

ASSIGNMENT-4

Assignment Date	28 October 2022
Student Name	Ms.SUBASRI.D.R
Student Roll Number	820419104073
Maximum Marks	2 Marks

1. Pull an Image from docker hub and run it in docker playground.

The screenshot shows the Docker Playground interface in a web browser. The top navigation bar includes links for Docker Hub, IBM-EPBL/IBM-Proje..., IBM, Assignments-CapD/..., Docker Playground, ulfd/ui-for-docker, and sandeepdoodigani/jo... The address bar shows the URL: labs.play-with-docker.com/p/cdof5j791rrg00fboigg#cdof5j79_cdo5t91rrg00fboigg. The left sidebar has a clock showing 02:59:51, a 'CLOSE SESSION' button, an 'Instances' section with a search icon and settings gear, and a '+ ADD NEW INSTANCE' button. Below this, a list of instances shows '192.168.0.18' and 'node1'. The main content area displays the instance details for 'cdof5j79_cdo5t91rrg00fboigg', including its IP (192.168.0.18), an 'OPEN PORT' button, memory usage (30.37% / 1.186GiB / 3.906GiB), CPU usage (0.19%), and an SSH command: 'ssh ip172-18-0-40-cdof5j791rrg00fboigg@direct.labs.play-w'. There are 'DELETE' and 'EDITOR' buttons. Below the instance details is a terminal window showing the command 'docker pull sandeepdoodigani/jobportalapp' and its output, which includes a list of layers being pulled and their status, followed by the digest and status of the pull operation.

```
[node1] (local) root@192.168.0.18 ~
$ docker pull sandeepdoodigani/jobportalapp
Using default tag: latest
latest: Pulling from sandeepdoodigani/jobportalapp
0e29546d541c: Pull complete
9b829c73b52b: Pull complete
cb5b7ae36172: Pull complete
6494e4811622: Pull complete
6f9f74896d4a: Pull complete
9e3b1213efc5: Pull complete
9fddfd563934: Pull complete
404f02044bae: Pull complete
c4f42be2be53: Pull complete
296c00cd64e4: Pull complete
86df5f9cfbe4: Pull complete
b0a57da07333: Pull complete
96d74d4156fd: Pull complete
778a951e5719: Pull complete
Digest: sha256:e8590bc86f5d2ef2f85536f570fe49a5fec2893ebfd146f5aa63dcde9f9bdd24
Status: Downloaded newer image for sandeepdoodigani/jobportalapp:latest
docker.io/sandeepdoodigani/jobportalapp:latest
```

The screenshot shows a Docker Playground interface with a container named `cdpiqu0_cdpiqu0qau000b95j10`. The container's IP is `192.168.0.18` and it is listening on port `8080`. The terminal output shows the container pulling various images and starting a Flask application. The output includes the following lines:

```
6f9f74896d4fa: Pull complete
be3b1213efc5: Pull complete
9fddfd56334: Pull complete
404f02044bac: Pull complete
c4f42be2be53: Pull complete
296c00c6b64e: Pull complete
86df5f9cfbe4: Pull complete
b0a57da07333: Pull complete
96d74d4156fd: Pull complete
778a951e5719: Pull complete
Digest: sha256:e8590bc86f5d2ef2f85536f570fe49a5fec2893ebfd146f5aa63dcde9f9b9dd24
Status: Downloaded newer image for sandeepdoodigani/jobportalapp:latest
* Serving Flask app 'app' (lazy loading)
* Environment: production
  WARNING: This is a development server. Do not use it in a production deployment.
  Use a production WSGI server instead.
* Debug mode: off
* Running on all addresses.
  WARNING: This is a development server. Do not use it in a production deployment.
* Running on http://172.17.0.2:8080/ (Press CTRL+C to quit)
```

