

Assignment 4

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|-----------------|-----------------|
| Assignment date | 18 October 2022 |
| Student name | Monashree K |
| Student roll no | 2019115055 |
| Maximum Marks | 2 Marks |

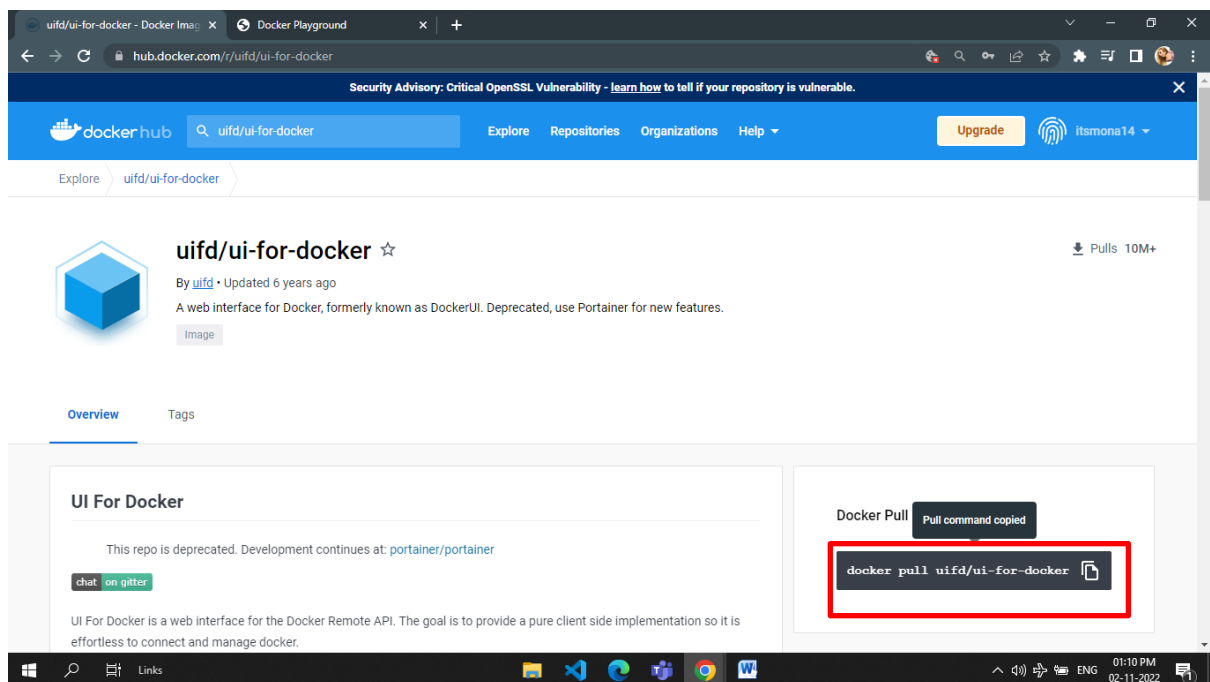
Question 1:

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 in a web browser. The top bar includes 'Docker Hub' and 'Docker Playground' tabs. The main content area displays the instance name 'cdi0ji60_cdi0jpe0qau0008f9u8g' and its IP address '192.168.0.13'. A 'CLOSE SESSION' button is visible. Below this, there's a section for 'Instances' with a list showing '192.168.0.13 node1'. The right panel shows the instance's memory usage (1.59% / 63.77MiB / 3.906GiB) and CPU usage (0.45%). An SSH command is provided: 'ssh ip172-18-0-40-cdi0ji60qau0008f9u80@direct.labs.play-v'. Below the instance details, there's a terminal window showing a shell session. The session starts with a warning about the sandbox environment, followed by the user running 'docker pull uifd/ui-for-docker' and 'docker run -d -p 9000:9000 --privileged -v /var/run/docker.sock:/var/run/docker.sock uifd/ui-for-docker'. The terminal output shows the image being pulled and the container being started.

Docker UI:

The screenshot shows the Docker UI interface in a web browser. The top bar includes 'Docker Hub', 'Docker Playground', and 'UI For Docker' tabs. The main content area displays the 'UI For Docker' title and a navigation bar with tabs: 'Dashboard', 'Containers', 'Containers Network', 'Images', 'Networks', 'Volumes', and 'Info'. A 'Refresh' button is located on the right. The 'Containers' tab is selected, showing a 'Running Containers' section with a list of containers, including 'serene_keller' which is 'Up 17 seconds'. A 'Status' section shows a donut chart with a green segment representing 'Running' containers and a red segment representing 'Stopped' containers. 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 the system clock.

