**ASSIGNMENT\_NO.:05**

**Que 1 → ● Create 2 Public Docker Hub registries named cloudethix\_master\_nginx\_harsh & cloudethix\_release\_nginx\_harsh.**

**Clone below repository on your system :-**

**root@DESKTOP-DA2RDP0:ASSIGNMENT\_05# git clone git@github.com:HarshitaMeshram/docker-**sample-nginx\_01.git

Cloning into 'docker-sample-nginx\_01'...

remote: Enumerating objects: 12, done.

remote: Counting objects: 100% (12/12), done.

remote: Compressing objects: 100% (10/10), done.

remote: Total 12 (delta 2), reused 0 (delta 0), pack-reused 0

Receiving objects: 100% (12/12), done.

Resolving deltas: 100% (2/2), done.

**root@DESKTOP-DA2RDP0:ASSIGNMENT\_05# ll**

total 0

drwxrwxrwx 1 harsh harsh 4096 Feb 21 12:21 ./

drwxrwxrwx 1 harsh harsh 4096 Feb 21 12:06 ../

drwxrwxrwx 1 harsh harsh 4096 Feb 21 12:20 .git/

drwxrwxrwx 1 harsh harsh 4096 Feb 21 12:06 docker-sample-nginx/

drwxrwxrwx 1 harsh harsh 4096 Feb 21 12:21 docker-sample-nginx\_01/

**root@DESKTOP-DA2RDP0:ASSIGNMENT\_05# cd docker-sample-nginx\_01/**

**root@DESKTOP-DA2RDP0:docker-sample-nginx\_01# ll**

total 0

drwxrwxrwx 1 harsh harsh 4096 Feb 21 12:21 ./

drwxrwxrwx 1 harsh harsh 4096 Feb 21 12:21 ../

drwxrwxrwx 1 harsh harsh 4096 Feb 21 12:21 .git/

-rwxrwxrwx 1 harsh harsh 95 Feb 21 12:21 Dockerfile\*

-rwxrwxrwx 1 harsh harsh 48 Feb 21 12:21 README.md\*

-rwxrwxrwx 1 harsh harsh 286 Feb 21 12:21 default.conf\*

-rwxrwxrwx 1 harsh harsh 103 Feb 21 12:21 index.html\*

root@DESKTOP-DA2RDP0:docker-sample-nginx\_01#

**Initialize a local repository & copy the code from above repo to your local repository in master branch and then create below branches. release main hotfix :-**

**root@DESKTOP-DA2RDP0:docker-sample-nginx\_01# git checkout -b release**

Switched to a new branch 'release'

**root@DESKTOP-DA2RDP0:docker-sample-nginx\_01# git checkout master**

Switched to branch 'master'

Your branch is up to date with 'origin/master'.

**root@DESKTOP-DA2RDP0:docker-sample-nginx\_01# git checkout -b main**

Switched to a new branch 'main'

**root@DESKTOP-DA2RDP0:docker-sample-nginx\_01# git checkout master**

Switched to branch 'master'

Your branch is up to date with 'origin/master'.

**root@DESKTOP-DA2RDP0:docker-sample-nginx\_01# git checkout -b hotfix**

Switched to a new branch 'hotfix'

**Once code is copied to local repository,from master branch update the index.html and add word "Cloudethix Master Branch Nginx" and build the docker image & add meaningful tags and push to Docker Hub registry cloudethix\_master\_nginx\_yourname**

root@DESKTOP-DA2RDP0:docker-sample-nginx\_01# ll

total 0

drwxrwxrwx 1 harsh harsh 4096 Feb 21 12:21 ./

drwxrwxrwx 1 harsh harsh 4096 Feb 21 12:21 ../

drwxrwxrwx 1 harsh harsh 4096 Feb 21 12:22 .git/

-rwxrwxrwx 1 harsh harsh 95 Feb 21 12:21 Dockerfile\*

-rwxrwxrwx 1 harsh harsh 48 Feb 21 12:21 README.md\*

-rwxrwxrwx 1 harsh harsh 286 Feb 21 12:21 default.conf\*

-rwxrwxrwx 1 harsh harsh 103 Feb 21 12:21 index.html\*

**root@DESKTOP-DA2RDP0:docker-sample-nginx\_01# cat index.html**

<html>

<body>

<h1>Host: <!--#echo var="HOSTNAME" --></h1>

Version: 1.1

</body>

</html>

**root@DESKTOP-DA2RDP0:docker-sample-nginx\_01# vi index.html**

**root@DESKTOP-DA2RDP0:docker-sample-nginx\_01# cat index.html**

<html>

<body>

<h1>Host: <!--#echo var="HOSTNAME" --></h1>

Cloudethix Master Branch Nginx

</body>

</html>

root@DESKTOP-DA2RDP0:docker-sample-nginx\_01#

**root@DESKTOP-DA2RDP0:docker-sample-nginx\_01# docker image build --no-cache -t harshitameshram/cloudethix\_master\_nginx\_harsh:v1 .**

ERROR: Cannot connect to the Docker daemon at unix:///var/run/docker.sock. Is the docker daemon running?

root@DESKTOP-DA2RDP0:docker-sample-nginx\_01# service docker start

\* Starting Docker: docker [ OK ]

root@DESKTOP-DA2RDP0:docker-sample-nginx\_01# docker image build --no-cache -t harshitameshram/cloudethix\_master\_nginx\_harsh:v1 .

[+] Building 53.3s (9/9) FINISHED docker:default

=> [internal] load build definition from Dockerfile 1.0s

=> => transferring dockerfile: 132B 0.1s

=> [internal] load .dockerignore 1.1s

=> => transferring context: 2B 0.0s

=> [internal] load metadata for docker.io/library/nginx:alpine 31.2s

=> [auth] library/nginx:pull token for registry-1.docker.io 0.0s

=> [1/3] FROM docker.io/library/nginx:alpine@sha256:6a2f8b28e45c4adea04ec207a251fd4a2df03ddc930f782af51e315ebc76e9a9 16.8s

=> => resolve docker.io/library/nginx:alpine@sha256:6a2f8b28e45c4adea04ec207a251fd4a2df03ddc930f782af51e315ebc76e9a9 1.0s

=> => sha256:6a2f8b28e45c4adea04ec207a251fd4a2df03ddc930f782af51e315ebc76e9a9 8.71kB / 8.71kB 0.0s

=> => sha256:cb0953165f59b5cf2227ae979a49a2284956d997fad4ed7a338eebc6aef3e70b 2.50kB / 2.50kB 0.0s

=> => sha256:6913ed9ec8d009744018c1740879327fe2e085935b2cce7a234bf05347b670d7 11.74kB / 11.74kB 0.0s

=> => sha256:619be1103602d98e1963557998c954c892b3872986c27365e9f651f5bc27cab8 3.40MB / 3.40MB 0.9s

=> => sha256:018b9065ed0dfedff48bbd11f6014960bb496e71c395f772bfad123ab33a1800 1.90MB / 1.90MB 1.4s

=> => sha256:c3ea3344e711fd7111dee02f17deebceb725ed1d0ee998f7fb472114dc1399ce 629B / 629B 1.2s

=> => extracting sha256:619be1103602d98e1963557998c954c892b3872986c27365e9f651f5bc27cab8 0.7s

=> => sha256:a101c9a82b88a3fa561030af162d98a130ca3bc0501b2e70594410dd426f2c9b 393B / 393B 2.0s

=> => sha256:d6a456492aaa4c003389fec3da0939f31c505232fcf1925db314815a196c444f 1.21kB / 1.21kB 1.8s

=> => sha256:c7059f3102784cd05dc96fff74a52bce9fa50fea724ece08748507fa3455999b 956B / 956B 2.2s

=> => sha256:a85ccd8c07bd7090e8a37ab878413b035a370e872367b145a0c0aaaaf60ccbdf 12.65MB / 12.65MB 4.2s

=> => sha256:e1c681003a03fff277ecf90fccf526881bcc2e006c9e371b58f45680d54c1954 1.40kB / 1.40kB 4.4s

=> => extracting sha256:018b9065ed0dfedff48bbd11f6014960bb496e71c395f772bfad123ab33a1800 1.9s

=> => extracting sha256:c3ea3344e711fd7111dee02f17deebceb725ed1d0ee998f7fb472114dc1399ce 0.0s

=> => extracting sha256:c7059f3102784cd05dc96fff74a52bce9fa50fea724ece08748507fa3455999b 0.0s

=> => extracting sha256:a101c9a82b88a3fa561030af162d98a130ca3bc0501b2e70594410dd426f2c9b 0.0s

=> => extracting sha256:d6a456492aaa4c003389fec3da0939f31c505232fcf1925db314815a196c444f 0.0s

=> => extracting sha256:e1c681003a03fff277ecf90fccf526881bcc2e006c9e371b58f45680d54c1954 0.0s

=> => extracting sha256:a85ccd8c07bd7090e8a37ab878413b035a370e872367b145a0c0aaaaf60ccbdf 2.1s

=> [internal] load build context 1.0s

=> => transferring context: 487B 0.1s

=> [2/3] COPY default.conf /etc/nginx/conf.d/ 2.0s

=> [3/3] COPY index.html /usr/share/nginx/html/ 0.7s

=> exporting to image 0.7s

=> => exporting layers 0.5s

=> => writing image sha256:3ee5758825dad96528ad1c9b65355bd5e6c54fc13800b23e576958196f6b3c5c 0.0s

=> => naming to docker.io/harshitameshram/cloudethix\_master\_nginx\_harsh:v1

**root@DESKTOP-DA2RDP0:docker-sample-nginx\_01# docker push harshitameshram/cloudethix\_master\_nginx\_harsh:v1**

The push refers to repository [docker.io/harshitameshram/cloudethix\_master\_nginx\_harsh]

b50631142cb0: Pushed

4296ef301564: Pushed

667a247707f0: Mounted from library/nginx

d8527026595f: Mounted from library/nginx

2593b08e5428: Mounted from library/nginx

9909978d630d: Mounted from library/nginx

c5140fc719dd: Mounted from library/nginx

3137f8f0c641: Mounted from harshitameshram/nginx

718db50a47c0: Mounted from library/nginx

aedc3bda2944: Mounted from library/nginx

v1: digest: sha256:7921396adf7f1e74c9807dea4daebf20200ff21fceef54b8c3630a234ce116f8 size: 2403

**root@DESKTOP-DA2RDP0:docker-sample-nginx\_01# git checkout release**

M index.html

Switched to branch 'release'

root@DESKTOP-DA2RDP0:docker-sample-nginx\_01#

root@DESKTOP-DA2RDP0:docker-sample-nginx\_01# ll

total 0

drwxrwxrwx 1 harsh harsh 4096 Feb 21 12:24 ./

drwxrwxrwx 1 harsh harsh 4096 Feb 21 12:21 ../

drwxrwxrwx 1 harsh harsh 4096 Feb 21 12:32 .git/

-rwxrwxrwx 1 harsh harsh 95 Feb 21 12:21 Dockerfile\*

-rwxrwxrwx 1 harsh harsh 48 Feb 21 12:21 README.md\*

-rwxrwxrwx 1 harsh harsh 286 Feb 21 12:21 default.conf\*

-rwxrwxrwx 1 harsh harsh 121 Feb 21 12:24 index.html\*

**root@DESKTOP-DA2RDP0:docker-sample-nginx\_01# cat index.html**

<html>

<body>

<h1>Host: <!--#echo var="HOSTNAME" --></h1>

Cloudethix Master Branch Nginx

</body>

</html>

root@DESKTOP-DA2RDP0:docker-sample-nginx\_01#

**root@DESKTOP-DA2RDP0:docker-sample-nginx\_01# vi index.html**

**root@DESKTOP-DA2RDP0:docker-sample-nginx\_01# cat index.html**

<html>

<body>

<h1>Host: <!--#echo var="HOSTNAME" --></h1>

"Cloudethix Release Branch Nginx"

</body>

</html>

root@DESKTOP-DA2RDP0:docker-sample-nginx\_01#

**root@DESKTOP-DA2RDP0:docker-sample-nginx\_01# docker image build --no-cache -t harshitameshram/cloudethix\_release\_nginx\_harsh:v2 .**

[+] Building 27.7s (9/9) FINISHED docker:default

=> [internal] load build definition from Dockerfile 0.3s

=> => transferring dockerfile: 132B 0.1s

=> [internal] load .dockerignore 0.2s

=> => transferring context: 2B 0.1s

=> [internal] load metadata for docker.io/library/nginx:alpine 23.8s

=> [auth] library/nginx:pull token for registry-1.docker.io 0.0s

=> CACHED [1/3] FROM docker.io/library/nginx:alpine@sha256:6a2f8b28e45c4adea04ec207a251fd4a2df03ddc930f782af51e315ebc76e9a9 0.0s

=> [internal] load build context 0.2s

=> => transferring context: 191B 0.1s

=> [2/3] COPY default.conf /etc/nginx/conf.d/ 0.6s

=> [3/3] COPY index.html /usr/share/nginx/html/ 0.8s

=> exporting to image 0.9s

=> => exporting layers 0.7s

=> => writing image sha256:ddff0a389dad15625a4532448f23f331cde75860320a7a7c48516fabbe8c6069 0.1s

