

Assignment 4

Assignment date	18 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 navigation bar with the Docker Hub logo, a search bar, and links to Explore, Repositories, Organizations, and Help. A notification banner at the top states: "Please check your inbox to verify the email associated with this account. You won't be able to create a repository or configure your Docker Hub without verifying your email address." Below the navigation bar, the repository page for `uifd/ui-for-docker` is displayed. It features a blue cube icon, the repository name, and a star icon. The text indicates it was updated 6 years ago and is deprecated, suggesting the use of Portainer for new features. A section titled "UI For Docker" contains a message: "This repo is deprecated. Development continues at: [portainer/portainer](#)". There is also a "Goals" section with a bullet point: "Minimal dependencies - I really want to keep this project a pure html/js app." On the right side, a "Docker Pull Command" box shows the command: `docker pull uifd/ui-for-docker`.

Docker playground:

The screenshot shows the Docker playground interface. On the left, there's a sidebar with a clock showing 09:27:55, a 'CLOSE SESSION' button, and a list of instances. The main area displays details for an instance named 'cdnmch60_cdnmcke0qau000bvepo0'. It shows the IP address 192.168.0.8, memory usage at 1.59% (63.77MiB / 3.906GiB), and CPU usage at 0.85%. There's an 'OPEN PORT' button set to 9000 and an SSH command: 'ssh ip172-18-0-6-cdnmch60qau000bvepng@direct.labs.play'. Below this are 'DELETE' and 'EDITOR' buttons. The terminal window shows a warning message and a series of commands being executed, including pulling the 'uifd/ui-for-docker' image and running a container.

```
##### WARNING!!!! #####
# This is a sandbox environment. Using personal credentials #
# is HIGHLY! discouraged. Any consequences of doing so are #
# completely the user's responsibilities. #
# The PWD team. #
#####
(node1) (local) root@192.168.0.8 ~
$ 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@192.168.0.8 ~
$ docker run -d -p 9000:9000 --privileged -v /var/run/docker.sock:/var/run/docker.sock uifd/ui-for-docker
uifb7abaade2113c04cb5736c71041276d03de8020a44ba7f42c0a341916f840
(node1) (local) root@192.168.0.8 ~
$
```

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. The main content area is titled 'Running Containers' and shows a list of containers, including 'reverent_swanson' which is 'Up 14 seconds'. To the right, there's a 'Status' section with a donut chart showing the distribution of container states: 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.

