

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 with the repository name, navigation links for Explore, Repositories, Organizations, and Help, and a user profile for `priyadharshini1632`. The repository details show it was updated 6 years ago and is deprecated, with a note to use Portainer for new features. The Docker Pull Command is displayed as `docker pull uifd/ui-for-docker`. The Windows taskbar at the bottom shows the date as 04-11-2022 and the time as 21:21.

Docker playground:

The screenshot shows the Docker Playground interface in a web browser. The browser tabs include IBM, WhatsApp, IBM-Project-22133-1659805, uifd/ui-for-docker - Docker, and Docker Playground. The address bar shows the URL: `labs.play-with-docker.com/p/cdijgim3tccg00a7r71g#cdijgim3_cdijhlm3tccg00a7r74g`.

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

The main panel displays the details for the container 'cdijgim3_cdijhlm3tccg00a7r74g'. It shows the IP address '192.168.0.18', an 'OPEN PORT' button, and a port number '9000'. Below this, it lists 'Memory' usage (1.63% (65.11 MiB) / 3.906 GiB) and 'CPU' usage (0.51%). An 'SSH' button is also present. At the bottom of the details section 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
841194d080e8: Pull complete
Digest: sha256:fe371fff5a69549269b24073a5ab1244dd4c0b834cbadf244870572150b1cb749
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 ~
$
```

The Windows taskbar at the bottom shows the search bar, task view, and several application icons. The system tray on the right shows the date and time as 21:50 on 04-11-2022.

Docker UI:

The screenshot shows the Docker UI (UI For Docker) web interface in a web browser. The browser tabs include Docker Hub, Docker Playground, and UI For Docker. The address bar shows the URL: `ip172-18-0-40-cdi0ji60qau0008f9u80-9000.direct.labs.play-with-docker.com/#/`.

The interface has a navigation bar with tabs: Dashboard, Containers, Containers Network, Images, Networks, Volumes, and Info. A 'Refresh' button is located on the right.

The main content area is divided into two sections: 'Running Containers' and 'Status'.

The 'Running Containers' section shows a list of containers. One container, 'serene_keller', is listed with a status of 'Up 17 seconds'.

The 'Status' section features a donut chart showing the status of containers. The chart is divided into three segments: Running (green), Stopped (red), and Ghost (grey). The 'Running' segment is the largest, indicating that most containers are running.

Below the 'Running Containers' section, there are two line graphs: 'Containers created' and 'Images created'. Both graphs show a single data point at the top of the y-axis, indicating that one container and one image have been created.

The Windows taskbar at the bottom shows the search bar, task view, and several application icons. The system tray on the right shows the date and time as 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"]
```