=> => naming to docker.io/harshitameshram/cloudethix\_release\_nginx\_harsh:v2 0.1s

**root@DESKTOP-DA2RDP0:docker-sample-nginx\_01# docker push harshitameshram/cloudethix\_release\_nginx\_harsh:v2**

The push refers to repository [docker.io/harshitameshram/cloudethix\_release\_nginx\_harsh]

f8ceaf4d42be: Pushed

e7fbde54b8a7: Pushed

667a247707f0: Mounted from harshitameshram/cloudethix\_master\_nginx\_harsh

d8527026595f: Mounted from harshitameshram/cloudethix\_master\_nginx\_harsh

2593b08e5428: Mounted from harshitameshram/cloudethix\_master\_nginx\_harsh

9909978d630d: Mounted from harshitameshram/cloudethix\_master\_nginx\_harsh

c5140fc719dd: Mounted from harshitameshram/cloudethix\_master\_nginx\_harsh

3137f8f0c641: Mounted from harshitameshram/cloudethix\_master\_nginx\_harsh

718db50a47c0: Mounted from harshitameshram/cloudethix\_master\_nginx\_harsh

aedc3bda2944: Mounted from harshitameshram/cloudethix\_master\_nginx\_harsh

v2: digest: sha256:35a8d87b80b30c2b2c5668b95f205ce941e6face93704af9227f7bd3b82a4182 size: 2403

**Once Images are copied to Docker hub registries, switch to the main branch:-**

root@DESKTOP-DA2RDP0:docker-sample-nginx\_01# git checkout main

M index.html

Switched to branch 'main'

root@DESKTOP-DA2RDP0:docker-sample-nginx\_01#

**Also create a file release\_pod.yaml with pod name release\_nginx & with label release\_nginx & add image that you have pushed in Docker Hub registry cloudethix\_release\_nginx\_yourname. ● Create a file called cluster\_ip-service.yaml with service name cloudethix\_clusterip and with Type clusterIP:-**

root@DESKTOP-DA2RDP0:docker-sample-nginx\_01# mkdir kube

root@DESKTOP-DA2RDP0:docker-sample-nginx\_01# ll

total 0

drwxrwxrwx 1 harsh harsh 4096 Feb 21 12:43 ./

drwxrwxrwx 1 harsh harsh 4096 Feb 21 12:21 ../

drwxrwxrwx 1 harsh harsh 4096 Feb 21 12:39 .git/

-rwxrwxrwx 1 harsh harsh 95 Feb 21 12:21 Dockerfile\*

-rwxrwxrwx 1 harsh harsh 48 Feb 21 12:21 README.md\*

-rwxrwxrwx 1 harsh harsh 286 Feb 21 12:21 default.conf\*

-rwxrwxrwx 1 harsh harsh 118 Feb 21 12:33 index.html\*

drwxrwxrwx 1 harsh harsh 4096 Feb 21 12:43 kube/

root@DESKTOP-DA2RDP0:docker-sample-nginx\_01# cd kube/

root@DESKTOP-DA2RDP0:kube# touch master\_pod.yaml

root@DESKTOP-DA2RDP0:kube# ll

total 0

drwxrwxrwx 1 harsh harsh 4096 Feb 21 12:46 ./

drwxrwxrwx 1 harsh harsh 4096 Feb 21 12:43 ../

-rwxrwxrwx 1 harsh harsh 0 Feb 21 12:46 master\_pod.yaml\*

**Create all these three resources in your k8s cluster:-**

root@DESKTOP-DA2RDP0:kube# kubectl apply -f .

service/cloudethix-clusterip created

deployment.apps/master-nginx created

deployment.apps/release-nginx created

root@DESKTOP-DA2RDP0:kube# kgp

NAME READY STATUS RESTARTS AGE

master-nginx-75f646c45-f7th4 1/1 Running 0 8s

release-nginx-675796b5d9-7bplh 1/1 Running 0 8s

root@DESKTOP-DA2RDP0:kube# kubectl get svc

NAME TYPE CLUSTER-IP EXTERNAL-IP PORT(S) AGE

cloudethix-clusterip ClusterIP 10.110.208.245 <none> 80/TCP 2m4s

kubernetes ClusterIP 10.96.0.1 <none> 443/TCP 95m

root@DESKTOP-DA2RDP0:kube#

root@DESKTOP-DA2RDP0:kube# kgp

NAME READY STATUS RESTARTS AGE

master-nginx-75f646c45-f7th4 1/1 Running 0 11m

release-nginx-675796b5d9-7bplh 1/1 Running 0 11m

**Now, access master\_nginx pod shell & curl the master\_nginx pod & check the result:-**

root@DESKTOP-DA2RDP0:kube# kubectl exec -it master-nginx-75f646c45-f7th4 -- /bin/sh

/ # curl localhost

<html>

<body>

<h1>Host: master-nginx-75f646c45-f7th4</h1>

Cloudethix Master Branch Nginx

</body>

</html>

/ # ^C

/ # exit

**Also try to curl release\_nginx pod with DNS name & check the result:-**

root@DESKTOP-DA2RDP0:kube# kubectl exec -it release-nginx-675796b5d9-7bplh -- /bin/sh

/ # curl localhost

<html>

<body>

<h1>Host: release-nginx-675796b5d9-7bplh</h1>

"Cloudethix Release Branch Nginx"

</body>

</html>

/ #

**Then curl the clusterip service with its name and check the result:-**

root@DESKTOP-DA2RDP0:kube#

/ # curl release-nginx-675796b5d9-7bplh

<html>

<body>

<h1>Host: release-nginx-675796b5d9-7bplh</h1>

"Cloudethix Release Branch Nginx"

</body>

</html>

/ #

/ #

/ # curl cloudethix-clusterip

<html>

<body>

<h1>Host: release-nginx-675796b5d9-7bplh</h1>

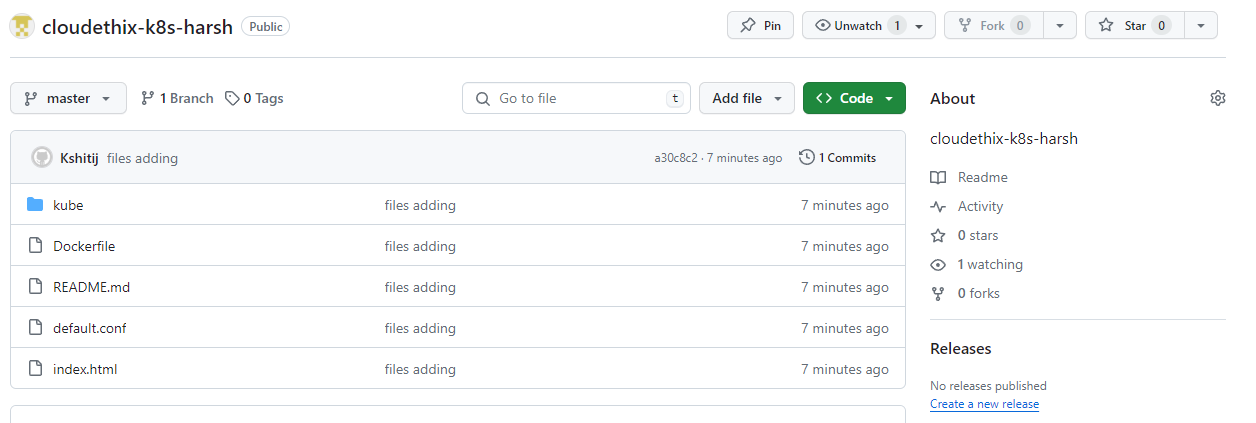
"Cloudethix Release Branch Nginx"

</body>

</html>

/ #

**Finally, create a GITHUB remote repository named cloudethix-k8s-yourname and push all the branches to the remote repository:-**



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**Que 2 →**

**● In the main branch of your local repository create a directory kube/NodePort. ● Create below files from below url. Please make sure you will create NodePort service with port 30008 instead of loadbalancer. https://kubernetes.io/docs/tasks/access-application-cluster/connec ting-frontend-backend/. backend-deployment.yaml backend-service.yaml frontend-deployment.yaml frontend-NodePort-service.yaml ● Once files are created , create all the resources in your k8s cluster. ● Access all public ips with port 30008 in the browser and then check the result. ● Finally, push all the latest code to the remote repository. ● Take all screenshots and create a well formatted document.**

**root@DESKTOP-DA2RDP0:docker-sample-nginx\_01# mkdir kube-NodePort**

**root@DESKTOP-DA2RDP0:docker-sample-nginx\_01# ll**

total 0

drwxrwxrwx 1 harsh harsh 4096 Feb 21 14:30 ./

drwxrwxrwx 1 harsh harsh 4096 Feb 21 12:21 ../

drwxrwxrwx 1 harsh harsh 4096 Feb 21 14:26 .git/

-rwxrwxrwx 1 harsh harsh 95 Feb 21 12:21 Dockerfile\*

-rwxrwxrwx 1 harsh harsh 48 Feb 21 12:21 README.md\*

-rwxrwxrwx 1 harsh harsh 286 Feb 21 12:21 default.conf\*

-rwxrwxrwx 1 harsh harsh 118 Feb 21 12:33 index.html\*

drwxrwxrwx 1 harsh harsh 4096 Feb 21 14:30 kube/

drwxrwxrwx 1 harsh harsh 4096 Feb 21 14:30 kube-NodePort/

**root@DESKTOP-DA2RDP0:docker-sample-nginx\_01# cd kube-NodePort/**

**root@DESKTOP-DA2RDP0:kube-NodePort# touch backend-deployment.yaml**

**root@DESKTOP-DA2RDP0:kube-NodePort# touch backend-service.yaml frontend-deployment.yaml frontend-NodePort-service.yaml**

**root@DESKTOP-DA2RDP0:kube-NodePort# ll**

total 4

drwxrwxrwx 1 harsh harsh 4096 Feb 21 14:33 ./

drwxrwxrwx 1 harsh harsh 4096 Feb 21 14:30 ../

-rwxrwxrwx 1 harsh harsh 483 Feb 21 14:36 backend-deployment.yaml\*

-rwxrwxrwx 1 harsh harsh 181 Feb 21 14:41 backend-service.yaml\*

-rwxrwxrwx 1 harsh harsh 220 Feb 21 14:44 frontend-NodePort-service.yaml\*

-rwxrwxrwx 1 harsh harsh 531 Feb 21 14:43 frontend-deployment.yaml\*

**root@DESKTOP-DA2RDP0:kube-NodePort# kubectl apply -f .**

deployment.apps/backend created

service/hello created

service/frontend created

deployment.apps/frontend created

root@DESKTOP-DA2RDP0:kube-NodePort#

**root@DESKTOP-DA2RDP0:kube-NodePort# kgp**

NAME READY STATUS RESTARTS AGE

backend-7d8fc44cfb-2rwrf 1/1 Running 0 9s

backend-7d8fc44cfb-ghpvm 1/1 Running 0 9s

backend-7d8fc44cfb-nv586 1/1 Running 0 9s

frontend-5d78757c9b-v8c4g 1/1 Running 0 7s

master-nginx-75f646c45-f7th4 1/1 Running 0 119m

release-nginx-675796b5d9-7bplh 1/1 Running 0 119m

root@DESKTOP-DA2RDP0:kube-NodePort#

**root@DESKTOP-DA2RDP0:docker-sample-nginx\_01# git branch -a**

develop

hotfix

\* main

master

release

remotes/origin/develop

remotes/origin/hotfix

remotes/origin/main

remotes/origin/master

remotes/origin/release

**root@DESKTOP-DA2RDP0:docker-sample-nginx\_01# git remote -v**

origin git@github.com:HarshitaMeshram/cloudethix-k8s-harsh.git (fetch)

origin git@github.com:HarshitaMeshram/cloudethix-k8s-harsh.git (push)

**root@DESKTOP-DA2RDP0:docker-sample-nginx\_01# git add kube-NodePort**

**root@DESKTOP-DA2RDP0:docker-sample-nginx\_01# git commit -m "kube-NodePort is adding"**

[main e1364b2] kube-NodePort is adding

6 files changed, 87 insertions(+)

create mode 100644 kube-NodePort/Dockerfile

create mode 100644 kube-NodePort/backend-deployment.yaml

create mode 100644 kube-NodePort/backend-service.yaml

create mode 100644 kube-NodePort/custom-index.html

create mode 100644 kube-NodePort/frontend-NodePort-service.yaml

create mode 100644 kube-NodePort/frontend-deployment.yaml

**root@DESKTOP-DA2RDP0:docker-sample-nginx\_01# git push origin main**

Enumerating objects: 10, done.

Counting objects: 100% (10/10), done.

Delta compression using up to 2 threads

Compressing objects: 100% (8/8), done.

Writing objects: 100% (9/9), 1.17 KiB | 7.00 KiB/s, done.

Total 9 (delta 3), reused 0 (delta 0), pack-reused 0

remote: Resolving deltas: 100% (3/3), completed with 1 local object.