The screenshot shows the Smart Internz JobPortal website. The page features a navigation bar with `LOGIN`, `REGISTER`, and `CONTACT US` buttons. The main content area is titled `Aboutus` and contains three columns: `Mission`, `Vission`, and `Objective`. The `Mission` column describes SMARTBRIDGE as an edTech organization with a vision to bridge the gap between academia & industry. The `Vission` column states the main objective is to bridge the existing gaps between prevailing industry standards and what the academics offer to the graduates while passing out of university. SmartBridge offers suitable skill deployment and training to the young talent before on boarding their first job. Our skill development programs are designed considering the present expectations in the industry. The `Objective` column lists well directed career guidance programs for educational institutions, appropriate certification courses that suit the industry need, train the trainers, expanded awareness about the current industry standards, liaise with corporates to offer niche internships, establish technology development centers in colleges, and specialised incubation centers in collaboration with corporates. The footer contains `JobPortal` and `Get in Touch` sections.

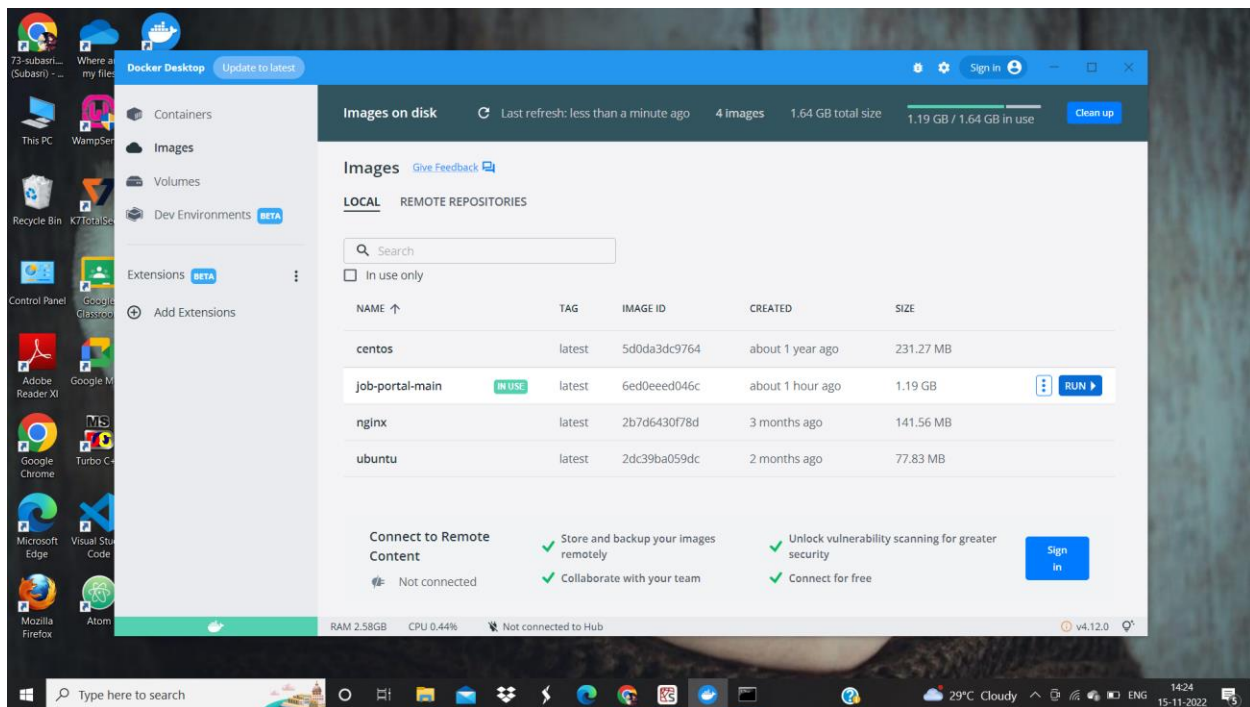
2.Create a docker file for the job portal application and deploy it in Docker desktop application.

```
Select Command Prompt - docker run -p 5000:5000 job-portal-main
-> sha256:c4f42be2be53b900ebffc040c1df13de538434ccc5f5d954a56848a0109a3a3f 2.21MB / 2.21MB 179.5s
-> extracting sha256:6f9f74896dfa93fe0172f594faba85e0bde8a8481a0fef0112efc7edd3c78f7 15.6s
