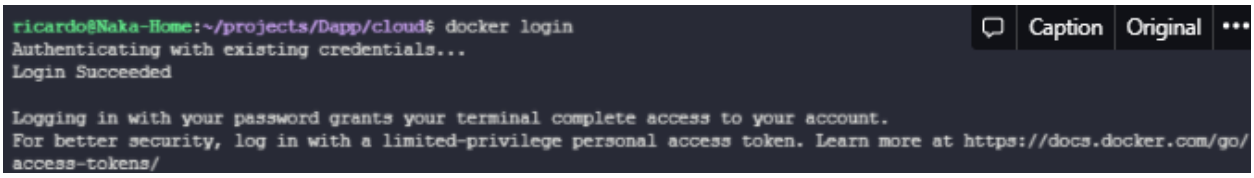
Homework - Kubernetes

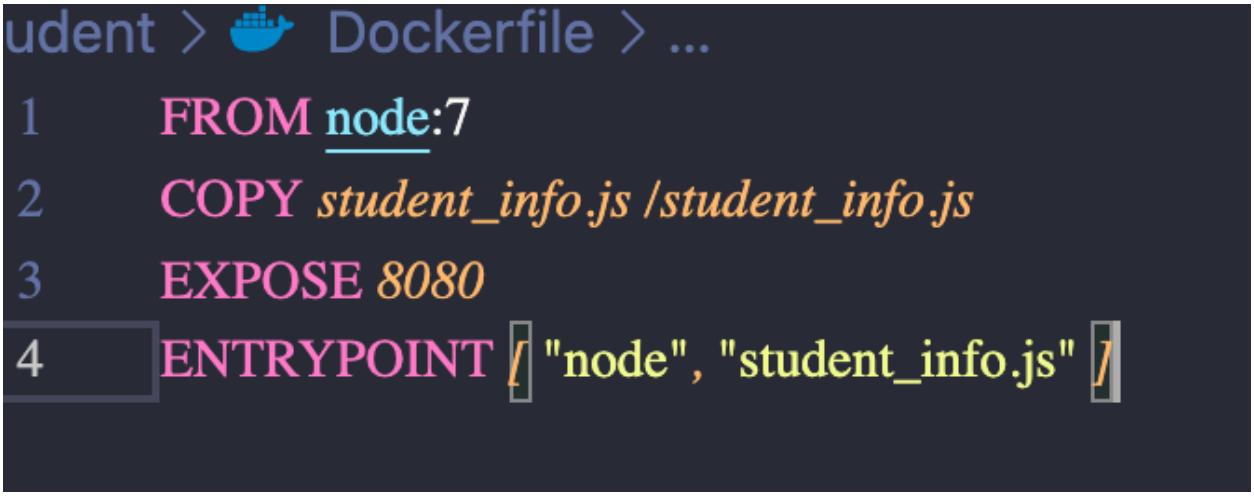
1. Login to Docker hub

```
docker login
```



2. Created Dockerfile in project folder.

```
FROM node:7
ADD student_info.js /student_info.js
EXPOSE 8080
ENTRYPOINT ["node", "student_info.js"]
```



3. Build and add tag to Docker image

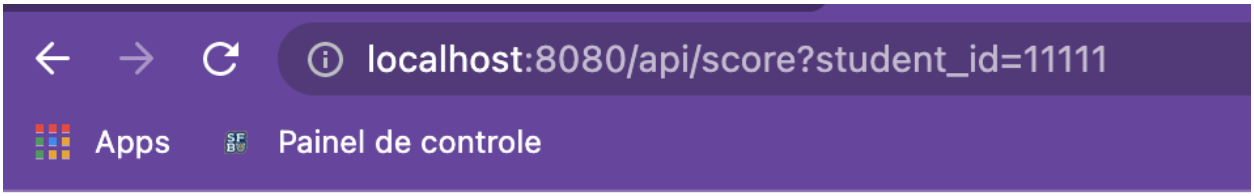
```
docker build ./ -t kubia-final
```

4. Renaming image using Dockerhub user:

```
docker tag kubia-final rnhori/kubia-final
```

5.Running locally to test

```
docker run -p 8080:8080 -d rnhori/kubia-final
```



{"id":11111,"name":"Bruce Lee","score":84}

6. Pushing the image to Docker Hub:

```
docker push rnhori/kubia-final
```

```
MacBook-Pro-de-Ricardo:student ricardo$ docker push rnhori/kubia-final
Using default tag: latest
The push refers to repository [docker.io/rnhori/kubia-final]
cf8b70dcba81: Pushed
ab90d83fa34a: Mounted from rnhori/kubia-10
8ee318e54723: Mounted from rnhori/kubia-10
e6695624484e: Mounted from rnhori/kubia-10
da59b99bbd3b: Mounted from rnhori/kubia-10
5616a6292c16: Mounted from rnhori/kubia-10
f3ed6cb59ab0: Mounted from rnhori/kubia-10
654f45ecb7e3: Mounted from rnhori/kubia-10
2c40c66f7667: Mounted from rnhori/kubia-10
latest: digest: sha256:7520953de7629b35ec5184ed236494e686f9794d24b32f4e14a51950dd87b8d4 size: 2213
```