To github.com:HarshitaMeshram/cloudethix-k8s-harsh.git

a30c8c2..e1364b2 main -> main

root@DESKTOP-DA2RDP0:docker-sample-nginx\_01#

**------------------------------------------------------------------------------------------------------------------------------------------**

**Que 3 → ● Create any 2 pods and assign them to different worker nodes with nodeName property.**

**------------------------------------------------------------------------------------------------------------------------------------------**

Done

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**Que 4 → ● Label both worker nodes such as worker-0 node as cloudethix-k8s-00 & worker-1 node as cloudethix-k8s-01. ● Once nodes are labeled, create pod00.yaml file and schedule the pod on worker-0 node with nodeSelector property. Also create one more file named pod01.yaml & schedule the pod on worker-1 node.**

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**root@DESKTOP-DA2RDP0:nv\_01# kubectl apply -f label.yaml**

node/worker-0 created

node/worker-1 created

**root@DESKTOP-DA2RDP0:nv\_01# kubectl apply -f pod00.yaml**

pod/pod1 created

**root@DESKTOP-DA2RDP0:nv\_01# kubectl apply -f pod01.yaml**

pod/pod2 created

**root@DESKTOP-DA2RDP0:nv\_01# kgp**

NAME READY STATUS RESTARTS AGE

backend-7d8fc44cfb-5pgl6 1/1 Running 0 36s

backend-7d8fc44cfb-bmskf 1/1 Running 0 37s

backend-7d8fc44cfb-hcrrw 1/1 Running 0 37s

frontend-5d78757c9b-dd7xf 1/1 Running 0 36s

master-nginx-75f646c45-n64q6 1/1 Running 0 37s

pod1 1/1 Running 0 21s

pod2 1/1 Running 0 11s

release-nginx-675796b5d9-dbhl8 1/1 Running 0 36s

**root@DESKTOP-DA2RDP0:nv\_01# kubectl describe pod pod1**

Node-Selectors: cloudethix-k8s-00=true

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**Que 5 → ● Clone the below repo locally & create DaemonSet from directory DaemonSet101.**

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root@DESKTOP-DA2RDP0:DaemonSet101# ll

total 8

drwxrwxrwx 1 harsh harsh 4096 Feb 21 18:18 ./

drwxrwxrwx 1 harsh harsh 4096 Feb 21 18:07 ../

-rwxrwxrwx 1 harsh harsh 7040 Feb 21 18:05 README.md\*

-rwxrwxrwx 1 harsh harsh 394 Feb 21 18:05 daemonset.yml\*

**root@DESKTOP-DA2RDP0:DaemonSet101# kubectl apply -f daemonset.yml**

daemonset.apps/prometheus-daemonset created

**root@DESKTOP-DA2RDP0:DaemonSet101# kubectl get daemonsets/prometheus-daemonset**

NAME DESIRED CURRENT READY UP-TO-DATE AVAILABLE NODE SELECTOR AGE

prometheus-daemonset 2 2 2 2 2 <none> 16s

root@DESKTOP-DA2RDP0:DaemonSet101#

root@DESKTOP-DA2RDP0:DaemonSet101#

**root@DESKTOP-DA2RDP0:DaemonSet101# kubectl describe daemonset/prometheus-daemonset**

Name: prometheus-daemonset

Selector: name=prometheus-exporter,tier=monitoring

Node-Selector: <none>

Labels: <none>

Annotations: deprecated.daemonset.template.generation: 1

Desired Number of Nodes Scheduled: 2

Current Number of Nodes Scheduled: 2

Number of Nodes Scheduled with Up-to-date Pods: 2

Number of Nodes Scheduled with Available Pods: 2

Number of Nodes Misscheduled: 0

Pods Status: 2 Running / 0 Waiting / 0 Succeeded / 0 Failed

Pod Template:

Labels: name=prometheus-exporter

tier=monitoring

Containers:

prometheus:

Image: prom/node-exporter

Port: 80/TCP

Host Port: 0/TCP

Environment: <none>

Mounts: <none>

Volumes: <none>

Events:

Type Reason Age From Message

---- ------ ---- ---- -------

Normal SuccessfulCreate 31s daemonset-controller Created pod: prometheus-daemonset-7vk5x

Normal SuccessfulCreate 31s daemonset-controller Created pod: prometheus-daemonset-dzx4w

root@DESKTOP-DA2RDP0:DaemonSet101#

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**Que 6 → ● Create a static pod with name cloudethix-static in your k8s cluster. Refer below link.**

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**root@DESKTOP-DA2RDP0:ASSIGNMENT\_05# ssh -i ~/.ssh/id\_rsa ubuntu@3.90.8.119**

Welcome to Ubuntu 18.04.6 LTS (GNU/Linux 5.4.0-1103-aws x86\_64)

\* Documentation: https://help.ubuntu.com

\* Management: https://landscape.canonical.com

\* Support: https://ubuntu.com/advantage

System information as of Wed Feb 21 13:37:50 UTC 2024

System load: 0.03 Users logged in: 0

Usage of /: 49.5% of 7.57GB IP address for eth0: 172.31.85.159

Memory usage: 26% IP address for docker0: 172.17.0.1

Swap usage: 0% IP address for tunl0: 10.111.158.83

Processes: 151

Expanded Security Maintenance for Infrastructure is not enabled.

10 updates can be applied immediately.

2 of these updates are standard security updates.

To see these additional updates run: apt list --upgradable

89 additional security updates can be applied with ESM Infra.

Learn more about enabling ESM Infra service for Ubuntu 18.04 at

https://ubuntu.com/18-04

New release '20.04.6 LTS' available.

Run 'do-release-upgrade' to upgrade to it.

Last login: Wed Feb 21 13:25:01 2024 from 137.59.68.246

**ubuntu@ip-172-31-85-159:~$ sudo su**

**root@ip-172-31-85-159:/home/ubuntu# ps -ef | grep kubel**

root 3619 3555 0 13:38 pts/0 00:00:00 grep --color=auto kubel

root 5400 1 1 06:02 ? 00:05:11 /usr/bin/kubelet --bootstrap-kubeconfig=/etc/kubernetes/bootstrap-kubelet.conf --kubeconfig=/etc/kubernetes/kubelet.conf --config=/var/lib/kubelet/config.yaml --container-runtime-endpoint=unix:///var/run/containerd/containerd.sock --hostname-override=worker-1 --pod-infra-container-image=registry.k8s.io/pause:3.9

**root@ip-172-31-85-159:/home/ubuntu# cd /etc/kubernetes/manifests**

**root@ip-172-31-85-159:/etc/kubernetes/manifests# vim static.yaml**

root@ip-172-31-85-159:/etc/kubernetes/manifests# exit

exit

ubuntu@ip-172-31-85-159:~$ exit

logout

Connection to 3.90.8.119 closed.

root@DESKTOP-DA2RDP0:ASSIGNMENT\_05# ll

total 0

drwxrwxrwx 1 harsh harsh 4096 Feb 21 17:30 ./

drwxrwxrwx 1 harsh harsh 4096 Feb 21 12:06 ../

drwxrwxrwx 1 harsh harsh 4096 Feb 21 13:44 .git/

drwxrwxrwx 1 harsh harsh 4096 Feb 21 12:06 docker-sample-nginx/

drwxrwxrwx 1 harsh harsh 4096 Feb 21 15:53 docker-sample-nginx\_01/

drwxrwxrwx 1 harsh harsh 4096 Feb 21 18:07 kubelabs/

**root@DESKTOP-DA2RDP0:ASSIGNMENT\_05# kgp**

NAME READY STATUS RESTARTS AGE

backend-7d8fc44cfb-5pgl6 1/1 Running 0 105m

backend-7d8fc44cfb-bmskf 1/1 Running 0 106m

backend-7d8fc44cfb-hcrrw 1/1 Running 0 106m

frontend-5d78757c9b-dd7xf 1/1 Running 0 105m

master-nginx-75f646c45-n64q6 1/1 Running 0 106m

pod1 1/1 Running 0 105m

pod2 1/1 Running 0 105m

prometheus-daemonset-7vk5x 1/1 Running 0 45m

prometheus-daemonset-dzx4w 1/1 Running 0 45m

release-nginx-675796b5d9-dbhl8 1/1 Running 0 105m

**static-web-worker-1 1/1 Running 0 32s**

root@DESKTOP-DA2RDP0:ASSIGNMENT\_05#

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**Que 7 → ● Install Kubectx & kubens in your k8s cluster**

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**root@DESKTOP-DA2RDP0:DaemonSet101# sudo wget -O kubectx https://raw.githubusercontent.com/ahmetb/kubectx/master/kubectx && chmod +x kubectx && sudo mv kubectx /usr/local/bin/**

--2024-02-21 18:18:05-- https://raw.githubusercontent.com/ahmetb/kubectx/master/kubectx

Resolving raw.githubusercontent.com (raw.githubusercontent.com)... 185.199.109.133, 185.199.111.133, 185.199.108.133, ...

Connecting to raw.githubusercontent.com (raw.githubusercontent.com)|185.199.109.133|:443... connected.

HTTP request sent, awaiting response... 200 OK

Length: 6108 (6.0K) [text/plain]

Saving to: ‘kubectx’

kubectx 100%[=================================================>] 5.96K 11.0KB/s in 0.5s

2024-02-21 18:18:07 (11.0 KB/s) - ‘kubectx’ saved [6108/6108]

**root@DESKTOP-DA2RDP0:DaemonSet101# sudo wget -O kubens https://raw.githubusercontent.com/ahmetb/kubectx/master/kubens && chmod +x kubens && sudo mv kubens /usr/local/bin/**

--2024-02-21 18:18:36-- https://raw.githubusercontent.com/ahmetb/kubectx/master/kubens

Resolving raw.githubusercontent.com (raw.githubusercontent.com)... 185.199.109.133, 185.199.111.133, 185.199.108.133, ...

Connecting to raw.githubusercontent.com (raw.githubusercontent.com)|185.199.109.133|:443... connected.

HTTP request sent, awaiting response... 200 OK

Length: 5555 (5.4K) [text/plain]

Saving to: ‘kubens’

kubens 100%[=================================================>] 5.42K --.-KB/s in 0.01s

2024-02-21 18:18:36 (487 KB/s) - ‘kubens’ saved [5555/5555]

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**Que 8 → ● Create 1 Public Docker Hub registry named flask\_webapp\_yourname. ● Clone below repository on your system. https://github.com/mmumshad/simple-webapp-docker.git ● Initialize a local repository & copy the code from above repo to your local repository in your working branch. ● Once code is copied to the local repository, build the docker image & add meaningful tags with version 1 and push to Docker Hub registry. ● Once Images are pushed to Docker hub registries, create a directory named kube. Inside the kube directory create deployement.yaml file with 3 replication , labels app: flask-webapp , containerPort: 8080 and add the image that you have pushed in Docker Hub registry. ● Create one service.yaml file with type nodeport & select flask-webapp with port 8080 & targetPort 8080 with any nodePort between range 30000-32768. ● Once a service is created try accessing the web page in the browser as below. (30011 is nodeport mentioned in service.yaml). Meanwhile open app.py from your code to understand paths & output. http://master\_ip:30011/ http://master\_ip:30011/how are you ● Now , update the app.py from your code and add below route above if \_\_name\_\_ == "\_\_main\_\_" line @app.route('/Who are you') def cloudethix(): return 'Yes, I am cloudethix, and You !!!' ● Once the file is updated , rebuild the docker image & add meaningful tags with version 2 and push to Docker Hub registry. ● Now we have the latest docker image in repo, It's time to roll out a new image. Roll out the new Image with all three ways one by one. 1. With kubectl set command 2. With kubectl edit deployment 3. With deployment.yaml file modification. ● Run the # kubectl rollout command to check status and history. ● Note:- Once above step 1 is done , run # kubectl rollout undo deployment command to rollback the change and then try a second way of rollout. ● In the browser run all three routes & notice the changes. http://master\_ip:30011/ http://master\_ip:30011/how are you http://master\_ip:30011/Who are you ● Once done with all above steps , commit all the changes to the remote repository. ● Capture the snap and prepare a well formatted document.**

**root@DESKTOP-DA2RDP0:ASSIGNMENT\_05# git clone git@github.com:mmumshad/simple-webapp-docker.git**

Cloning into 'simple-webapp-docker'...

remote: Enumerating objects: 14, done.

remote: Counting objects: 100% (7/7), done.

remote: Compressing objects: 100% (5/5), done.

remote: Total 14 (delta 3), reused 2 (delta 2), pack-reused 7

Receiving objects: 100% (14/14), done.

Resolving deltas: 100% (3/3), done.