-> extracting sha256:5e3b1213efc50508e78bd602833945c164de2a37205e06a62dada823124dc743 0.4s
-> extracting sha256:9f681f636334f2defa670241bf5e7459c4bd0109c549780764f1c1244a096792 1.2s
-> extracting sha256:404f0204dbac0432ca522cbb9f25d81c91fcea6808bfeef0be0b243b2f31ba07 0.0s
-> extracting sha256:c4f42be2be53b900ebffc040c1df13de538434ccc5f5d954a56848a0109a3a3f 0.7s
-> [2/6] WORKDIR /app 1.2s
-> [3/6] ADD . /app 6.2s
-> [4/6] COPY requirements.txt /app 0.2s
-> [5/6] RUN python3 -m pip install -r requirements.txt 1940.4s
-> [6/6] RUN python3 -m pip install ibm_db 2.6s
-> exporting to image 3.9s
-> exporting layers 3.8s
-> writing image sha256:6ed0eed046cb1b9ed947507581b307a29a2843ba7309d5b881238ca357383c 0.0s
-> naming to docker.io/library/job-portal-main 0.0s

Use 'docker scan' to run Snyk tests against images to find vulnerabilities and learn how to fix them

C:\job-portal-main>docker images
REPOSITORY TAG IMAGE ID CREATED SIZE
job-portal-main latest 6ed0eed046c 40 minutes ago 1.19GB
ubuntu latest 2dc39ba059dc 2 months ago 77.8MB
nginx latest 2b7d6430f78d 2 months ago 142MB
centos latest 5d0da3dc9764 14 months ago 231MB

C:\job-portal-main>docker run -p 5000:5000 job-portal-main
* Serving Flask app 'app' (lazy loading)
* Environment: production
WARNING: This is a development server. Do not use it in a production deployment.
Use a production WSGI server instead.
* Debug mode: off
* Running on all addresses.
WARNING: This is a development server. Do not use it in a production deployment.
* Running on http://172.17.0.2:5000/ (Press CTRL+C to quit)
```