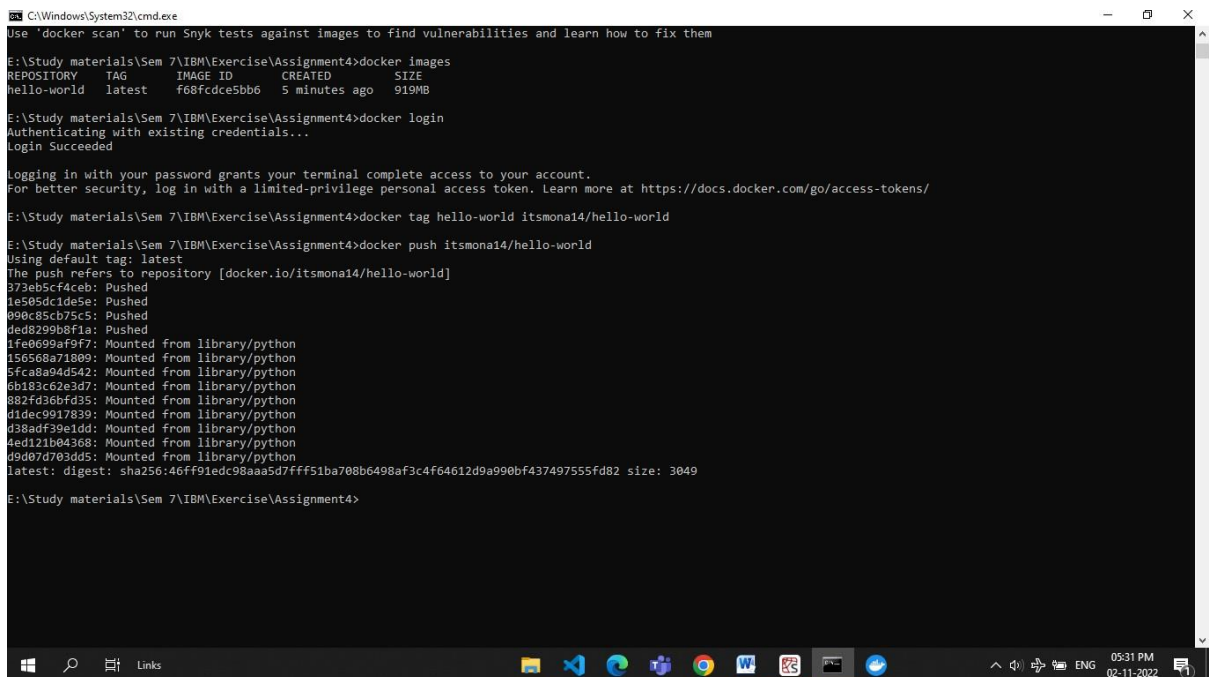
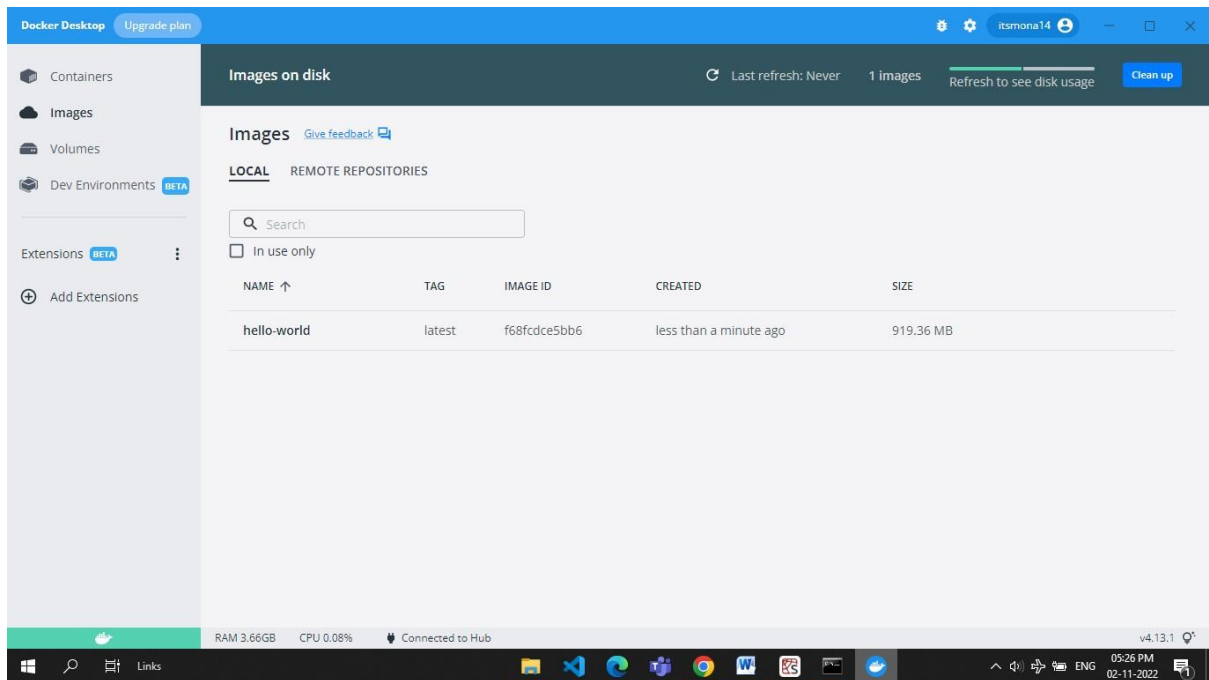
Bulid Docker image