**root@DESKTOP-DA2RDP0:ASSIGNMENT\_05# cd simple-webapp-docker/**

**root@DESKTOP-DA2RDP0:simple-webapp-docker# ll**

total 0

drwxrwxrwx 1 harsh harsh 4096 Feb 22 15:49 ./

drwxrwxrwx 1 harsh harsh 4096 Feb 22 11:46 ../

drwxrwxrwx 1 harsh harsh 4096 Feb 22 15:49 .git/

-rwxrwxrwx 1 harsh harsh 194 Feb 22 15:49 Dockerfile\*

-rwxrwxrwx 1 harsh harsh 229 Feb 22 15:49 app.py\*

**root@DESKTOP-DA2RDP0:simple-webapp-docker# docker image build --no-cache -t harshitameshram/flaskwebappharsh:version1 .**

[+] Building 414.7s (10/10) FINISHED docker:default

=> [internal] load build definition from Dockerfile 1.9s

=> => transferring dockerfile: 233B 0.1s

=> [internal] load .dockerignore 2.4s

=> => transferring context: 2B 0.0s

=> [internal] load metadata for docker.io/library/ubuntu:20.04 28.4s

=> [auth] library/ubuntu:pull token for registry-1.docker.io 0.0s

=> CACHED [1/4] FROM docker.io/library/ubuntu:20.04@sha256:bb1c41682308d7040f74d103022816d41c50d7b0c89e9d706a74b4e548636e54 0.2s

=> [internal] load build context 4.3s

=> => transferring context: 264B 2.2s

=> [2/4] RUN apt-get update && apt-get install -y python3 python3-pip 352.8s

=> [3/4] RUN pip install flask 16.5s

=> [4/4] COPY app.py /opt/ 3.2s

=> exporting to image 9.2s

=> => exporting layers 9.1s

=> => writing image sha256:9acf8ae8222949bad008f96137586b048d8e26ca3bfd4a1b1c0eaca5b18fc33d 0.0s

=> => naming to docker.io/harshitameshram/flaskwebappharsh:version1 0.1s

**root@DESKTOP-DA2RDP0:simple-webapp-docker# docker push harshitameshram/flaskwebappharsh:version1**

The push refers to repository [docker.io/harshitameshram/flaskwebappharsh]

e08b33dfb1b7: Pushed

a1e09ad7b7ff: Pushed

9edc22e3209e: Pushed

28da0445c449: Layer already exists

version1: digest: sha256:3d2e057cd6e10b01bf6e94a790702f13d521e04a876f25b96c35aafa23233947 size: 1160

**root@DESKTOP-DA2RDP0:simple-webapp-docker# ll**

total 0

drwxrwxrwx 1 harsh harsh 4096 Feb 22 15:49 ./

drwxrwxrwx 1 harsh harsh 4096 Feb 22 11:46 ../

drwxrwxrwx 1 harsh harsh 4096 Feb 22 15:49 .git/

-rwxrwxrwx 1 harsh harsh 194 Feb 22 15:49 Dockerfile\*

-rwxrwxrwx 1 harsh harsh 229 Feb 22 15:49 app.py\*

**root@DESKTOP-DA2RDP0:simple-webapp-docker# mkdir kube**

**root@DESKTOP-DA2RDP0:simple-webapp-docker# cd kube/**

**root@DESKTOP-DA2RDP0:kube# touch deployement.yaml service.yaml**

**root@DESKTOP-DA2RDP0:kube# vi deployement.yaml**

**root@DESKTOP-DA2RDP0:kube# vi service.yaml**

**root@DESKTOP-DA2RDP0:kube# kubectl apply -f .**

deployment.apps/flask-webapp-deployment created

service/flask-webapp-service created

**root@DESKTOP-DA2RDP0:kube# kgp**

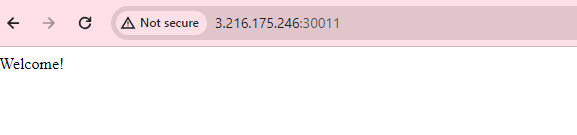
NAME READY STATUS RESTARTS AGE

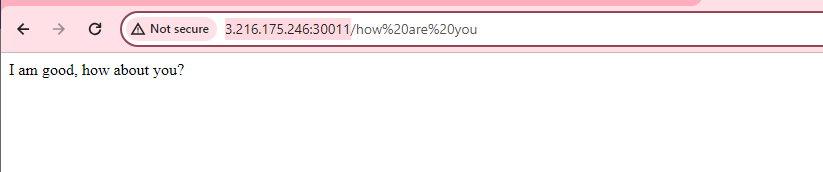
flask-webapp-deployment-6c4b959cd-4hbc4 1/1 Running 0 12s

flask-webapp-deployment-6c4b959cd-pwfqn 1/1 Running 0 12s

flask-webapp-deployment-6c4b959cd-q9m4j 1/1 Running 0 12s

root@DESKTOP-DA2RDP0:kube#





**root@DESKTOP-DA2RDP0:kube# k set image deployment flask-webapp-deployment flask-webapp-cont=harshitameshram/flaskwebappharsh:version1 --record**

deployment.apps/flask-webapp-deployment image updated

**root@DESKTOP-DA2RDP0:kube# k edit deployment flask-webapp-deployment**

deployment.apps/flask-webapp-deployment edited

**root@DESKTOP-DA2RDP0:kube# kubectl apply -f .**

deployment.apps/flask-webapp-deployment configured

**root@DESKTOP-DA2RDP0:kube# kubectl rollout status deployment flask-webapp-deployment**

deployment "flask-webapp-deployment" successfully rolled out

**root@DESKTOP-DA2RDP0:kube# kubectl rollout history deployment flask-webapp-deployment**

**deployment.apps/flask-webapp-deployment**

REVISION CHANGE-CAUSE

4 kubectl set image deployment flask-webapp-deployment flask-webapp-cont=harshitameshram/flaskwebappharsh:version1 --record=true

5 kubectl set image deployment flask-webapp-deployment flask-webapp-cont=harshitameshram/flaskwebappharsh:version1 --record=true

**root@DESKTOP-DA2RDP0:kube# kgp**

NAME READY STATUS RESTARTS AGE

flask-webapp-deployment-6c4b959cd-f9qh2 1/1 Running 0 4m29s

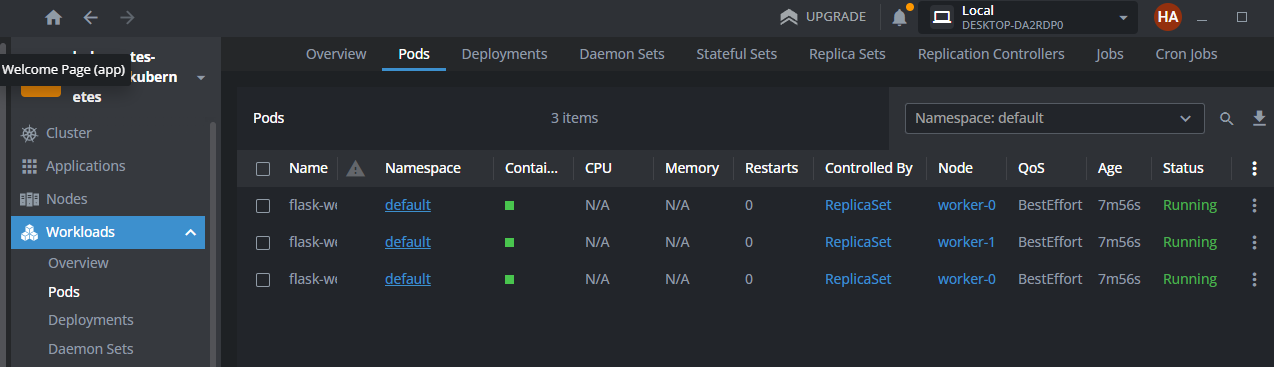
flask-webapp-deployment-6c4b959cd-vxg6x 1/1 Running 0 4m27s

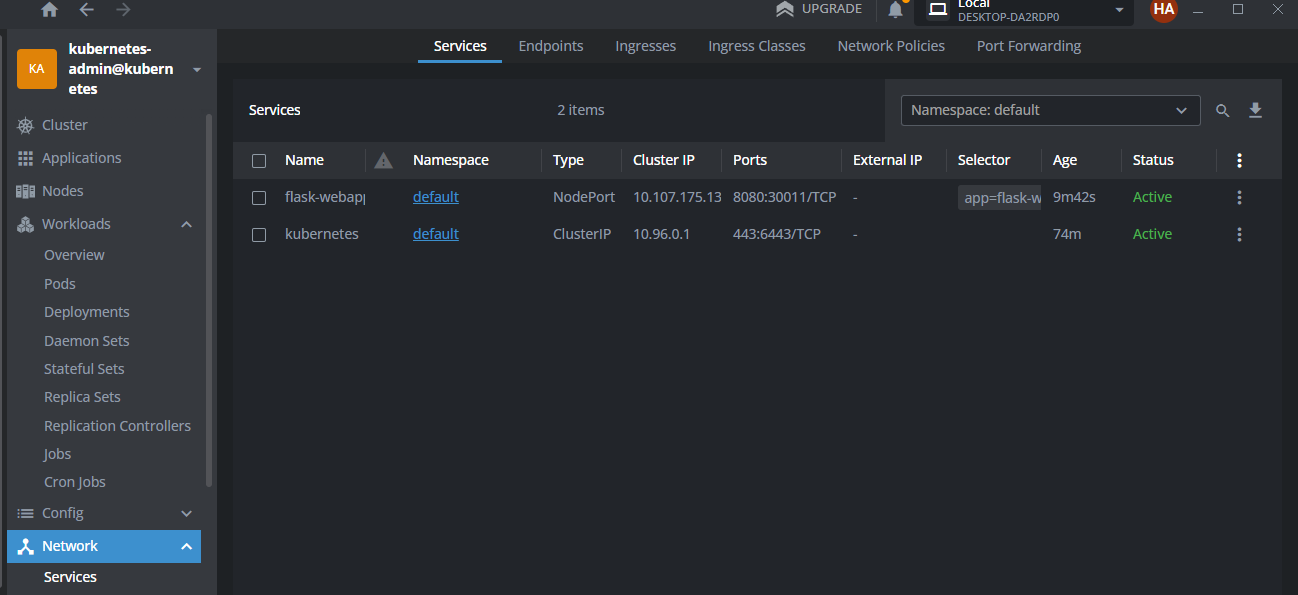
flask-webapp-deployment-6c4b959cd-w7n2c 1/1 Running 0 4m30s

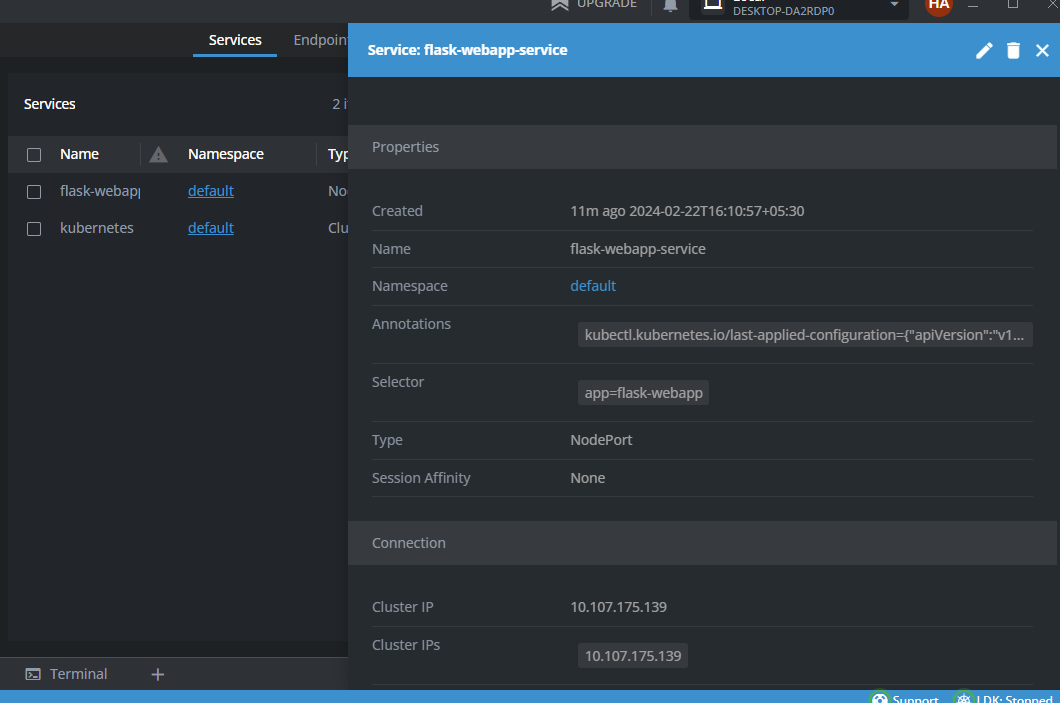
root@DESKTOP-DA2RDP0:kube#

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**Que 9 → ● Download and install Lens & access your k8s cluster from Lens. ● Create nginx Pod and Nodeport service. Check the Pod logs from Lens. ● Check the service from lens. Also login to the pod shell using the lens. ● Take snaps and delete the resources that you have just created.**







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**Que 10 → ● Create 1 Public Docker Hub registry named cloudethix\_configmap\_yourname. ● Clone below repository on your system. https://github.com/zembutsu/docker-sample-nginx.git ● Initialize a local repository & copy the code from above repo to your local repository in the working branch. ● Once code is copied , build a docker image from docker file and add meaningful tags and push to docker hub repository. ● Once Images are pushed to Docker hub registries, create a directory named kube. Inside the kube directory create deployement.yaml file with 3 replication , labels app: frontend-webapp , containerPort: 80 and add the image that you have pushed in Docker Hub registry. ● Create one service.yaml file with type nodeport & select frontend-webapp pod with port 80 & targetPort 80 with any nodePort between range 30000-32768. ● Once the service is created try accessing the web page in the browser as below. Notice the changes & take the snap. ● Now create a configmap.yaml file with below data & delete the deployment that you have created.**

