 5.16MB 18.3s
-> > sha256:a7969cfff6f46e6a91291fd76b19ecbe93c03ea4ded0d14042aebc4c0c4211a43 54.59MB / 54.59MB 47.5s
-> > sha256:74fbf06eaf91271fb88f0a1716224dcce5c0bead3609943792a9cb0ba4d6d3d 196.87MB / 196.87MB 133.3s
-> > sha256:16fe51aed099f36017f4d2b59b1a622b29be8c3622a02e13df14578825eb37 6.20MB / 6.20MB 53.8s
-> > sha256:2b979a731384cf50dac8fd255d381b70028d67b60b45c1a2b6c3ea10b02636d4 17.39MB / 17.39MB 68.0s
-> > sha256:aa3c4359fdb43308669a88ba78b2ebb713221ef3a3eca97f93590508f1506de1 234B / 234B 67.3s
-> > extracting sha256:17c9e6141fdb3387e5a1c07d4f9b6a05ac1498e96029fa3ea55470d4504f770 10.8s
-> > sha256:58700fbcfac082e5d24a9f76ba7748a194c4fd7312a397860b4637f72ce91b6 2.89MB / 2.89MB 70.7s
-> > extracting sha256:de4a4c6caea8801bb0b7377e10220a914da403bc93fa79663cbf2dcf1800b6f1 1.3s
-> > extracting sha256:4edced8587e6c18412817019074f5e04a8ede4e2fc89d06af13df3f80d78a70d 1.0s
-> > extracting sha256:a7969cfff6f46e6a91291fd76b19ecbe93c03ea4ded0d14042aebc4c0c4211a43 13.1s
-> > extracting sha256:74fbf06eaf91271fb88f0a1716224dcce5c0bead3609943792a9cb0ba4d6d3d 13.6s
-> > extracting sha256:16fe51aed099f36017f4d2b59b1a622b29be8c3622a02e13df14578825eb37 0.4s
-> > extracting sha256:2b979a731384cf50dac8fd255d381b70028d67b60b45c1a2b6c3ea10b02636d4 1.1s
-> > extracting sha256:aa3c4359fdb43308669a88ba78b2ebb713221ef3a3eca97f93590508f1506de1 0.4s
-> > extracting sha256:58700fbcfac082e5d24a9f76ba7748a194c4fd7312a397860b4637f72ce91b6 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 3.8s
-> exporting to image 0.2s
-> > exporting layers 0.2s
-> > writing image sha256:f68fcdce5bb665f00e8f47bc4d137a4f7e0533348402c5bfdad71121d7d43f63 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