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

E:\Study materials\Sem 7\IBM\Exercise\Assignment4>docker build -t hello-world .
[+] 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:3.8@sha256:089d758211770a2dd03ecc4b10a8d851f6f77af3f1e3f3620d0519190b8aa1d5 149.9s
=> == resolve docker.io/library/python:3.8@sha256:089d758211770a2dd03ecc4b10a8d851f6f77af3f1e3f3620d0519190b8aa1d5 0.0s
=> == sha256:900972ffecdc8c17c25b21573681851f092e054f57cc07eb43937e1a47114480 8.56kB / 8.56kB 0.0s
=> == sha256:17c9e6141fdb3387e5a1c07d4f9bca85ac1498e96029fa3ea55470d4504f7770 55.05MB / 55.05MB 65.2s
=> == sha256:4edced8587e6c18412817019074f5e04a8ede4e2fc09d00aef13df3f00d78a70d 10.80MB / 10.80MB 8.7s
=> == sha256:089d758211770a2dd03ecc4b10a8d851f6f77af3f1e3f3620d0519190b8aa1d5 1.06kB / 1.06kB 0.0s
=> == sha256:254101fc77377ef80a912ce9ad7488081a01e0a35b7ff1cc5e7d0bb86d0b6e1c3f 2.22kB / 2.22kB 0.0s
=> == sha256:de44dc6ae8801bb0b7377e10220a914da403bc93fa79663cbf2dc-f1800b6f1 5.16MB / 5.16MB 18.3s
=> == sha256:a7969cfff46e6a91291fd76b19ecbe93c03ea4ded0d14042aecb4c0c4211a43 54.59MB / 54.59MB 47.5s
=> == sha256:74fbfde6af91271fb88f0a1716224dce5c0e0ead3609943792a9cb6ba4d6d3d 196.87MB / 196.87MB 133.3s
=> == sha256:16fe51aed899f36017fe42b590b1a622b29ebe8c3622e92e13df14578825eb37 6.29MB / 6.29MB 53.8s
=> == sha256:2b979a731384cf50dac8fd255d381b70028d67b69b45c1a2b6c3ea10b92636d4 17.39MB / 17.39MB 68.0s
=> == sha256:aa3c4359fdb43306069ae8ba78b2eb713221ef3a3eca97f93590500f1506de1 234B / 234B 67.3s
=> == extracting sha256:17c9e6141fdb3387e5a1c07d4f9bca85ac1498e96029fa3ea55470d4504f7770 10.6s
=> == sha256:5b706fbcfa0c82e5d34a9f76ba7748a194cf4df7312a397060b4637f72ce01b6 1.89MB / 1.89MB 70.7s
=> == extracting sha256:de44dc6ae8801bb0b7377e10220a914da403bc93fa79663cbf2dc-f1800b6f1 1.3s
=> == extracting sha256:4edced8587e6c18412817019074f5e04a8ede4e2fc09d00aef13df3f00d78a70d 1.0s
=> == extracting sha256:a7969cfff46e6a91291fd76b19ecbe93c03ea4ded0d14042aecb4c0c4211a43 13.1s
=> == extracting sha256:74fbfde6af91271fb88f0a1716224dce5c0e0ead3609943792a9cb6ba4d6d3d 13.6s
=> == extracting sha256:16fe51aed899f36017fe42b590b1a622b29ebe8c3622e92e13df14578825eb37 0.4s
=> == extracting sha256:2b979a731384cf50dac8fd255d381b70028d67b69b45c1a2b6c3ea10b92636d4 1.1s
=> == extracting sha256:aa3c4359fdb43306069ae8ba78b2eb713221ef3a3eca97f93590500f1506de1 0.0s
=> == extracting sha256:5b706fbcfa0c82e5d34a9f76ba7748a194cf4df7312a397060b4637f72ce01b6 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:f68fcdce5bb665f00e8f47bc4d137a4f7e0533348402c5bfda071121d7d43f63 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



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_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-'. Below the details are 'DELETE' and 'EDITOR' buttons. A terminal window at the bottom shows the container's output, including a warning: 'WARNING: This is a development server. Do not use it in a production deployment. Use a production WSGI server instead.' and a list of running addresses: 'Running on all addresses (0.0.0.0)', 'Running on http://127.0.0.1:5000', and 'Running on http://172.17.0.2:5000'.

