

CONTAINMENT ZONE ALERTING APPLICATION

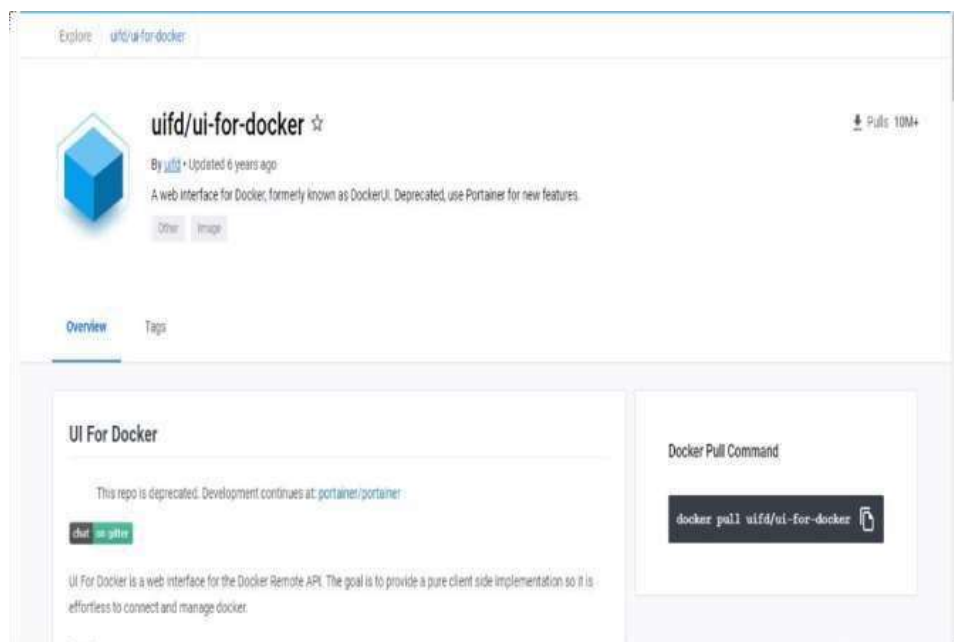
ASSIGNMENT 4:

Questions:

1. Pull an Image from docker hub and run it in docker playground.
2. Create a dockerfile for the job portal / flask application and deploy it in Docker desktop application.
3. Create an IBM container registry and push a docker image of a flask application or job portal app.
4. Create a Kubernetes cluster in IBM cloud and deploy flask application image or job portal image and also expose the same app to run in nodeport.

Answers:

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



cd9an2u3_cd9av060qau0008hbjs0

192.168.0.13

OPEN PORT

Memory

CPU

SSH

ssh ip172-18-0-4-cd9an2u3tcog00fgf6k0@direct.labs.play-w

DELETE

EDITOR

```
# This is a sandbox environment. Using personal credentials
# is HIGHLY discouraged. Any consequences of doing so are
# completely the user's responsibilities.
#
# The VWD team.
#=====
root@ui:~# docker pull ui-for-docker
Using default tag: latest
latest: Pulling from ui-for-docker
41154d080c8: Pull complete
Digest: sha256:fe371ff5a69549269b24073a5a81244dd4c0b834ebad244870572150b10b749
Status: Downloaded newer image for ui-for-docker:latest
docker.io/ui-for-docker:latest
root@ui:~# docker run -d -p 9000:9000 --privileged --v /var/run/docker.sock:/var/run/docker.sock ui-for-docker
c590dd163101ee795bdcc00cb1dd98f6fc549cb5f24dadb9ff7c1931923fc0d
root@ui:~#
```

Not secure | ip172-18-0-4-cd9an2u3tcog00fgf6k0-9000.direct.labs.play-with-docker.com/