**I am Cloudethix Team, Are you ?!!**

**Version: 1.1**

**● Then update the same deployment.yaml file and mount configmap as volume on container using volumeMounts with mountPath /usr/share/nginx/html/ ● Now it's time to create configmap & deployment. Once created , try to access the webpage in the browser & confirm that the index page is the same as we have in configmap.**

**---------------------------------------------------------------------------------------------------------------------**

**root@DESKTOP-DA2RDP0:ASSIGNMENT\_05# git clone** [**git@github.com:zembutsu/docker-sample-nginx.git**](mailto:git@github.com:zembutsu/docker-sample-nginx.git)

**root@DESKTOP-DA2RDP0:docker-sample-nginx# ll**

total 4

drwxrwxrwx 1 harsh harsh 4096 Feb 21 12:06 ./

drwxrwxrwx 1 harsh harsh 4096 Feb 22 11:46 ../

drwxrwxrwx 1 harsh harsh 4096 Feb 21 12:06 .git/

-rwxrwxrwx 1 harsh harsh 95 Feb 21 12:06 Dockerfile\*

-rwxrwxrwx 1 harsh harsh 1084 Feb 21 12:06 LICENSE\*

-rwxrwxrwx 1 harsh harsh 73 Feb 21 12:06 README.md\*

-rwxrwxrwx 1 harsh harsh 286 Feb 21 12:06 default.conf\*

-rwxrwxrwx 1 harsh harsh 103 Feb 21 12:06 index.html\*

root@DESKTOP-DA2RDP0:docker-sample-nginx#

**root@DESKTOP-DA2RDP0:docker-sample-nginx# docker image build --no-cache -t harshitameshram/cloudethixconfigmapharsh:v1 .**

[+] Building 47.7s (9/9) FINISHED docker:default

=> [internal] load .dockerignore 2.1s

=> => transferring context: 2B 0.1s

=> [internal] load build definition from Dockerfile 2.2s

=> => transferring dockerfile: 132B 0.1s

=> [internal] load metadata for docker.io/library/nginx:alpine 38.3s

=> [auth] library/nginx:pull token for registry-1.docker.io 0.0s

=> CACHED [1/3] FROM docker.io/library/nginx:alpine@sha256:6a2f8b28e45c4adea04ec207a251fd4a2df03ddc930f782af51e315ebc76e9a9 0.0s

=> [internal] load build context 0.7s

=> => transferring context: 469B 0.1s

=> [2/3] COPY default.conf /etc/nginx/conf.d/ 1.3s

=> [3/3] COPY index.html /usr/share/nginx/html/ 1.1s

=> exporting to image 1.7s

=> => exporting layers 1.3s

=> => writing image sha256:07a0e1ea0a81a3394dbfc4bec5a0b4532bcec0c64ebee5ef6e0ac8f076ab2e69 0.0s

=> => naming to docker.io/harshitameshram/cloudethixconfigmapharsh:v1 0.3s

**root@DESKTOP-DA2RDP0:docker-sample-nginx# docker push harshitameshram/cloudethixconfigmapharsh:v1**

The push refers to repository [docker.io/harshitameshram/cloudethixconfigmapharsh]

b322ceba5f58: Pushed

6215f820e76f: Pushed

667a247707f0: Mounted from harshitameshram/cloudethix\_release\_nginx\_harsh

d8527026595f: Mounted from harshitameshram/cloudethix\_release\_nginx\_harsh

2593b08e5428: Mounted from harshitameshram/cloudethix\_release\_nginx\_harsh

9909978d630d: Mounted from harshitameshram/cloudethix\_release\_nginx\_harsh

c5140fc719dd: Mounted from harshitameshram/cloudethix\_release\_nginx\_harsh

3137f8f0c641: Mounted from harshitameshram/cloudethix\_release\_nginx\_harsh

718db50a47c0: Mounted from harshitameshram/cloudethix\_release\_nginx\_harsh

aedc3bda2944: Mounted from harshitameshram/cloudethix\_release\_nginx\_harsh

v1: digest: sha256:2e22b23478a8aeab592a84754cacede653e1b03d61bd27d2d77b84440ea0c8e4 size: 2403

**root@DESKTOP-DA2RDP0:docker-sample-nginx# ll**

total 4

drwxrwxrwx 1 harsh harsh 4096 Feb 22 17:11 ./

drwxrwxrwx 1 harsh harsh 4096 Feb 22 11:46 ../

drwxrwxrwx 1 harsh harsh 4096 Feb 21 12:06 .git/

-rwxrwxrwx 1 harsh harsh 95 Feb 21 12:06 Dockerfile\*

-rwxrwxrwx 1 harsh harsh 1084 Feb 21 12:06 LICENSE\*

-rwxrwxrwx 1 harsh harsh 73 Feb 21 12:06 README.md\*

-rwxrwxrwx 1 harsh harsh 286 Feb 21 12:06 default.conf\*

-rwxrwxrwx 1 harsh harsh 103 Feb 21 12:06 index.html\*

drwxrwxrwx 1 harsh harsh 4096 Feb 22 17:11 kube/

**root@DESKTOP-DA2RDP0:docker-sample-nginx# cd kube/**

**root@DESKTOP-DA2RDP0:kube# touch deployement.yaml**

**root@DESKTOP-DA2RDP0:kube# touch service.yaml**

**root@DESKTOP-DA2RDP0:kube# vi service.yaml**

**root@DESKTOP-DA2RDP0:kube# ll**

total 0

drwxrwxrwx 1 harsh harsh 4096 Feb 22 17:20 ./

drwxrwxrwx 1 harsh harsh 4096 Feb 22 17:11 ../

-rwxrwxrwx 1 harsh harsh 486 Feb 22 17:17 deployement.yaml\*

-rwxrwxrwx 1 harsh harsh 208 Feb 22 17:20 service.yaml\*

**root@DESKTOP-DA2RDP0:kube# kubectl apply -f .**

deployment.apps/simpal-deployment created

service/deploment-svc created

**root@DESKTOP-DA2RDP0:kube# kgp**

NAME READY STATUS RESTARTS AGE

flask-webapp-deployment-6c4b959cd-f9qh2 1/1 Running 0 30m

flask-webapp-deployment-6c4b959cd-vxg6x 1/1 Running 0 30m

flask-webapp-deployment-6c4b959cd-w7n2c 1/1 Running 0 30m

simpal-deployment-64cc67f8bf-6gvcm 1/1 Running 0 13s

simpal-deployment-64cc67f8bf-jgdgx 1/1 Running 0 13s

simpal-deployment-64cc67f8bf-ws7tv 1/1 Running 0 13s

**root@DESKTOP-DA2RDP0:kube# ll**

total 0

drwxrwxrwx 1 harsh harsh 4096 Feb 22 17:20 ./

drwxrwxrwx 1 harsh harsh 4096 Feb 22 17:11 ../

-rwxrwxrwx 1 harsh harsh 486 Feb 22 17:17 deployement.yaml\*

-rwxrwxrwx 1 harsh harsh 208 Feb 22 17:20 service.yaml\*



**root@DESKTOP-DA2RDP0:kube# touch configmap.yaml**

**root@DESKTOP-DA2RDP0:kube# vi configmap.yaml**

root@DESKTOP-DA2RDP0:kube#

**root@DESKTOP-DA2RDP0:kube# kubectl apply -f .**

configmap/special-config created

deployment.apps/special created

service/deploment-svc created

**root@DESKTOP-DA2RDP0:kube# kgp**

NAME READY STATUS RESTARTS AGE

flask-webapp-deployment-6c4b959cd-f9qh2 1/1 Running 0 71m

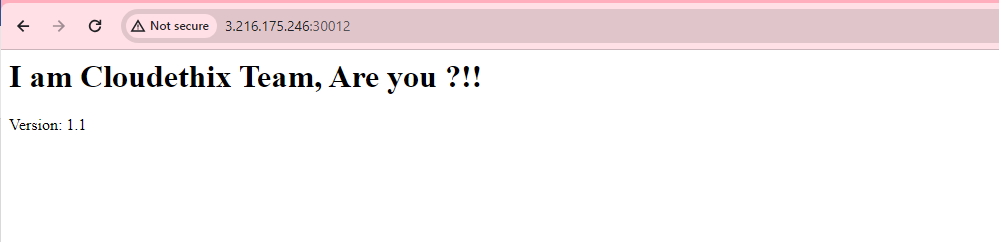
flask-webapp-deployment-6c4b959cd-vxg6x 1/1 Running 0 71m

flask-webapp-deployment-6c4b959cd-w7n2c 1/1 Running 0 71m

special-7d7ddbdb94-266zz 1/1 Running 0 6s

special-7d7ddbdb94-hrdsq 1/1 Running 0 6s

special-7d7ddbdb94-ldbkc 1/1 Running 0 6s



**------------------------------------------------------------------------------------------------------------------------------------------**

**Que 11 → ● Create 1 Public Docker Hub registry named cloudethix\_multicontainer\_yourname. ● Clone below repository on your system. https://github.com/janakiramm/Kubernetes-multi-container-pod.git ● Initialize a local repository & copy the code from above repo to your local repository in any of your working branches. ● Once code is copied , go to the Build directory and build docker image from docker file and add meaningful tags and push to docker hub repository. ● Now go to the deploy directory and notice the files. ● Here, web-pod-1.yml file will create the pod with two containers (Multi container). Take a note of lables , name of containers and ports. Also, please make sure you will update the python container image that you have pushed to your docker registry. ● Now, open web-svc.yml file and notice service Type , selectors & targetPort. Apply the file. ● Now open db-pod.yml & notice the lables , name , Image, containerPort and apply the file. ● Now open the db-svc.yml file and notice service Type , selectors & targetPort. Apply the file. ● Once above files are applied , Check that the Pods and Services are created using command line or lens. ● Now , from the command line run below urls & notice the changes. # curl http://$NODE\_IP:$NODE\_PORT/init Initialize the database with sample schema ● Now it's time to Insert some sample data. Make sure you will use correct $NODE\_IP:$NODE\_PORT # curl -i -H "Content-Type: application/json" -X POST -d '{"uid": "1", "user":"John Doe"}' http://$NODE\_IP:$NODE\_PORT/users/add # curl -i -H "Content-Type: application/json" -X POST -d '{"uid": "2", "user":"Jane Doe"}' http://$NODE\_IP:$NODE\_PORT/users/add # curl -i -H "Content-Type: application/json" -X POST -d '{"uid": "3", "user":"Bill Colls"}' http://$NODE\_IP:$NODE\_PORT/users/add # curl -i -H "Content-Type: application/json" -X POST -d '{"uid": "4", "user":"Mike Taylor"}' http://$NODE\_IP:$NODE\_PORT/users/add ● Now access the data that we have added to database using below command. # curl http://$NODE\_IP:$NODE\_PORT/users/1 ● The second time you access the data, it appends '(c)' indicating that it is pulled from the Redis cache. ● Also, try to access mysql shell i.e db pod & run select \* from the users table. check app.py for DB related information. ● Prepare proper documentation in brief & write start to end flow. Refer below link if you face any issues.** [**https://github.com/janakiramm/Kubernetes-multi-container-pod**](https://github.com/janakiramm/Kubernetes-multi-container-pod)

**root@DESKTOP-DA2RDP0:ASSIGNMENT\_05# git clone git@github.com:janakiramm/Kubernetes-multi-container-pod.git**

Cloning into 'Kubernetes-multi-container-pod'...

remote: Enumerating objects: 51, done.

remote: Total 51 (delta 0), reused 0 (delta 0), pack-reused 51

Receiving objects: 100% (51/51), 88.14 KiB | 268.00 KiB/s, done.

Resolving deltas: 100% (21/21), done.