Docker Desktop Upgrade plan

Containers Images Volumes Dev Environments BETA Extensions BETA Add Extensions

Images on disk Last refresh: Never 1 Images Refresh to see disk usage Clean up

Images Give feedback

LOCAL REMOTE REPOSITORIES

Search

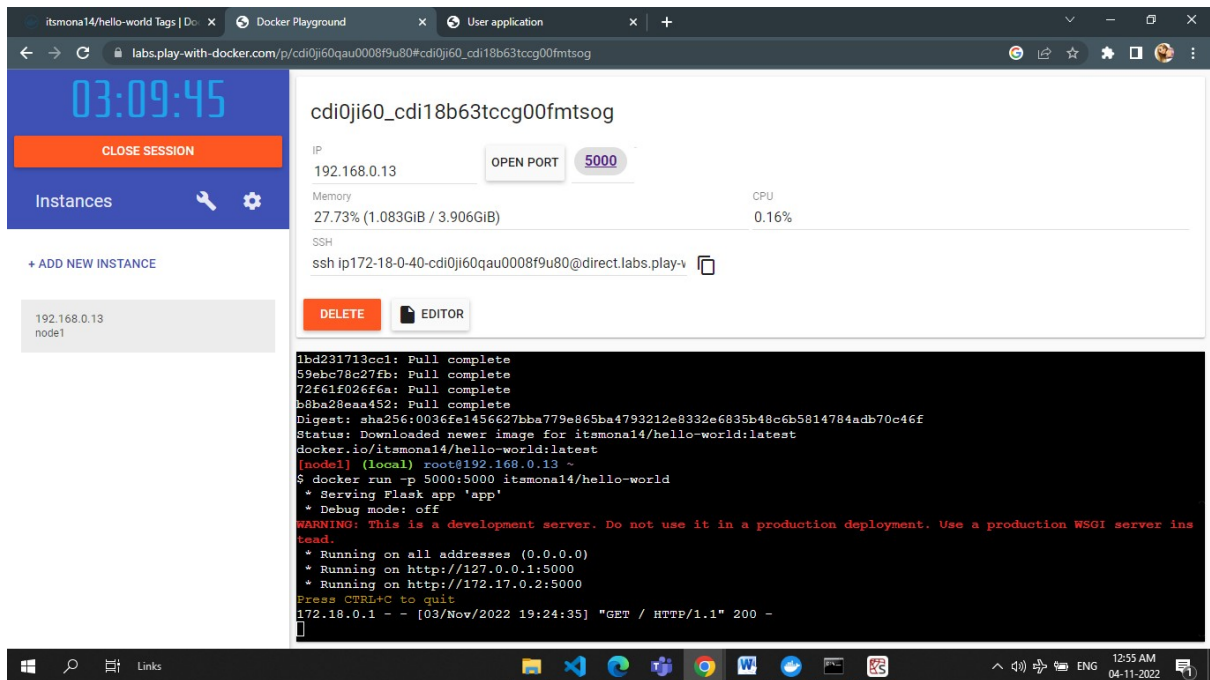
☐ In use only

NAME ↑	TAG	IMAGE ID	CREATED	SIZE
hello-world	latest	f68fcdce5bb6	less than a minute ago	919.36 MB

RAM 3.66GB CPU 0.08% Connected to Hub v4.13.1

```
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
d38adf39e1dd: Mounted from library/python
4ed121b04368: Mounted from library/python
d9d07d783dd5: Mounted from library/python
latest: digest: sha256:46ff91edc98aaa5d7fff51ba708b6498af3c4f64612d9a990bf437497555fd82 size: 3849
E:\Study materials\Sem 7\IBM\Exercise\Assignment4>
```

Tested it using Docker playground

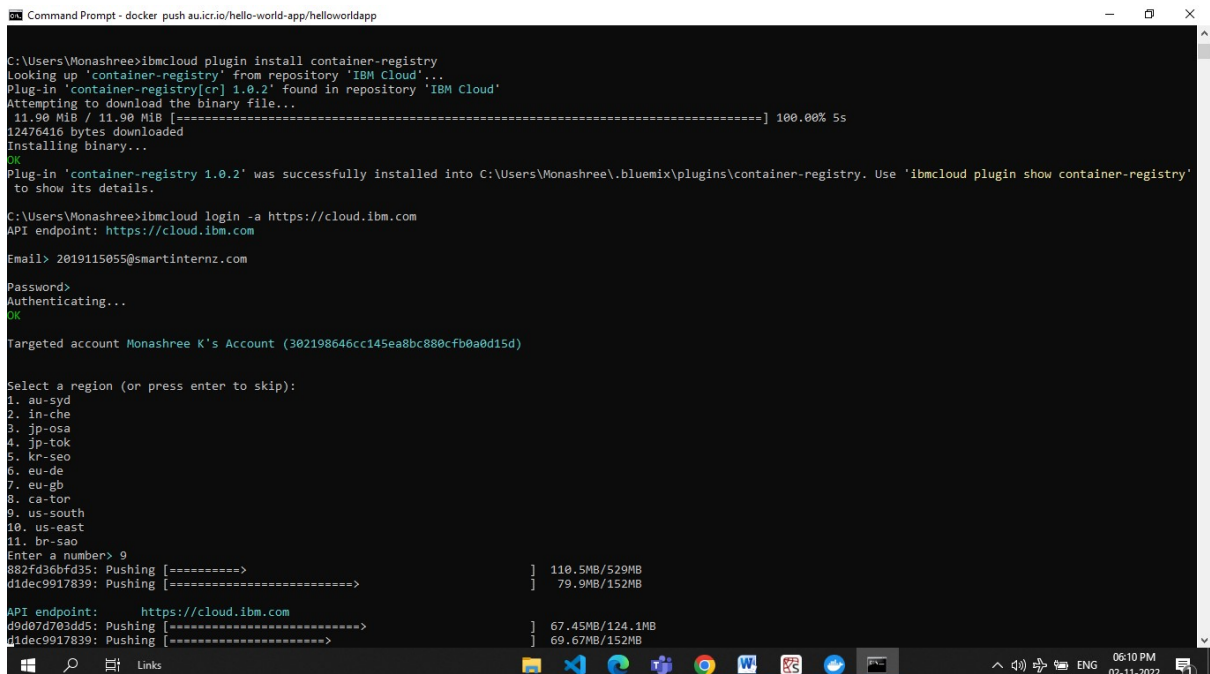


Question 3:

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




```
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

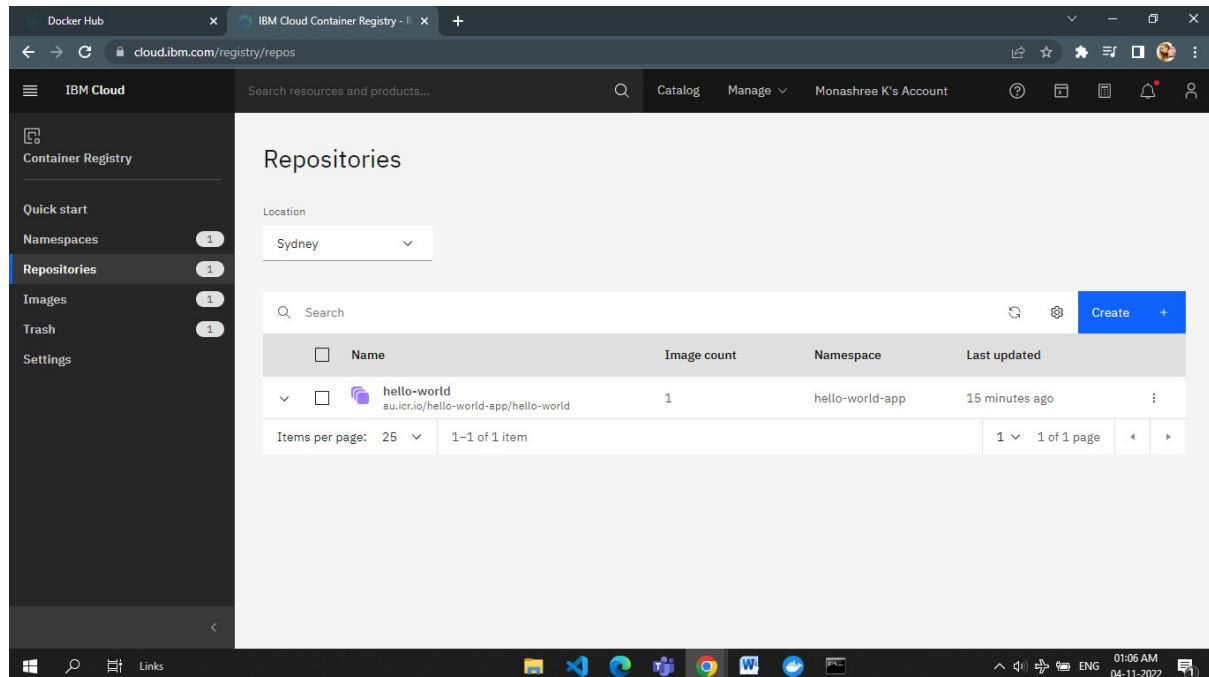
E:\Study materials\Sem 7\IBM\Exercise\Assignment4>docker push au.icr.io/hello-world-app/hello-world
Using default tag: latest
The push refers to repository [au.icr.io/hello-world-app/hello-world]
402bdc5cc869: Pushed
006e0938fc5e: Pushed
4bb20ce8724f: Pushed
402dea3c8533: Pushed
f5d161bba139: Pushed
1569e0d95ce6: Pushed
d9e08da15d0c: Pushed
0b183c62e3d7: Mounted from hello-world-app/hellowordapp
002f936bdf35: Mounted from hello-world-app/hellowordapp
d1dec9917839: Mounted from hello-world-app/hellowordapp
d38adf39e1dd: Mounted from hello-world-app/hellowordapp
4ed121b04368: Mounted from hello-world-app/hellowordapp
d9d07d783dd5: Mounted from hello-world-app/hellowordapp
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 -
```



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
```

The screenshot shows the IBM Cloud Kubernetes dashboard for a cluster named 'mycluster-free'. The cluster is in a 'Normal' state and expires in 29 days. The dashboard provides an overview of the cluster's status, including node status (1 of 1, Normal), add-on status (0 of 0, Normal), master status (Normal), and ingress status (Unknown). A details section at the bottom lists cluster information: Cluster ID (cd11j33f0a6mchav5kig), Version (1.24.7_1542), Infrastructure (Classic), Zones (Milan 01), Created (04/11/2022, 01:12), Resource group (Default), and Image security enforcement (Enable button).

Node status	Add-on status	Master status	Ingress status
1 of 1 Normal	0 of 0 Normal	Normal	Unknown

Cluster ID	Version	Infrastructure	Zones
cd11j33f0a6mchav5kig	1.24.7_1542	Classic	Milan 01

Created	Resource group	Image security enforcement
04/11/2022, 01:12	Default	<button>Enable</button>

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

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

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 all addresses (0.0.0.0)
* 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/...