UI For Docker

Dashboard

Containers

Containers Network

Images

Networks

Volumes

Info

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UI For Docker

The UI for Docker container engine

Learn more

Running Containers

Status

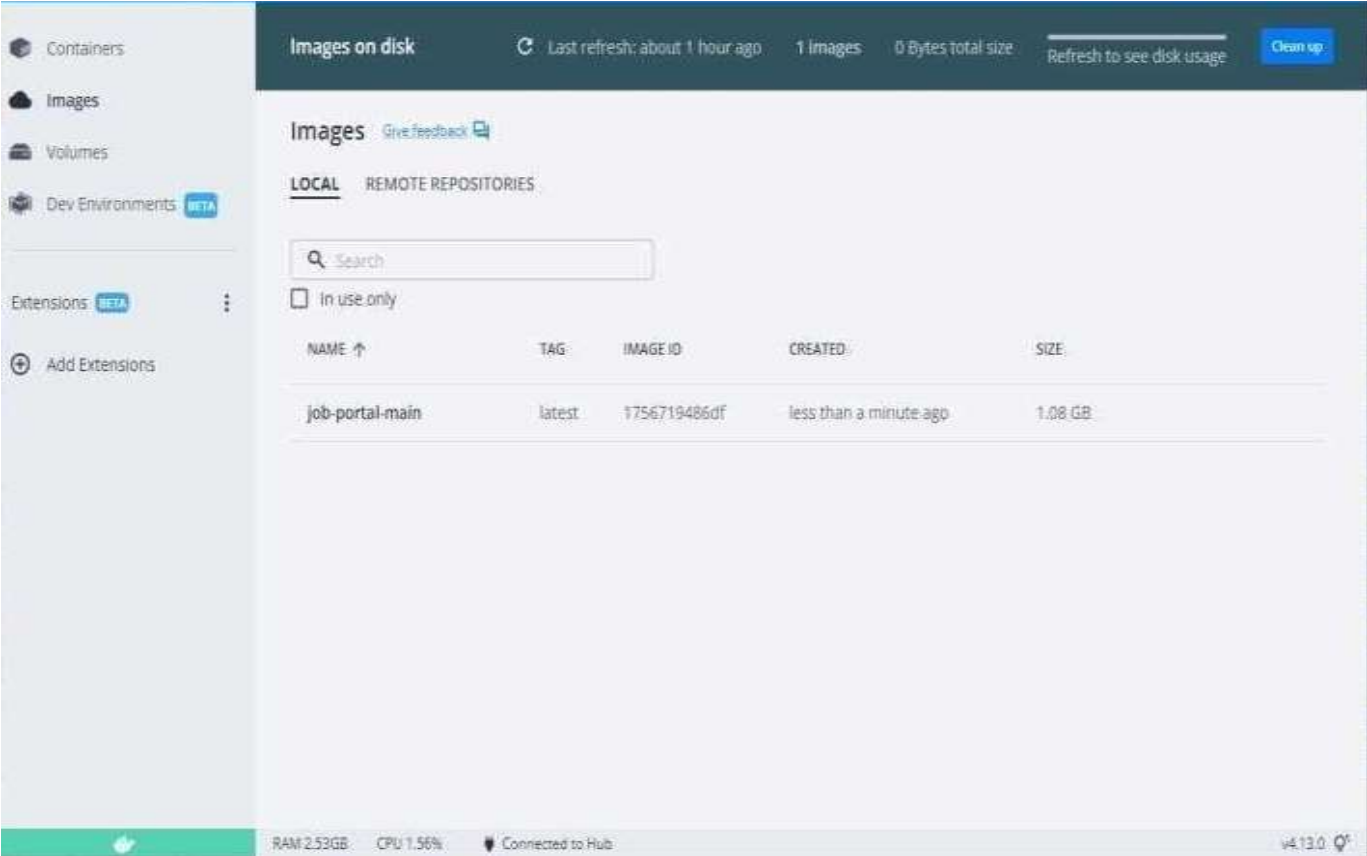
• beautiful_godwaver

Tip About a private



2. Create a dockerfile for the job portal / flask application and deploy it in Docker desktop application.

```
C:\Windows\System32\cmd.exe
C:\Users\WV> docker build -f Dockerfile -t job-portal-main .
Sending build context to Docker daemon 1.048MB
Step 1/10: FROM python:3.8-slim
--> python:3.8-slim
Step 2/10: WORKDIR /app
--> /app
Step 3/10: COPY requirements.txt .
--> /app
Step 4/10: RUN pip install --no-cache-dir -r requirements.txt
--> /app
Step 5/10: COPY . .
--> /app
Step 6/10: EXPOSE 5000
--> 5000
Step 7/10: CMD ["python", "app.py"]
--> python app.py
Step 8/10: HEALTHCHECK --interval=30s --timeout=30s --start-period=30s --retries=3 CMD curl -f http://localhost:5000/ || exit 1
--> /app
Step 9/10: LABEL org.opencontainers.image.title=job-portal-main
--> job-portal-main
Step 10/10: COMMIT job-portal-main
--> job-portal-main
Successfully built job-portal-main
C:\Users\WV> docker images
REPOSITORY          TAG                 IMAGE ID            SIZE
job-portal-main     latest             1756719486df       1.08 GB
```



Quick Start	Namespaces (1)	Repositories (1)	Images (1)	Settings
Filter table				
	Name	Image Count	Namespace	Last Updated
	my-app us.icr.io/my_namespace_demo/my-app	1	my_namespace_demo	2 minutes ago
1 of 1 page				