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
882f3db0fd35: Pushing [=====] 110.5MB/529MB
d1dec9917839: Pushing [=====] 79.9MB/152MB

API endpoint: https://cloud.ibm.com
d9d07d703dd5: 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

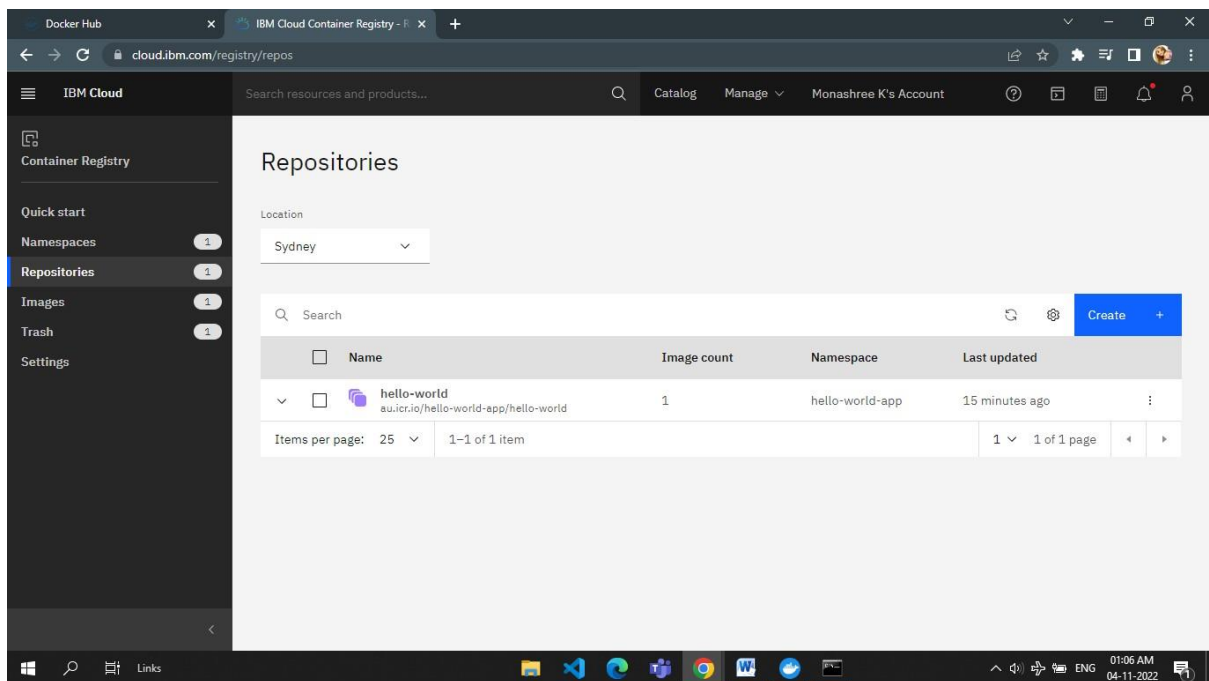
E:\Study materials\Sem 7\IBM\Exercise\Assignment4>docker tag hello-world au.icr.io/hello-world-app/hello-world
E:\Study materials\Sem 7\IBM\Exercise\Assignment4>docker push au.icr.io/hello-world-app/hello-world
Using default tag: latest
The push refers to repository [au.icr.io/hello-world-app/hello-world]
492bcd5cc060: Pushed
006e0938fc5e: Pushed
4bb20ce8724f: Pushed
402dea3c8533: Pushed
f5d161bba139: Pushed
1569e0d95ce6: Pushed
09e08d150dc: Pushed
0b183c62d3d7: Mounted from hello-world-app/hello-world-app
082fd36b6fd35: 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 ^N

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

Service

- Ingresses ^N
- Ingress Classes
- Services ^N

Config and Storage

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

```
* 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/cdi1j33f0a6mchav5kig/ser...

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