**root@DESKTOP-DA2RDP0:ASSIGNMENT\_05# cd Kubernetes-multi-container-pod/**

**root@DESKTOP-DA2RDP0:Kubernetes-multi-container-pod# ll**

total 120

drwxrwxrwx 1 harsh harsh 4096 Feb 22 18:06 ./

drwxrwxrwx 1 harsh harsh 4096 Feb 22 18:06 ../

drwxrwxrwx 1 harsh harsh 4096 Feb 22 18:06 .git/

-rwxrwxrwx 1 harsh harsh 9 Feb 22 18:06 .gitignore\*

drwxrwxrwx 1 harsh harsh 4096 Feb 22 18:06 Build/

drwxrwxrwx 1 harsh harsh 4096 Feb 22 18:06 Deploy/

-rwxrwxrwx 1 harsh harsh 2550 Feb 22 18:06 README.md\*

-rwxrwxrwx 1 harsh harsh 116003 Feb 22 18:06 multi-container-pod.png\*

**root@DESKTOP-DA2RDP0:Kubernetes-multi-container-pod# cd Build/**

**root@DESKTOP-DA2RDP0:Build# ll**

total 4

drwxrwxrwx 1 harsh harsh 4096 Feb 22 18:06 ./

drwxrwxrwx 1 harsh harsh 4096 Feb 22 18:06 ../

-rwxrwxrwx 1 harsh harsh 62 Feb 22 18:06 Dockerfile\*

-rwxrwxrwx 1 harsh harsh 1607 Feb 22 18:06 app.py\*

-rwxrwxrwx 1 harsh harsh 242 Feb 22 18:06 docker-compose.yml\*

-rwxrwxrwx 1 harsh harsh 24 Feb 22 18:06 requirements.txt\*

**root@DESKTOP-DA2RDP0:Build# docker image build --no-cache -t harshitameshram/cloudethix\_multicontainer\_harsh:v1 .**

[+] Building 209.4s (10/10) FINISHED docker:default

=> [internal] load build definition from Dockerfile 1.9s

root@DESKTOP-DA2RDP0:Build# docker push harshitameshram/cloudethix\_multicontainer\_harsh:v1

The push refers to repository [docker.io/harshitameshram/cloudethix\_multicontainer\_harsh]

43ac2249f7c8: Pushed

c88bc05ca0e4: Pushed

9b812da47961: Pushed

3e397f5b8357: Mounted from library/python

e257add70b4b: Mounted from library/python

ce7e990ce056: Mounted from library/python

633d23790c1d: Mounted from library/python

d071a18d9802: Mounted from library/python

8451f9fe0016: Mounted from library/python

858cd8541f7e: Mounted from library/python

a42d312a03bb: Mounted from library/python

dd1eb1fd7e08: Mounted from library/python

v1: digest: sha256:85bcde7846b1faa8c38f071a99cd31374ea430fff6570c6717d1eeb63165e7ab size: 2844

**root@DESKTOP-DA2RDP0:Build# cd ..**

**root@DESKTOP-DA2RDP0:Kubernetes-multi-container-pod# ll**

total 120

drwxrwxrwx 1 harsh harsh 4096 Feb 22 18:06 ./

drwxrwxrwx 1 harsh harsh 4096 Feb 22 18:06 ../

drwxrwxrwx 1 harsh harsh 4096 Feb 22 18:06 .git/

-rwxrwxrwx 1 harsh harsh 9 Feb 22 18:06 .gitignore\*

drwxrwxrwx 1 harsh harsh 4096 Feb 22 18:06 Build/

drwxrwxrwx 1 harsh harsh 4096 Feb 22 18:06 Deploy/

-rwxrwxrwx 1 harsh harsh 2550 Feb 22 18:06 README.md\*

-rwxrwxrwx 1 harsh harsh 116003 Feb 22 18:06 multi-container-pod.png\*

**root@DESKTOP-DA2RDP0:Kubernetes-multi-container-pod# cd Deploy/**

**root@DESKTOP-DA2RDP0:Deploy# ll**

total 0

drwxrwxrwx 1 harsh harsh 4096 Feb 22 18:06 ./

drwxrwxrwx 1 harsh harsh 4096 Feb 22 18:06 ../

-rwxrwxrwx 1 harsh harsh 325 Feb 22 18:06 db-pod.yml\*

-rwxrwxrwx 1 harsh harsh 203 Feb 22 18:06 db-svc.yml\*

-rwxrwxrwx 1 harsh harsh 500 Feb 22 18:18 web-pod-1.yml\*

-rwxrwxrwx 1 harsh harsh 467 Feb 22 18:06 web-pod-2.yml\*

-rwxrwxrwx 1 harsh harsh 644 Feb 22 18:06 web-rc.yml\*

-rwxrwxrwx 1 harsh harsh 218 Feb 22 18:06 web-svc.yml\*

**root@DESKTOP-DA2RDP0:Deploy# kubectl apply -f web-pod-1.yml**

pod/web1 created

**root@DESKTOP-DA2RDP0:Deploy# kubectl apply -f web-svc.yml**

service/web created

**root@DESKTOP-DA2RDP0:Deploy# kubectl apply -f db-pod.yml**

pod/mysql created

**root@DESKTOP-DA2RDP0:Deploy# kubectl apply -f db-svc.yml**

service/mysql created

**root@DESKTOP-DA2RDP0:Deploy# kgp**

NAME READY STATUS RESTARTS AGE

flask-webapp-deployment-6c4b959cd-f9qh2 1/1 Running 0 104m

flask-webapp-deployment-6c4b959cd-vxg6x 1/1 Running 0 104m

flask-webapp-deployment-6c4b959cd-w7n2c 1/1 Running 0 104m

mysql 1/1 Running 0 95s

special-7d7ddbdb94-266zz 1/1 Running 0 32m

special-7d7ddbdb94-hrdsq 1/1 Running 0 32m

special-7d7ddbdb94-ldbkc 1/1 Running 0 32m

web1 2/2 Running 4 (66s ago) 2m12s

**root@DESKTOP-DA2RDP0:Deploy# kgs**

NAME TYPE CLUSTER-IP EXTERNAL-IP PORT(S) AGE

deploment-svc NodePort 10.96.69.167 <none> 80:30012/TCP 33m

flask-webapp-service NodePort 10.109.67.7 <none> 8080:30011/TCP 112m

kubernetes ClusterIP 10.96.0.1 <none> 443/TCP 3h29m

mysql ClusterIP 10.107.128.110 <none> 3306/TCP 94s

web NodePort 10.97.89.242 <none> 80:30247/TCP 2m23s

root@DESKTOP-DA2RDP0:Deploy#

**root@DESKTOP-DA2RDP0:Deploy# curl -i -H "Content-Type: application/json" -X POST -d '{"uid": "1",**

**"user":"John Doe"}' http://3.216.175.246:30247/users/add**

HTTP/1.0 200 OK

Content-Type: application/json

Content-Length: 5

Server: Werkzeug/1.0.1 Python/2.7.15

Date: Thu, 22 Feb 2024 13:08:38 GMT

**Addedroot@DESKTOP-DA2RDP0:Dep curl -i -H "Content-Type: application/json" -X POST -d '{"uid": "2", "2",**

**"user":"Jane Doe"}' http://3.216.175.246:30247/users/add**

HTTP/1.0 200 OK

Content-Type: application/json

Content-Length: 5

Server: Werkzeug/1.0.1 Python/2.7.15

Date: Thu, 22 Feb 2024 13:09:23 GMT

**root@DESKTOP-DA2RDP0:Deploy# curl -i -H "Content-Type: application/json" -X POST -d '{"uid": "3",**

**"user":"Bill Colls"}' http://3.216.175.246:30247/users/add**

HTTP/1.0 200 OK

Content-Type: application/json

Content-Length: 5

Server: Werkzeug/1.0.1 Python/2.7.15

Date: Thu, 22 Feb 2024 13:09:55 GMT

**Addedroot@DESKTOP-DA2RDP0:Depcurl -i -H "Content-Type: application/json" -X POST -d '{"uid": "4", "4",**

**"user":"Mike Taylor"}' http://3.216.175.246:30247/users/add**

HTTP/1.0 200 OK

Content-Type: application/json

Content-Length: 5

Server: Werkzeug/1.0.1 Python/2.7.15

Date: Thu, 22 Feb 2024 13:10:27 GMT

**root@DESKTOP-DA2RDP0:Deploy# curl** [**http://3.216.175.246:30247/users/1**](http://3.216.175.246:30247/users/1)

**John Doeroot@DESKTOP-DA2RDP0:Deploy# mysql -u root -p**

**Enter password:**

**ERROR 2002 (HY000): Can't connect to local server through socket '/run/mysqld/mysqld.sock' (2)**

**(getting error )**

* **To solve this**

**root@DESKTOP-DA2RDP0:Deploy# apt install mariadb**

**root@DESKTOP-DA2RDP0:Deploy# service mariadb start**

**\* Starting MariaDB database server mariadbd**

**root@DESKTOP-DA2RDP0:Deploy# mysql -u root -p**

**Enter password:**

Welcome to the MariaDB monitor. Commands end with ; or \g.

Your MariaDB connection id is 33

Server version: 10.6.16-MariaDB-0ubuntu0.22.04.1 Ubuntu 22.04

Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

**MariaDB [(none)]> SHOW DATABASES;**

+--------------------+

| Database |

+--------------------+

| information\_schema |

| mysql |

| performance\_schema |

| sys |

+--------------------+

4 rows in set (0.001 sec)

**MariaDB [(none)]> USE mysql;**

Reading table information for completion of table and column names

You can turn off this feature to get a quicker startup with -A

Database changed

**MariaDB [mysql]> SHOW TABLES;**

+---------------------------+

| Tables\_in\_mysql |

+---------------------------+

| column\_stats |

| columns\_priv |

| db |

| event |

| func |

| general\_log |

| global\_priv |

| gtid\_slave\_pos |

| help\_category |

| help\_keyword |

| help\_relation |

| help\_topic |

| index\_stats |

| innodb\_index\_stats |

| innodb\_table\_stats |

| plugin |

| proc |

| procs\_priv |

| proxies\_priv |

| roles\_mapping |

| servers |

| slow\_log |

| table\_stats |

| tables\_priv |

| time\_zone |

| time\_zone\_leap\_second |

| time\_zone\_name |

| time\_zone\_transition |

| time\_zone\_transition\_type |

| transaction\_registry |

| user |

+---------------------------+

31 rows in set (0.001 sec)

**MariaDB [mysql]> SELECT \* FROM user;**

+-----------+-------------+----------+-------------+-------------+-------------+-------------+-------------+-----------+-------------+---------------+--------------+-----------+------------+-----------------+------------+------------+--------------+------------+-----------------------+------------------+--------------+-----------------+------------------+------------------+----------------+---------------------+--------------------+------------------+------------+--------------+------------------------+---------------------+----------+------------+-------------+--------------+---------------+-------------+-----------------+----------------------+-----------------------+-----------------------+------------------+---------+--------------+--------------------+

| Host | User | Password | Select\_priv | Insert\_priv | Update\_priv | Delete\_priv | Create\_priv | Drop\_priv | Reload\_priv | Shutdown\_priv | Process\_priv | File\_priv | Grant\_priv | References\_priv | Index\_priv | Alter\_priv | Show\_db\_priv | Super\_priv | Create\_tmp\_table\_priv | Lock\_tables\_priv | Execute\_priv | Repl\_slave\_priv | Repl\_client\_priv | Create\_view\_priv | Show\_view\_priv | Create\_routine\_priv | Alter\_routine\_priv | Create\_user\_priv | Event\_priv | Trigger\_priv | Create\_tablespace\_priv | Delete\_history\_priv | ssl\_type | ssl\_cipher | x509\_issuer | x509\_subject | max\_questions | max\_updates | max\_connections | max\_user\_connections | plugin | authentication\_string | password\_expired | is\_role | default\_role | max\_statement\_time |

+-----------+-------------+----------+-------------+-------------+-------------+-------------+-------------+-----------+-------------+---------------+--------------+-----------+------------+-----------------+------------+------------+--------------+------------+-----------------------+------------------+--------------+-----------------+------------------+------------------+----------------+---------------------+--------------------+------------------+------------+--------------+------------------------+---------------------+----------+------------+-------------+--------------+---------------+-------------+-----------------+----------------------+-----------------------+-----------------------+------------------+---------+--------------+--------------------+

| localhost | mariadb.sys | | N | N | N | N | N | N | N

| N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | | | | | 0 | 0 | 0 | 0 | mysql\_native\_password | | Y | N | | 0.000000 |

| localhost | root | invalid | Y | Y | Y | Y | Y | Y | Y

| Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | | | | | 0 | 0 | 0 | 0 | mysql\_native\_password | invalid | N | N | | 0.000000 |

| localhost | mysql | invalid | Y | Y | Y | Y | Y | Y | Y

| Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | | | | | 0 | 0 | 0 | 0 | mysql\_native\_password | invalid | N | N | | 0.000000 |

+-----------+-------------+----------+-------------+-------------+-------------+-------------+-------------+-----------+-------------+---------------+--------------+-----------+------------+-----------------+------------+------------+--------------+------------+-----------------------+------------------+--------------+-----------------+------------------+------------------+----------------+---------------------+--------------------+------------------+------------+--------------+------------------------+---------------------+----------+------------+-------------+--------------+---------------+-------------+-----------------+----------------------+-----------------------+-----------------------+------------------+---------+--------------+--------------------+

3 rows in set (0.003 sec)

MariaDB [mysql]>

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**Que 12 → ● Create 1 Public Docker Hub registry named cloudethix\_Initcontainer\_yourname. ● Clone below repository on your system. https://github.com/janakiramm/simpleapp.git ● Initialize a local repository & copy the code from above repo to your local repository in any of your working branch. ● Once code is copied , go to the Build directory and build docker image from docker file and add meaningful tags and push to docker hub repository. ● Once Images are pushed to Docker hub registries, create a directory named kube. Inside the kube directory create deployement.yaml file with 3 replication , label app: simpleapp-webapp , containerPort: 80 and add the image that you have pushed in Docker Hub registry. ● Create one service.yaml file with type nodeport & select simpleapp-webapp pod with port 80 & targetPort 80 with any nodePort between range 30000-32768. ● Open the webpage in the browser and notice the changes and capture the snap. ● Then delete the deployment that you have just created. ● Update the deployment.yaml file and add volumeMounts with mountPath /usr/share/nginx/html from emptyDir: {} volume. ● Once above changes are added, add initContainers block with below parameters. Also add volumeMounts for Init Container with mountPath "/work-dir" from emptyDir: {} volume. initContainers: - name: install image: busybox:1.28 command: - wget - "-O" - "/work-dir/index.html" - http://info.cern.ch volumeMounts: - name: workdir mountPath: "/work-dir" ● Add volumes with emptyDir: {} in deployment.yaml file. ● Once the deployment.yaml file is ready, create the deployment & access the page in the browser and notice the changes. ● Prepare a well formatted document and write your understanding step by step.**