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

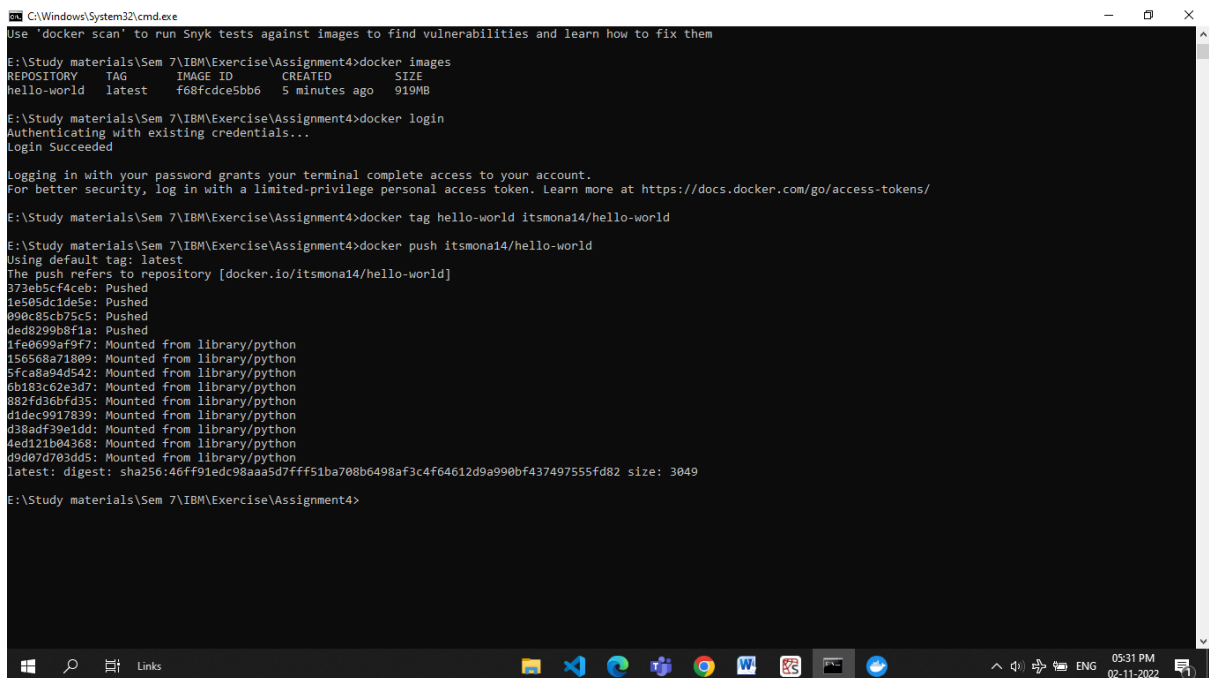
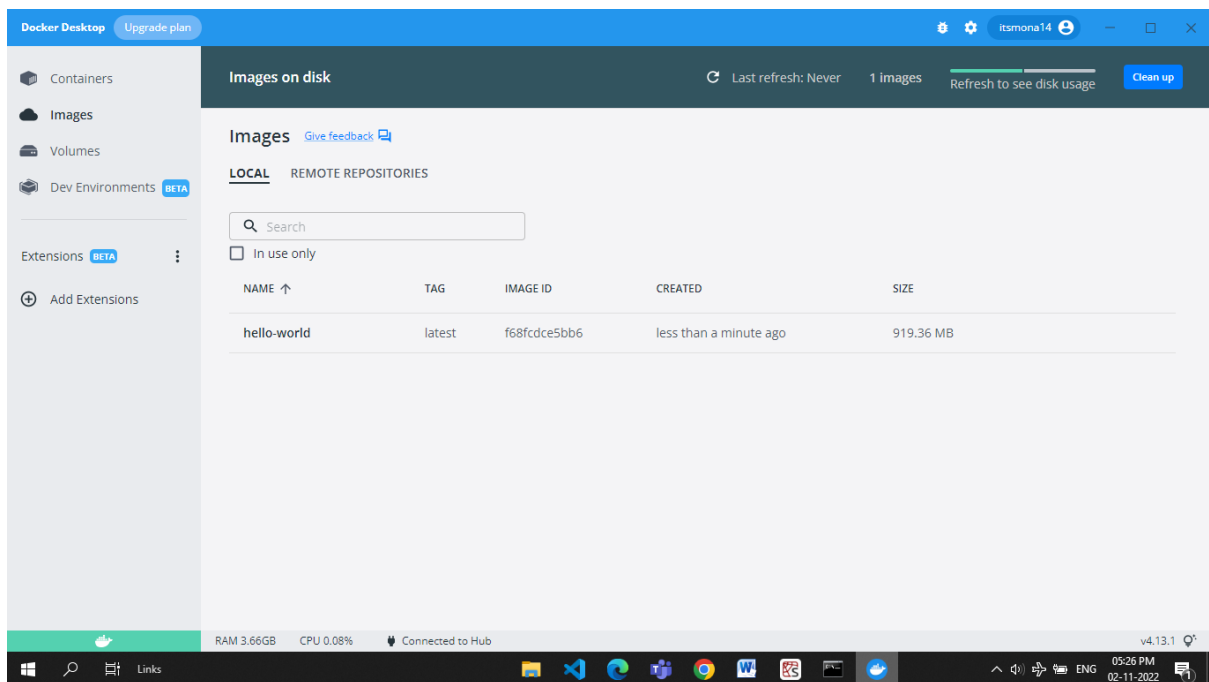
```
FROM python:3.8
WORKDIR /app
ADD . /app
COPY requirements.txt /app
RUN python3 -m pip install -r requirements.txt
EXPOSE 5000
CMD ["python", "app.py"]
```