UI For Docker

Dashboard Containers Containers Network Images Networks Volumes Info Refresh

Running Containers

- reverent_swanson Up 14 seconds

Status

Running Stopped Ghost

Containers created

Images created

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
D:\Assignment-4>docker build -t hello-world -f ./Dockerfile.txt .
Sending build context to Docker daemon 3.072kB
Step 1/6 : FROM python:3.8
----> 900972ffeedc
Step 2/6 : WORKDIR /app
----> Using cache
----> b88d5cd12c50
Step 3/6 : ADD . /app
----> 10c4362dc12c
Step 4/6 : RUN python3 -m pip install pandas
----> Running in 67f6b4819d37
Collecting pandas
  Downloading pandas-1.5.1-cp38-cp38-manylinux_2_17_x86_64.manylinux2014_x86_64.whl (12.2 MB)
    12.2/12.2 MB 1.9 MB/s eta 0:00:00
Collecting numpy>=1.20.3
  Downloading numpy-1.23.4-cp38-cp38-manylinux_2_17_x86_64.manylinux2014_x86_64.whl (17.1 MB)
    17.1/17.1 MB 3.1 MB/s eta 0:00:00
Collecting pytz>=2020.1
  Downloading pytz-2022.6-py2.py3-none-any.whl (498 kB)
    498.1/498.1 KB 2.9 MB/s eta 0:00:00
Collecting python-dateutil>=2.8.1
  Downloading python_dateutil-2.8.2-py2.py3-none-any.whl (247 kB)
    247.7/247.7 KB 5.5 MB/s eta 0:00:00
Collecting six>=1.5
  Downloading six-1.16.0-py2.py3-none-any.whl (11 kB)
Installing collected packages: pytz, six, numpy, python-dateutil, pandas
Successfully installed numpy-1.23.4 pandas-1.5.1 python-dateutil-2.8.2 pytz-2022.6 six-1.16.0
WARNING: Running pip as the 'root' user can result in broken permissions and conflicting behaviour with the system package manager. It is recommended to use
a virtual environment instead: https://pip.pypa.io/warnings/venv
WARNING: You are using pip version 22.0.4; however, version 22.3.1 is available.
You should consider upgrading via the '/usr/local/bin/python3 -m pip install --upgrade pip' command.
Removing intermediate container 67f6b4819d37
----> f8292666cfd0
Step 5/6 : EXPOSE 5000
----> Running in c0de9dffb4ac
Removing intermediate container c0de9dffb4ac
----> b7b8c93b968d
Step 6/6 : CMD ["python","app.py"]
----> Running in ef3b212833fe
Removing intermediate container ef3b212833fe
----> 2083f6074678
Successfully built 2083f6074678
```

Deploy it on Docker hub

The screenshot shows the Docker Desktop application window. The left sidebar contains navigation options: Containers, Images (selected), Volumes, Dev Environments (with a BETA badge), Extensions (with a BETA badge), and Add Extensions. The main area is titled 'Images' and includes a sub-header 'LOCAL' and 'REMOTE REPOSITORIES'. Below this, there's a search bar and a table of local images. The table has columns for NAME, TAG, STATUS, CREATED, SIZE, and ACTIONS. The images listed are 'hello-world' (latest, 1.08 GB), and five 'python' images (all 912.64 MB, with tags like <none>, a56b2110ea98, c6abdb993040, c90b418fd24, and 900972fecd).

NAME	TAG	STATUS	CREATED	SIZE	ACTIONS
hello-world 2083f6074678	latest	Unused	less than a minute a	1.08 GB	[Play] [More] [Delete]
<none> eddf9e3b368	<none>	Unused (dang	1 minute ago	912.64 MB	[Play] [More] [Delete]
<none> a56b2110ea98	<none>	Unused (dang	3 minutes ago	912.64 MB	[Play] [More] [Delete]
<none> c6abdb993040	<none>	Unused (dang	3 minutes ago	912.64 MB	[Play] [More] [Delete]
<none> c90b418fd24	<none>	Unused (dang	6 minutes ago	912.64 MB	[Play] [More] [Delete]
python 900972fecd	3.8	Unused	17 days ago	912.64 MB	[Play] [More] [Delete]

Showing 6 items

RAM 3.24GB CPU 0.00% Connected to Hub v4.14.0

```
D:\Assignment-4>docker login -u vishnutheep
Password:
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/

D:\Assignment-4>docker push vishnutheep/hello-world
Using default tag: latest
The push refers to repository [docker.io/vishnutheep/hello-world]
f3c8c59a0c89: Layer already exists
0b7604a76207: Layer already exists
377571558d49: Layer already exists
1fe0699af9f7: Layer already exists
156568a71809: Layer already exists
5fca8a94d542: Layer already exists
6b183c62e3d7: Layer already exists
882fd36bfd35: Layer already exists
d1dec9917839: Layer already exists
d38adf39e1dd: Layer already exists
4ed121b04368: Layer already exists
d9d07d703dd5: Layer already exists
latest: digest: sha256:d8d9a36b5ee9f67e97e83a0bb82ae56cefff183f3ed35fa58d35d6e1411b93ea size: 2844

D:\Assignment-4>
```

Tested it using Docker playground

The screenshot shows the Docker Playground interface. On the left, there's a sidebar with a clock showing 03:21:43, a 'CLOSE SESSION' button, and an 'Instances' section with a '+ ADD NEW INSTANCE' button and a list of instances including '192.168.0.8 node1'. The main area displays details for instance 'cdoav363_cdoav6m3tccg00aojkmg', including its IP (192.168.0.8), memory usage (1.90% / 76.04MiB), CPU usage (0.16%), and an SSH command. Below this are 'DELETE' and 'EDITOR' buttons. The terminal window shows the following commands and output:

```
docker.io/uifd/ui-for-docker:latest
[node1] (local) root@192.168.0.8 ~
$ docker run -d -p 9000:9000 --privileged -v /var/run/docker.sock:/var/run/docker.sock uifd/ui-for-docker
11ad05c8a20727c2dd46adad520a147a5b32a03f60d65b87b5506565fa890740
[node1] (local) root@192.168.0.8 ~
$ docker pull vishnutheep/hello-world
Using default tag: latest
latest: Pulling from vishnutheep/hello-world
17c9e6141fdb: Pull complete
3e4a4c6c8a8: Pull complete
4edeed088766: Pull complete
a7969c9fbf46: Pull complete
74fbfde6af91: Pull complete
16fe51ae899: Pull complete
2b979a731384: Pull complete
aa3c4359fdb4: Pull complete
58700fbcfa0c: Pull complete
dcbecfd1633b: Pull complete
04f2f4d65da1: Pull complete
f95d0cc6d22b: Extracting [=====>] 70.14MB/70.14MB
```

Question 3:

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

Solution 3:

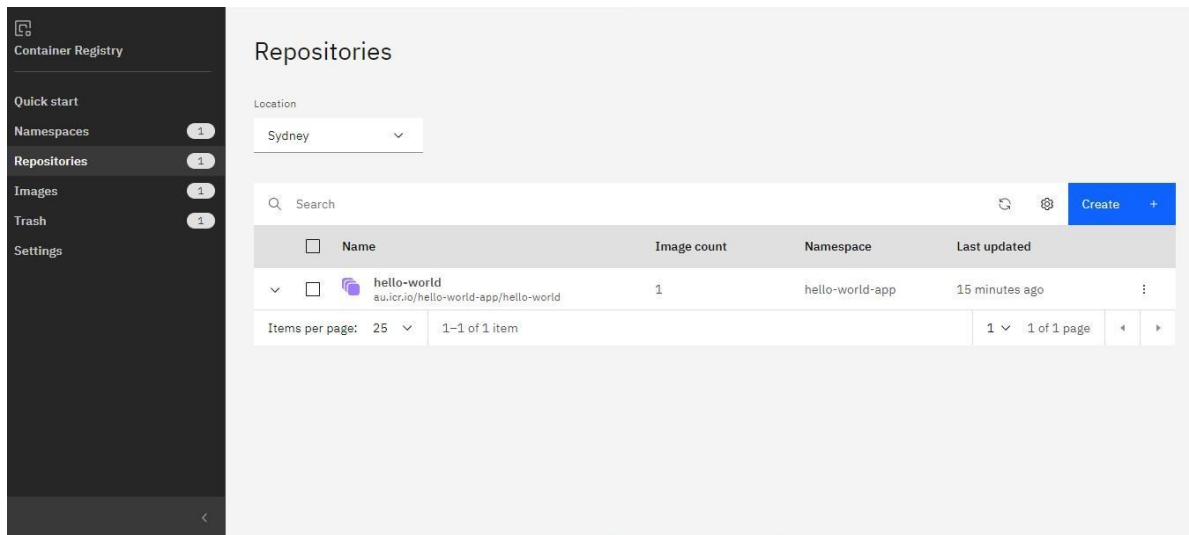
My image link: au.icr.io/hello-world-app/hello-world

```
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
d9d07d703dd5: Pushing [=====>] 67.45MB/124.1MB
d1dec9917839: Pushing [=====>] 69.62MB/152MB
```

```
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:

```
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
```

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 cd1j33f9a6mchav5kig	Version 1.24.7_1542	Infrastructure Classic	Zones Milan 01
Created 04/11/2022, 01:12	Resource group Default	Image security enforcement Enable	

kubernetes default [Search](#) [+](#) [🔔](#) [👤](#)

Workloads > Deployments

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

Config Maps N

CPU Usage

Memory Usage

Deployments

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

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

Config Maps N

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/cd1j33f9a6mchav5kig/.../ser...

03:49 PM
04-11-2022