**root@DESKTOP-DA2RDP0:simpleapp# ll**

total 0

drwxrwxrwx 1 harsh harsh 4096 Feb 22 19:18 ./

drwxrwxrwx 1 harsh harsh 4096 Feb 22 19:11 ../

drwxrwxrwx 1 harsh harsh 4096 Feb 22 19:12 .git/

-rwxrwxrwx 1 harsh harsh 85 Feb 22 19:12 Dockerfile\*

drwxrwxrwx 1 harsh harsh 4096 Feb 22 19:12 html/

drwxrwxrwx 1 harsh harsh 4096 Feb 22 19:22 kube/

-rwxrwxrwx 1 harsh harsh 69 Feb 22 19:12 wrapper.sh\*

**root@DESKTOP-DA2RDP0:simpleapp# docker image build --no-cache -t harshitameshram/cloudethixinitcontainerharsh:v1 .**

[+] Building 28.7s (9/9) FINISHED docker:default

=> [internal] load .dockerignore 0.2s

=> => transferring context: 2B 0.1s

=> [internal] load build definition from Dockerfile 0.4s

=> => transferring dockerfile: 122B 0.1s

=> [internal] load metadata for docker.io/library/nginx:latest 24.2s

=> [auth] library/nginx:pull token for registry-1.docker.io 0.0s

=> CACHED [1/3] FROM docker.io/library/nginx@sha256:c26ae7472d624ba1fafd296e73cecc4f93f853088e6a9c13c0d52f6ca5865107 0.0s

=> [internal] load build context 0.3s

=> => transferring context: 90B 0.1s

=> [2/3] COPY wrapper.sh / 1.0s

=> [3/3] COPY html /usr/share/nginx/html 1.1s

=> exporting to image 0.5s

=> => exporting layers 0.4s

=> => writing image sha256:993f289bf034244b40e22cf588337795f4c65ed81cdc7411a3c0e55d6cbc72fa 0.0s

=> => naming to docker.io/harshitameshram/cloudethixinitcontainerharsh:v1 0.1s

**root@DESKTOP-DA2RDP0:simpleapp# docker push harshitameshram/cloudethixinitcontainerharsh:v1**

The push refers to repository [docker.io/harshitameshram/cloudethixinitcontainerharsh]

a6b71eafa969: Pushed

da81714d27b2: Pushed

61a7fb4dabcd: Mounted from harshitameshram/nginx

bcc6856722b7: Mounted from harshitameshram/nginx

188d128a188c: Mounted from harshitameshram/nginx

7d52a4114c36: Mounted from harshitameshram/nginx

3137f8f0c641: Mounted from harshitameshram/cloudethixconfigmapharsh

84619992a45b: Mounted from harshitameshram/nginx

ceb365432eec: Mounted from harshitameshram/voting-app

v1: digest: sha256:459519312087470b68b1d95dec32a564f48212a597cf83592195b2c5f514fd0a size: 2192

**root@DESKTOP-DA2RDP0:simpleapp# ll**

total 0

drwxrwxrwx 1 harsh harsh 4096 Feb 22 19:18 ./

drwxrwxrwx 1 harsh harsh 4096 Feb 22 19:11 ../

drwxrwxrwx 1 harsh harsh 4096 Feb 22 19:12 .git/

-rwxrwxrwx 1 harsh harsh 85 Feb 22 19:12 Dockerfile\*

drwxrwxrwx 1 harsh harsh 4096 Feb 22 19:12 html/

drwxrwxrwx 1 harsh harsh 4096 Feb 22 19:22 kube/

-rwxrwxrwx 1 harsh harsh 69 Feb 22 19:12 wrapper.sh\*

**root@DESKTOP-DA2RDP0:simpleapp# cd kube/**

**root@DESKTOP-DA2RDP0:kube# ll**

total 4

drwxrwxrwx 1 harsh harsh 4096 Feb 22 19:22 ./

drwxrwxrwx 1 harsh harsh 4096 Feb 22 19:18 ../

-rwxrwxrwx 1 harsh harsh 472 Feb 22 19:31 deployement.yaml\*

-rwxrwxrwx 1 harsh harsh 224 Feb 22 19:23 service.yaml\*

**root@DESKTOP-DA2RDP0:kube# kgp**

NAME READY STATUS RESTARTS AGE

flask-webapp-deployment-6c4b959cd-f9qh2 1/1 Running 0 160m

flask-webapp-deployment-6c4b959cd-vxg6x 1/1 Running 0 160m

flask-webapp-deployment-6c4b959cd-w7n2c 1/1 Running 0 160m

mysql 1/1 Running 0 58m

simpleapp-589847665b-45ws7 1/1 Running 0 7m53s

simpleapp-589847665b-4sfk7 1/1 Running 0 7m53s

simpleapp-589847665b-zh29p 1/1 Running 0 7m53s

special-7d7ddbdb94-266zz 1/1 Running 0 89m

special-7d7ddbdb94-hrdsq 1/1 Running 0 89m

special-7d7ddbdb94-ldbkc 1/1 Running 0 89m

web1 2/2 Running 4 (57m ago) 58m

**root@DESKTOP-DA2RDP0:kube# kubectl apply -f .**

deployment.apps/simpleapp created

service/simpleapp-service created

root@DESKTOP-DA2RDP0:kube#



**root@DESKTOP-DA2RDP0:kube# kubectl apply -f .**

deployment.apps/simpleapp-webapp created

service/simpleapp-service created

**root@DESKTOP-DA2RDP0:kube# kgp**

NAME READY STATUS RESTARTS AGE

simpleapp-webapp-77855d4c69-5fnsn 0/1 PodInitializing 0 3s

simpleapp-webapp-77855d4c69-fnqbj 0/1 PodInitializing 0 3s

simpleapp-webapp-77855d4c69-ttqfb 0/1 PodInitializing 0 3s

**root@DESKTOP-DA2RDP0:kube# kgp**

NAME READY STATUS RESTARTS AGE

simpleapp-webapp-77855d4c69-5fnsn 1/1 Running 0 17s

simpleapp-webapp-77855d4c69-fnqbj 1/1 Running 0 17s

simpleapp-webapp-77855d4c69-ttqfb 1/1 Running 0 17s

**root@DESKTOP-DA2RDP0:kube# kgs**

NAME TYPE CLUSTER-IP EXTERNAL-IP PORT(S) AGE

kubernetes ClusterIP 10.96.0.1 <none> 443/TCP 4m57s

simpleapp-service NodePort 10.104.219.76 <none> 80:30013/TCP 22s

root@DESKTOP-DA2RDP0:kube#



**------------------------------------------------------------------------------------------------------------------------------------------**

**Que 13 → ● Create 1 Public Docker Hub registry named cloudethix\_hpa\_yourname. ● Clone below repository on your system. https://github.com/vivekamin/kubernetes-hpa-example.git ● Initialize a local repository & copy the code from above repo to your local repository in any of your working branch. ● Once code is copied , build a docker image from the docker file and add meaningful tags and push to the docker hub repository. ● Once the image is pushed, go to k8s directory and update deployment.yaml file with image name from your repo. And then create it. ● Open service.yml and change the type to nodePort and apply the same. ● Open the HPA.yaml file, notice it and then apply the same. ● Open the browser, and access the webpage. ● Now it's time to test the HPA working with the below command. # kubectl run -i --tty load-generator --rm --image=busybox --restart=Never -- /bin/sh -c "while sleep 0.01; do wget -q -Ohttp://NODE\_PORT\_SERVICE\_NAME; done" ● Check the HPA from kubectl command and also check if the deployment is scaling up. ● Take the snap , prepare a well formatted doc and write your understanding.**

**root@DESKTOP-DA2RDP0:ASSIGNMENT\_05# git clone git@github.com:vivekamin/kubernetes-hpa-example.git**

Cloning into 'kubernetes-hpa-example'...

remote: Enumerating objects: 26, done.

remote: Total 26 (delta 0), reused 0 (delta 0), pack-reused 26

Receiving objects: 100% (26/26), done.

Resolving deltas: 100% (9/9), done.

**root@DESKTOP-DA2RDP0:ASSIGNMENT\_05# ll**

total 0

drwxrwxrwx 1 harsh harsh 4096 Feb 23 11:10 ./

drwxrwxrwx 1 harsh harsh 4096 Feb 21 12:06 ../

drwxrwxrwx 1 harsh harsh 4096 Feb 21 13:44 .git/

drwxrwxrwx 1 harsh harsh 4096 Feb 22 18:06 Kubernetes-multi-container-pod/

drwxrwxrwx 1 harsh harsh 4096 Feb 22 17:11 docker-sample-nginx/

drwxrwxrwx 1 harsh harsh 4096 Feb 21 15:53 docker-sample-nginx\_01/

drwxrwxrwx 1 harsh harsh 4096 Feb 21 18:07 kubelabs/

drwxrwxrwx 1 harsh harsh 4096 Feb 23 11:10 kubernetes-hpa-example/

drwxrwxrwx 1 harsh harsh 4096 Feb 22 16:17 simple-webapp-docker/

drwxrwxrwx 1 harsh harsh 4096 Feb 22 19:18 simpleapp/

**root@DESKTOP-DA2RDP0:ASSIGNMENT\_05# cd kubernetes-hpa-example/**

**root@DESKTOP-DA2RDP0:kubernetes-hpa-example# ll**

total 4

drwxrwxrwx 1 harsh harsh 4096 Feb 23 11:10 ./

drwxrwxrwx 1 harsh harsh 4096 Feb 23 11:10 ../

drwxrwxrwx 1 harsh harsh 4096 Feb 23 11:10 .git/

-rwxrwxrwx 1 harsh harsh 127 Feb 23 11:10 Dockerfile\*

-rwxrwxrwx 1 harsh harsh 2788 Feb 23 11:10 README.md\*

drwxrwxrwx 1 harsh harsh 4096 Feb 23 11:10 k8s/

-rwxrwxrwx 1 harsh harsh 272 Feb 23 11:10 package.json\*

drwxrwxrwx 1 harsh harsh 4096 Feb 23 11:10 src/

**root@DESKTOP-DA2RDP0:kubernetes-hpa-example# docker image build --no-cache -t harshitameshram/cloudethix\_hpa\_harsh:v1 .**

ERROR: Cannot connect to the Docker daemon at unix:///var/run/docker.sock. Is the docker daemon running?

**root@DESKTOP-DA2RDP0:kubernetes-hpa-example# service docker start**

\* Starting Docker: docker [ OK ]

**root@DESKTOP-DA2RDP0:kubernetes-hpa-example# docker image build --no-cache -t harshitameshram/cloudethix\_hpa\_harsh:v1 .**

[+] Building 76.3s (11/11) FINISHED docker:default

=> [internal] load build definition from Dockerfile 1.7s

=> => transferring dockerfile: 164B 0.1s

=> [internal] load .dockerignore 2.0s

=> => transferring context: 2B 0.0s

=> [internal] load metadata for docker.io/library/node:8.12.0-alpine 38.0s

=> [auth] library/node:pull token for registry-1.docker.io 0.0s

=> [1/5] FROM docker.io/library/node:8.12.0-alpine@sha256:d75742c5fd41261113ed4706f961a21238db84648c825a5126ada373c361f46e 21.0s

=> => resolve docker.io/library/node:8.12.0-alpine@sha256:d75742c5fd41261113ed4706f961a21238db84648c825a5126ada373c361f46e 0.4s

=> => sha256:d75742c5fd41261113ed4706f961a21238db84648c825a5126ada373c361f46e 2.03kB / 2.03kB 0.0s

=> => sha256:81abb8de1e5e8b6e55bca143b3c2ec1e2d167cb27fd2cd3191a0d222f7c5e710 951B / 951B 0.0s

=> => sha256:df48b68da02a3ac8e7df87a5024808ef969852db941c93346352f673bb135e27 5.09kB / 5.09kB 0.0s

=> => sha256:eeb7d76f44e71e809d68e84491576534c80dea0b607501e1f476b6949124d646 18.82MB / 18.82MB 7.3s

=> => sha256:e35f88fcc25962e9894d7e7da2b79ec9ce1b503ef2fe0e800bad87bcb2438319 1.08MB / 1.08MB 2.4s

=> => sha256:4fe2ade4980c2dda4fc95858ebb981489baec8c1e4bd282ab1c3560be8ff9bde 2.21MB / 2.21MB 2.9s

=> => extracting sha256:4fe2ade4980c2dda4fc95858ebb981489baec8c1e4bd282ab1c3560be8ff9bde 0.7s

=> => extracting sha256:eeb7d76f44e71e809d68e84491576534c80dea0b607501e1f476b6949124d646 10.1s