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
=> => transferring dockerfile: 194B
=> [internal] load .dockerignore
=> => transferring context: 2B
=> [internal] load metadata for docker.io/library/python:3.8
=> [1/5] FROM docker.io/library/python:3.8@sha256:089d758211770a2dd03ecc4b10a8d851f6f77af3f1e3f3620d8519190b8aa1d5
=> resolve docker.io/library/python:3.8@sha256:089d758211770a2dd03ecc4b10a8d851f6f77af3f1e3f3620d8519190b8aa1d5 149.99s
=> sha256:900972ffec08c17c25b21573681851f802e054f5cc47eb43937a1a47114480 8.56kB / 8.56kB
=> sha256:17c9e6141f0b3387e5a1c07d4f9b6a05ac1498e96029fa3ea55470d4504f7770 55.05MB / 55.05MB
=> sha256:4edced8587e6c18412817019074f5e04a8ede4e2fc89d06af13df3f80d78a70d 10.88MB / 10.88MB
=> sha256:089d758211770a2dd03ecc4b10a8d851f6f77af3f1e3f3620d8519190b8aa1d5 1.86kB / 1.86kB
=> sha256:254101fcf737ef89a912ce9ad7488881a01e0a35bffc5e7d6bb86d0b6e1c3f 2.22kB / 2.22kB
=> sha256:de4a4c6cae8801bb0b7377e10220a914da403bc93fa79663cbf2dcf1800b6f1 5.16MB / 5.16MB
=> sha256:a7969c9f9f9f46e6a91291f070b19ecbe93c03ea4de0d14042aebc4c4211e45 54.59MB / 54.59MB
=> sha256:74bf0de6af91271fb88f0a1716224dcce5c0beead3600943702a9cbb44d6d3d 196.87MB / 196.87MB
=> sha256:16fe51aed099f36017fe42b598b1a622b29eb8c3622e92e13df14578825eb37 6.29MB / 6.29MB
=> sha256:2b979a731384cf50dac8fd255d381b70028d67b60b45c1a2b6c3ea10b92636d4 17.30MB / 17.30MB
=> sha256:aa3c4359fdb43308669ae8ba78b2eb713221ef3a3eca97f93590508f1506de1 234B / 234B
=> extracting sha256:17c9e6141f0b3387e5a1c07d4f9b6a05ac1498e96029fa3ea55470d4504f7770 10.8s
=> sha256:58700fbcfa0c82e5d24a9f76ba7748a194c4fdf7312a397860b4637f72ce91b6 2.89MB / 2.89MB
=> extracting sha256:de4a4c6cae8801bb0b7377e10220a914da403bc93fa79663cbf2dcf1800b6f1 1.3s
=> extracting sha256:4edced8587e6c18412817019074f5e04a8ede4e2fc89d06af13df3f80d78a70d 1.0s
=> extracting sha256:a7969c9f9f9f46e6a91291f070b19ecbe93c03ea4de0d14042aebc4c4211e45 13.1s
=> extracting sha256:74bf0de6af91271fb88f0a1716224dcce5c0beead3600943702a9cbb44d6d3d 13.6s
=> extracting sha256:16fe51aed099f36017fe42b598b1a622b29eb8c3622e92e13df14578825eb37 0.4s
=> extracting sha256:2b979a731384cf50dac8fd255d381b70028d67b60b45c1a2b6c3ea10b92636d4 1.1s
=> extracting sha256:aa3c4359fdb43308669ae8ba78b2eb713221ef3a3eca97f93590508f1506de1 0.0s
=> extracting sha256:58700fbcfa0c82e5d24a9f76ba7748a194c4fdf7312a397860b4637f72ce91b6 0.4s
=> [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 3.8s
=> exporting to image
=> => exporting layers
=> => writing image sha256:f68fcdce5bb665f00e8f47bc4d137a4f7e8533348402c5bfdad71121d7d3f63
=> => 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