3.Create a IBM container registry and deploy hello world app or job portal app.

```
Command Prompt
update      Update CLI to the latest version
version     Print the version
help, h     Show help

Enter 'ibmcloud help [command]' for more information about a command.

ENVIRONMENT VARIABLES:
  IBMCLD_COLOR=false          Do not colorize output
  IBMCLD_VERSION_CHECK=false  Do not check latest version for update
  IBMCLD_HTTP_TIMEOUT=5       A time limit for HTTP requests
  IBMCLD_API_KEY=api_key_value API Key used for login
  IBMCLD_CR_VPC_URL=url_value The custom server URL to use when obtaining an instance identity token and IAM token as a VPC VSI compute resource. This value will replace the default server endpoint of the VPC VSI instance identity token service.
  IBMCLD_CR_TOKEN=cr_token_value Compute resource token used for login. Can either be a token string or a path to a @file.
  IBMCLD_CR_PROFILE=profile_value The name, ID, or CRN of the linked trusted IAM profile to be used when obtaining the IAM access token. If authenticating as a VPC VSI compute resource, only specifying a trusted profile CRN or ID is supported.
  IBMCLD_TRACE=true           Print API request diagnostics to stdout
  IBMCLD_TRACE=path/to/trace.log Append API request diagnostics to a log file
  IBMCLD_HOME=path/to/dir     Path to config directory

GLOBAL OPTIONS:
  --version, -v          Print the version
  --help, -h             Show help

C:\Users\SUBASRI>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% 1m16s
12476416 bytes downloaded
Installing binary...
OK
Plug-in 'container-registry 1.0.2' was successfully installed into C:\Users\SUBASRI\bluemix\plugins\container-registry. Use 'ibmcloud plugin show container-registry' to show its details.

C:\Users\SUBASRI>
```

```
Command Prompt
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/

C:\Users\SUBASRI>ibmcloud cr login
Logging 'docker' in to 'icr.io'...
Logged in to 'icr.io'.

OK

C:\Users\SUBASRI>docker tag job-portal-main icr.io/jobportalapp1/job-portal-main:jobportaltest

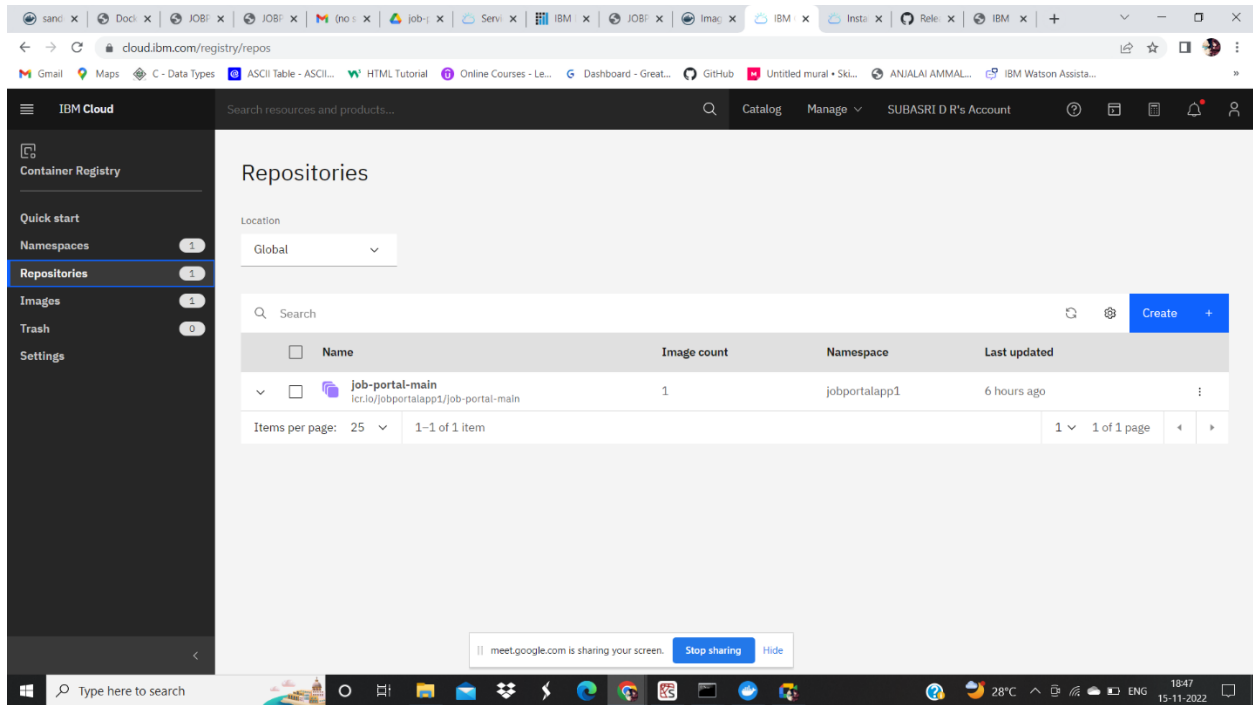
C:\Users\SUBASRI>docker push icr.io/jobportalapp1/job-portal-main:jobportaltest
The push refers to repository [icr.io/jobportalapp1/job-portal-main]
9185ffa09a1: Pushed
7467e01a2478: Pushed
2a3bfe6f6e05: Pushed
7e44c22986a1: Pushed
55f5b2973be3: Pushed
aa4c888c19f6: Pushed
8ba9f690e8ba: Pushed
3e607d59ef9f: Pushed
1e18e7e1fcc2: Pushed
c3a0d93bd24: Pushed
26a504e63be4: Pushed
8bf42db0de72: Pushed
31892cc314cb: Pushed
11936051f93b: Pushed
jobportaltest: digest: sha256:4bd4729ed4c18776a95cbe8a5eded1c1fc2e675fb34f023703b28d8c278f66d size: 3263

C:\Users\SUBASRI>
C:\Users\SUBASRI>ibmcloud cr image-list
Listing images...

Repository          Tag          Digest          Namespace      Created      Size      Security status
icr.io/jobportalapp1/job-portal-main  jobportaltest  4bd4729ed4c1     jobportalapp1   3 hours ago  472 MB    -

OK

C:\Users\SUBASRI>
```