=> => extracting sha256:e35f88fcc25962e9894d7e7da2b79ec9ce1b503ef2fe0e800bad87bcb2438319 0.5s

=> [internal] load build context 4.6s

=> => transferring context: 38.32kB 3.7s

=> [2/5] RUN mkdir -p /usr/src/app 3.6s

=> [3/5] WORKDIR /usr/src/app 1.6s

=> [4/5] COPY . /usr/src/app 1.0s

=> [5/5] RUN npm install 5.3s

=> exporting to image 2.1s

=> => exporting layers 1.8s

=> => writing image sha256:b0ce3213ad6fc3988d9fa0d0f2b47de40e6f87548e85702ffaabfe7739d3f0e6 0.0s

=> => naming to docker.io/harshitameshram/cloudethix\_hpa\_harsh:v1 0.2s

**root@DESKTOP-DA2RDP0:kubernetes-hpa-example# docker push harshitameshram/cloudethix\_hpa\_harsh:v1**

The push refers to repository [docker.io/harshitameshram/cloudethix\_hpa\_harsh]

9eeddc8aeb04: Pushed

d5bd9fea330a: Pushed

5f70bf18a086: Mounted from harshitameshram/haproxy-img

3e6512e944af: Pushed

8b59e4cead98: Mounted from library/node

7aa09d2ca0a3: Mounted from library/node

df64d3292fd6: Mounted from library/node

v1: digest: sha256:02512cebbd9db730fab3ba22883524f1b9acb532aeb3cb11170505944515ba04 size: 1781

**root@DESKTOP-DA2RDP0:kubernetes-hpa-example# ll**

total 4

drwxrwxrwx 1 harsh harsh 4096 Feb 23 11:10 ./

drwxrwxrwx 1 harsh harsh 4096 Feb 23 11:10 ../

drwxrwxrwx 1 harsh harsh 4096 Feb 23 11:10 .git/

-rwxrwxrwx 1 harsh harsh 127 Feb 23 11:10 Dockerfile\*

-rwxrwxrwx 1 harsh harsh 2788 Feb 23 11:10 README.md\*

drwxrwxrwx 1 harsh harsh 4096 Feb 23 11:10 k8s/

-rwxrwxrwx 1 harsh harsh 272 Feb 23 11:10 package.json\*

drwxrwxrwx 1 harsh harsh 4096 Feb 23 11:10 src/

**root@DESKTOP-DA2RDP0:kubernetes-hpa-example# cd k8s/**

**root@DESKTOP-DA2RDP0:k8s# ll**

total 0

drwxrwxrwx 1 harsh harsh 4096 Feb 23 11:10 ./

drwxrwxrwx 1 harsh harsh 4096 Feb 23 11:10 ../

-rwxrwxrwx 1 harsh harsh 463 Feb 23 11:19 deployment.yml\*

-rwxrwxrwx 1 harsh harsh 291 Feb 23 11:10 hpa.yml\*

-rwxrwxrwx 1 harsh harsh 210 Feb 23 11:19 service.yml\*

**root@DESKTOP-DA2RDP0:k8s# kubectl apply -f . --validate=false**

deployment.apps/node-example created

horizontalpodautoscaler.autoscaling/node-example created

service/node-example created

**root@DESKTOP-DA2RDP0:k8s# kgp**

NAME READY STATUS RESTARTS AGE

node-example-975cfd446-rx8dx 1/1 Running 0 6s

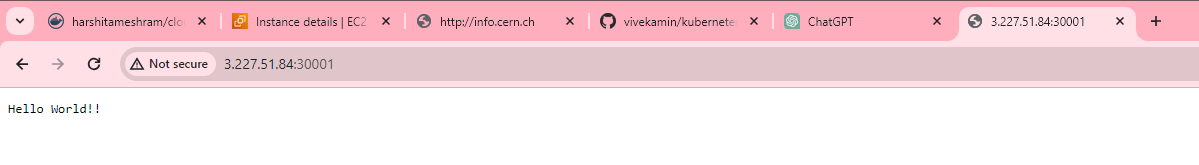
**root@DESKTOP-DA2RDP0:k8s# kgs**

NAME TYPE CLUSTER-IP EXTERNAL-IP PORT(S) AGE

kubernetes ClusterIP 10.96.0.1 <none> 443/TCP 30m

node-example NodePort 10.108.94.112 <none> 3000:30001/TCP 14s

root@DESKTOP-DA2RDP0:k8s#



**root@DESKTOP-DA2RDP0:k8s# kubectl get hpa**

NAME REFERENCE TARGETS MINPODS MAXPODS REPLICAS AGE

node-example Deployment/node-example <unknown>/1% 1 4 0 9m51s

root@DESKTOP-DA2RDP0:k8s#

root@DESKTOP-DA2RDP0:k8s#

**root@DESKTOP-DA2RDP0:k8s# kubectl get deployment**

NAME READY UP-TO-DATE AVAILABLE AGE

node-example 1/1 1 1 10m

root@DESKTOP-DA2RDP0:k8s#

root@DESKTOP-DA2RDP0:k8s#

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**Que 14 → ● Create 1 Public Docker Hub registry named cloudethix\_cronjob\_yourname. ● Initialize a local repository & copy below code (three files) to your local repository in any of your working branch. ● Once code is copied, build the docker image from Dockerfile , add meaningful tags and then push the docker image to Docker hub registry. ● Now update the pythoncronjob.yml file to change the image name that you have just pushed to docker hub registry. ● Now create a cron job using pythoncronjob.yml file. Check with kubectl command if the cron job is created. ● Check the Job name which is created by cronjob from command line or lens. ● Then check the pod logs which are created by the job and capture the output. ● Prepare well formatted documents and write your understanding.**

**root@DESKTOP-DA2RDP0:ASSIGNMENT\_05# mkdir cloudethix\_cronjob\_harsh**

**root@DESKTOP-DA2RDP0:ASSIGNMENT\_05# cd cloudethix\_cronjob\_harsh/**

**root@DESKTOP-DA2RDP0:cloudethix\_cronjob\_harsh# ll**

total 0

drwxrwxrwx 1 harsh harsh 4096 Feb 23 11:45 ./

drwxrwxrwx 1 harsh harsh 4096 Feb 23 11:45 ../

root@DESKTOP-DA2RDP0:cloudethix\_cronjob\_harsh# touch helloworld.py

root@DESKTOP-DA2RDP0:cloudethix\_cronjob\_harsh# touch Dockerfile

root@DESKTOP-DA2RDP0:cloudethix\_cronjob\_harsh# touch pythoncronjob.yml

**root@DESKTOP-DA2RDP0:cloudethix\_cronjob\_harsh# docker image build --no-cache -t harshitameshram/cloudethix\_cronjob\_harsh:v1 .**

[+] Building 36.2s (11/11) FINISHED docker:default

=> [internal] load .dockerignore 0.8s

=> => transferring context: 2B 0.0s

=> [internal] load build definition from Dockerfile 0.8s

=> => transferring dockerfile: 450B 0.1s

=> [internal] load metadata for docker.io/library/python:3.7-alpine 6.1s

=> [auth] library/python:pull token for registry-1.docker.io 0.0s

=> [1/5] FROM docker.io/library/python:3.7-alpine@sha256:f3d31c8677d03f0b3c724446077f229a6ce9d3ac430f5c08cd7dff00292048c3 20.2s

=> => resolve docker.io/library/python:3.7-alpine@sha256:f3d31c8677d03f0b3c724446077f229a6ce9d3ac430f5c08cd7dff00292048c3 0.4s

=> => sha256:e6da3ee9bb64dd12b98fa609487f112fe1e365522e6e8345309db15c22a80a51 1.37kB / 1.37kB 0.0s

=> => sha256:1bac8ae77e4af0b868b62a75115616a20e025e0451eeed05d94a4cfc4523e58a 6.87kB / 6.87kB 0.0s

=> => sha256:f3d31c8677d03f0b3c724446077f229a6ce9d3ac430f5c08cd7dff00292048c3 1.65kB / 1.65kB 0.0s

=> => sha256:96526aa774ef0126ad0fe9e9a95764c5fc37f409ab9e97021e7b4775d82bf6fa 3.40MB / 3.40MB 1.1s

=> => sha256:9875af95546db78168a6761b7fa205ed1cd0c153cd89356c1512e551c12b2d5c 622.29kB / 622.29kB 1.6s

=> => sha256:4819c95424fc4a94767c9329b02238ebcce0bc682384cb671379bc1fb8a12b55 10.94MB / 10.94MB 2.2s

=> => extracting sha256:96526aa774ef0126ad0fe9e9a95764c5fc37f409ab9e97021e7b4775d82bf6fa 1.4s

=> => sha256:ea1518237b3753b3fe40ee773d77651704178d9baa72ae5012e13a992cfa6c63 2.85MB / 2.85MB 3.0s

=> => sha256:148762f75a1f92cc9857e9c488bf95d5aac61e9905ec47a7408025b2dd5c3b7a 240B / 240B 3.2s

=> => extracting sha256:9875af95546db78168a6761b7fa205ed1cd0c153cd89356c1512e551c12b2d5c 1.7s

=> => extracting sha256:4819c95424fc4a94767c9329b02238ebcce0bc682384cb671379bc1fb8a12b55 3.6s

=> => extracting sha256:148762f75a1f92cc9857e9c488bf95d5aac61e9905ec47a7408025b2dd5c3b7a 0.0s

=> => extracting sha256:ea1518237b3753b3fe40ee773d77651704178d9baa72ae5012e13a992cfa6c63 3.4s

=> [internal] load build context 0.5s

=> => transferring context: 185B 0.1s

=> [2/5] RUN addgroup -S appgroup && adduser -S appuser -G appgroup 2.2s

=> [3/5] WORKDIR /app 1.4s

=> [4/5] COPY helloworld.py /app/helloworld.py 0.8s

=> [5/5] RUN chmod +x /app/helloworld.py 1.8s

=> exporting to image 1.4s

=> => exporting layers 1.3s

=> => writing image sha256:b48d7db80511d651d2d206f85905f8503bfde06c0fc71801512db9847009dcd4 0.0s

=> => naming to docker.io/harshitameshram/cloudethix\_cronjob\_harsh:v1 0.0s

**root@DESKTOP-DA2RDP0:cloudethix\_cronjob\_harsh# docker push harshitameshram/cloudethix\_cronjob\_harsh:v1**

The push refers to repository [docker.io/harshitameshram/cloudethix\_cronjob\_harsh]

504af0b9f022: Pushed

40e1dcfef516: Pushed

e4fb369a2106: Pushed

6d7eadf38e5d: Pushed

ae2ed3079163: Mounted from library/python

aa3a591fc84e: Mounted from library/python

7f29b11ef9dd: Mounted from library/python

a1c2f058ec5f: Mounted from library/python

cc2447e1835a: Mounted from library/python

v1: digest: sha256:94f0946ea727b5c411fb712d3cdda6642d4aac028440899fa44946c6ffeddb62 size: 2197

**root@DESKTOP-DA2RDP0:cloudethix\_cronjob\_harsh# ll**

total 0

drwxrwxrwx 1 harsh harsh 4096 Feb 23 11:46 ./

drwxrwxrwx 1 harsh harsh 4096 Feb 23 11:45 ../

-rwxrwxrwx 1 harsh harsh 411 Feb 23 11:48 Dockerfile\*

-rwxrwxrwx 1 harsh harsh 143 Feb 23 11:48 helloworld.py\*

-rwxrwxrwx 1 harsh harsh 373 Feb 23 11:55 pythoncronjob.yml\*

**root@DESKTOP-DA2RDP0:cloudethix\_cronjob\_harsh# kubectl apply -f .**

cronjob.batch/python-helloworld created

**root@DESKTOP-DA2RDP0:cloudethix\_cronjob\_harsh# kgp**

NAME READY STATUS RESTARTS AGE

node-example-975cfd446-rx8dx 1/1 Running 0 26m

**root@DESKTOP-DA2RDP0:cloudethix\_cronjob\_harsh# kubectl get cronjob**

NAME SCHEDULE SUSPEND ACTIVE LAST SCHEDULE AGE

python-helloworld \*/1 \* \* \* \* False 2 3s 109s

root@DESKTOP-DA2RDP0:cloudethix\_cronjob\_harsh#

**root@DESKTOP-DA2RDP0:cloudethix\_cronjob\_harsh# kubectl get jobs**

NAME COMPLETIONS DURATION AGE

python-helloworld-28477827 0/1 112s 112s

python-helloworld-28477828 0/1 52s 52s

root@DESKTOP-DA2RDP0:cloudethix\_cronjob\_harsh#

**root@DESKTOP-DA2RDP0:cloudethix\_cronjob\_harsh# kubectl get jobs**

NAME COMPLETIONS DURATION AGE

python-helloworld-28477827 0/1 5m19s 5m19s

python-helloworld-28477828 0/1 4m19s 4m19s

python-helloworld-28477829 0/1 3m19s 3m19s

python-helloworld-28477830 0/1 2m19s 2m19s

python-helloworld-28477831 0/1 79s 79s

python-helloworld-28477832 0/1 19s 19s

**IN LENS**

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