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 an 'Instances' section with a '+ ADD NEW INSTANCE' button. The main area displays details for a container named 'cdi0ji60_cdi18b63tccg00fmsog'. 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 lp172-18-0-40-cdi0ji60qau0008f9u80@direct.labs.play-v'. Below the details is a terminal window showing the container's output. It includes a warning: 'WARNING: This is a development server. Do not use it in a production deployment. Use a production WSGI server instead.' and shows the Flask app running on port 5000.

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

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> 9
882fd36bfd35: Pushing [=====] 110.5MB/529MB
d1dec9917839: Pushing [=====] 79.9MB/152MB

API endpoint: https://cloud.ibm.com
99d07d702add: 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

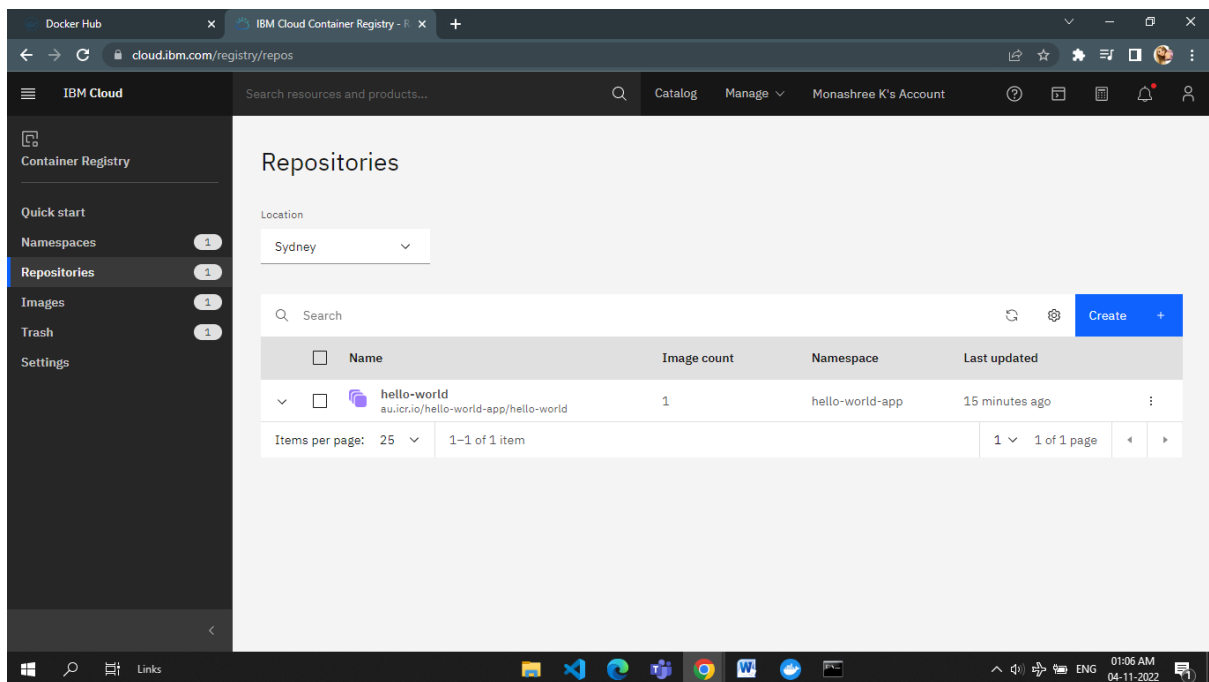
E:\Study materials\Sem 7\IBM\Exercise\Assignment4>docker tag hello-world au.icr.io/hello-world-app/hello-world
E:\Study materials\Sem 7\IBM\Exercise\Assignment4>docker push au.icr.io/hello-world-app/hello-world
Using default tag: latest
The push refers to repository [au.icr.io/hello-world-app/hello-world]
492bcd8cc069: Pushed
006e0938fc5e: Pushed
4bb20ce8724f: Pushed
402dea3c8533: Pushed
f5d161bba139: Pushed
1569e0d95ce6: Pushed
09e08da15d0c: Pushed
0b193c62e3d7: Mounted from hello-world-app/hello-world-app
882f3d36bf935: 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
d9d07d703dd5: 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 -
```



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

kubernetes default Search

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

Workloads (1)

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

Service

- Ingresses (1)
- Ingress Classes
- Services (1)

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