4. Create a Kubernetes cluster in IBM cloud and deploy hello world image or job portal image and also expose the same app to run in node port.

```

Command Prompt
api-resources Print the supported API resources on the server
api-versions Print the supported API versions on the server, in the form of "group/version"
config Modify kubeconfig files
plugin Provides utilities for interacting with plugins
version Print the client and server version information

Usage:
  kubectl [flags] [options]

Use "kubectl <command> --help" for more information about a given command.
Use "kubectl options" for a list of global command-line options (applies to all commands).

C:\Users\SUBASRI>ibmcloud plugin install kubernetes-service
Looking up 'kubernetes-service' from repository 'IBM Cloud'...
Plug-in 'container-service[kubernetes-service/ks] 1.0.459' found in repository 'IBM Cloud'
Plug-in 'container-service[kubernetes-service/ks] 1.0.459' was already installed. Do you want to re-install it or not? [y/N] > y
Attempting to download the binary file...
26.86 MB / 26.86 MB [=====] 100.00% 21s
28168192 bytes downloaded
Installing binary...
OK
Plug-in 'container-service 1.0.459' was successfully installed into C:\Users\SUBASRI\bluemix\plugins\container-service. Use 'ibmcloud plugin show container-service' to show its details.

C:\Users\SUBASRI>cd C:\job-portal-main

C:\job-portal-main>kubectl apply -f deployment.yaml
deployment.apps/job-portal-main configured

C:\job-portal-main>kubectl apply -f service.yaml
service/job-portal-main configured

C:\job-portal-main>kubectl get pods
NAME                                READY   STATUS    RESTARTS   AGE
flask-node-deployment-7f5dc9d8cd-57vld 0/1     ErrImagePull 0           5h57m
job-portal-main-668fcc7c86-kj5vn        1/1     Terminating 0           167m
job-portal-main-677b754f79-jc8g2        1/1     Running      0           26s

C:\job-portal-main>kubectl get service
NAME                                TYPE        CLUSTER-IP      EXTERNAL-IP      PORT(S)      AGE
flask-node-deployment              ClusterIP   10.103.200.80    <none>            5080/TCP     5h57m
job-portal-main                    ClusterIP   10.107.155.3     <none>            5080/TCP     5h57m
kubernetes                         ClusterIP   10.96.0.1        <none>            443/TCP      10h

C:\job-portal-main>

```

SKILL/JOB RECOMMENDER

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Aboutus

Mission

This is an edTech organization with a vision to bridge the gap between academia & industry. Our outcome-based experiential learning programs on emerging technologies (Internet of Things, Machine Learning, Data Science, Artificial Intelligence, Robotics) are building skilled entry - level engineers, for the corporate world.

Vision

Our main objective is to bridge the existing gaps between prevailing industry standards and what the academics offer to the graduates while passing out of university. This offers suitable skill deployment and training to the young talent before on boarding their first job. Our skill development programs are designed considering the present expectations in the industry.

Objective

Well directed career guidance programs for educational institutions
Appropriate certification courses that suit the industry need
Train the trainers; expanded awareness about the current industry standards
Liaise with corporates to offer niche internships
Establish technology development centers in colleges
Specialised incubation centers in collaboration with corporates.