3. Create an IBM container registry and push a docker image of a flaskapplication or job portal app.

```

File Edit View Search Terminal Help
Collecting Jinja2==2.10.1 (from flask->-r requirements.txt (line 1))
  Downloading https://files.pythonhosted.org/packages/65/e0/eb35e762807015ca61ccce04e8a277b03f1d8e53da3ec3106882ec42558b/Jinja2-2.10.1-py2.py3-none-any.whl (125kB)
Collecting itsdangerous==0.24 (from flask->-r requirements.txt (line 1))
  Downloading https://files.pythonhosted.org/packages/70/ae/44b03b233d6fade317f32c24d100b3b39c2239807046a4c933c7b89fa49e/itsdangerous-1.1.0-py2.py3-none-any.whl
Collecting click==5.1 (from flask->-r requirements.txt (line 1))
  Downloading https://files.pythonhosted.org/packages/fa/37/45195cb5abb30d7257104c43afe8b07e5a195a6847506c074527aa599ec/Click-7.0-py2.py3-none-any.whl (81kB)
Collecting MarkupSafe==0.23 (from Jinja2==2.10.1->flask->-r requirements.txt (line 1))
  Downloading https://files.pythonhosted.org/packages/b9/2e/64db92e53b86efccfae371321f597fa2e1b2bd3853d8ce658568f7a13894/MarkupSafe-1.1.1.tar.gz
Building wheels for collected packages: MarkupSafe
  Building wheel for MarkupSafe (setup.py): started
  Building wheel for MarkupSafe (setup.py): finished with status 'done'
  Stored in directory: /root/.cache/pip/wheels/f2/aa/84/bedf97a1b8a5f5f1aed7580fffb09ce0972edc16a505916a77
Successfully built MarkupSafe
Installing collected packages: Werkzeug, MarkupSafe, Jinja2, itsdangerous, click, Flask
Successfully installed Jinja2-2.10.1 MarkupSafe-1.1.1 Werkzeug-0.10.0 click-7.0 flask-1.1.1 itsdangerous-1.1.0
You are using pip version 19.0.1, however version 19.2.3 is available.
You should consider upgrading via the 'pip install --upgrade pip' command.
Removing intermediate container 4dfb0c30b100
---> 9d770042eaa4
Step 5/7 : EXPOSE 5001
---> Running in fb71c5bc1336
Removing intermediate container fb71c5bc1336
---> f1a4f0e0259f
Step 6/7 : ENTRYPOINT ["python"]
---> Running in e2dea689ae42
Removing intermediate container e2dea689ae42
---> 8d73c854889a
Step 7/7 : CMD ["demo.py"]
---> Running in 4cc028df4bd6
Removing intermediate container 4cc028df4bd6
---> f53a787f955b
Successfully built f53a787f955b
Successfully tagged flask-docker-demo:latest
(base) rgunkar@rgunkar-Inspiron-3551:~/Desktop/flask_docker_demo$

```

2. Change directory to Lab 1:

```
cd "Lab 1"
```

3. Log in to the IBM Cloud CLI:

```
ibmcloud login
```

To specify an IBM Cloud region, include the API endpoint.

Note: If you have a federated ID, use `ibmcloud login --sso` to log in to the IBM Cloud CLI. You know you have a federated ID when the login fails without the `--sso` and succeeds with the `--sso` option.

4. In order to upload images to the IBM Cloud Container Registry, you first need to create a namespace with the following command:

```
ibmcloud cr namespace-add <my_namespace>
```

5. Build the container image with a `1` tag and push the image to the IBM Cloud

Registry: `ibmcloud cr build --tag us.icr.io/<my_namespace>/hello-world:1 .`

6. Verify the image is built:

```
ibmcloud cr images
```

7. If you created your cluster at the beginning of this, make sure it's ready for use.

1 . Push an image to IBM Cloud Container Registry

To push an image, we first must have an image to push. We have prepared several

`Dockerfile`s in this repository that will create the images. We will be running the images, and creating new ones, in the later labs.

This lab uses the Container Registry built in to IBM Cloud, but the image can be created and uploaded to any standard Docker registry to which your cluster has access.

Create a Kubernetes cluster in IBM cloud and deploy flask application image or job portal image and also expose the same app.

Run `ibmcloud ks clusters` and make sure that your cluster is in "Normal" state.

Use `ibmcloud ks workers --cluster <yourclustername>`, and make sure that all workers are in "Normal" state with "Ready" status.

Make a note of the public IP of the worker.

You are now ready to use Kubernetes to deploy the hello-world application.

2. Deploy your application

1. Run `ibmcloud ks cluster config --cluster <yourclustername>`.

Start by running your image as a deployment:

```
kubectl create deployment hello-world-deployment
```

When you're all done, you can either use this deployment in the [next lab of this course](#), or you can remove the deployment and thus stop taking the course.

1. To remove the deployment and service, use `kubectl delete all -l`

```
app=hello-world-deployment .
```

`--image=us.icr.io/<my_namespace>/hello-world:1`

This action will take a bit of time. To check the status of your deployment, you can use

`kubectl get pods` .

You should see output similar to the following:

`=> kubectl get pods`

NAME	READY	STATUS	RESTARTS	AGE
helloworld-562211614-0g2kd	0/1	ContainerCreating	0	1m

2. Once the status reads `Running` , expose that deployment as a service, accessed through the IP of the worker nodes. The example for this course listens on port 8080 . Run:

```
kubectl expose deployment/hello-world-deployment --type=NodePort --port=8080  
-- name=hello-world-service --target-port=8080
```

3. To find the port used on that worker node, examine your new service:

```
kubectl describe service hello-world-service
```

Take note of the "NodePort:" line as `< nodeport>`

4. Run `ibmcloud ks worker ls --cluster <name-of-cluster>` , and note the public IP as `< public-IP>` .

5. You can now access your container/service using `curl <public-IP>:<nodeport>`

(or your favorite web browser). If you see, "Hello world! Your app is up and running in a cluster!" you're done!