7. Getting image from DockerHub on GCP console.

```
docker pull rnhori/kubia-final
```

```
horiguchi19618@cloudshell:~ (cs571-cloud-computing-project)$ docker pull rnhori/kubia-final
Using default tag: latest
latest: Pulling from rnhori/kubia-final
ad74af05f5a2: Pull complete
2b032b8bbe8b: Pull complete
a9a5b35f6ead: Pull complete
3245b5a1c52c: Pull complete
afa075743392: Pull complete
9fb9f21641cd: Pull complete
3f40ad2666bc: Pull complete
49c0ed396b49: Pull complete
39b044528e9d: Pull complete
Digest: sha256:7520953de7629b35ec5184ed236494e686f9794d24b32f4e14a51950dd87b8d4
Status: Downloaded newer image for rnhori/kubia-final:latest
docker.io/rnhori/kubia-final:latest
```

8. Listing docker images:

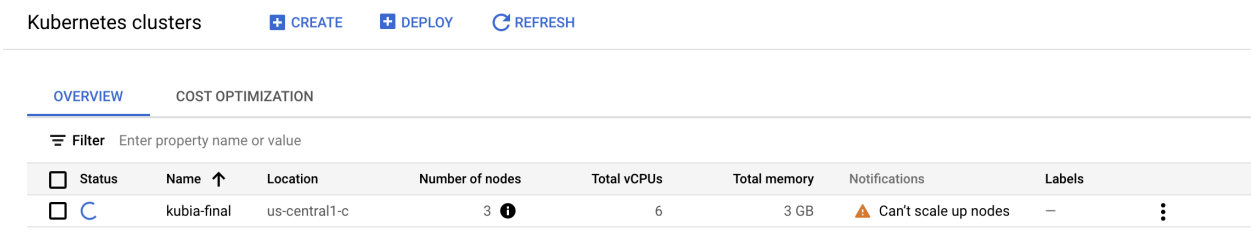
```
docker images
```

```
horiguchi19618@cloudshell:~ (cs571-cloud-computing-project)$ docker images
REPOSITORY          TAG       IMAGE ID       CREATED         SIZE
rnhori/kubia-final  latest    6269610e6995   10 hours ago    660MB
```

9. Creating app cluster with 3 nodes:

```
gcloud container clusters create kubia-final
--machine-type e2-micro --num-nodes=3 --zone=us-central1-c
```

```
horiguchi19618@cloudshell:~ (cs571-cloud-computing-project)$ gcloud container clusters create kubia-final --machine-type e2-micro --n
um-nodes=3 --zone=us-central1-c
Default change: VPC-native is the default mode during cluster creation for versions greater than 1.21.0-gke.1500. To create advanced
routes based clusters, please pass the `--no-enable-ip-alias` flag
Note: Your Pod address range (`--cluster-ipv4-cidr`) can accommodate at most 1008 node(s).
Creating cluster kubia-final in us-central1-c... Cluster is being health-checked (master is healthy)...done.
Created [https://container.googleapis.com/v1/projects/cs571-cloud-computing-project/zones/us-central1-c/clusters/kubia-final].
To inspect the contents of your cluster, go to: https://console.cloud.google.com/kubernetes/workload_/gcloud/us-central1-c/kubia-fina
l?project=cs571-cloud-computing-project
kubeconfig entry generated for kubia-final.
NAME: kubia-final
LOCATION: us-central1-c
MASTER_VERSION: 1.21.6-gke.1500
MASTER_IP: 34.135.117.254
MACHINE_TYPE: e2-micro
NODE_VERSION: 1.21.6-gke.1500
NUM_NODES: 3
STATUS: RUNNING
```



10. Checking if service was created:

```
kubectl get services
```

```
STATUS: RUNNING
horiguchi19618@cloudshell:~ (cs571-cloud-computing-project)$ kubectl get services
NAME         TYPE        CLUSTER-IP   EXTERNAL-IP   PORT(S)   AGE
kubernetes   ClusterIP   10.83.80.1   <none>        443/TCP   2m48s
```

11. Deploying image to kubernetes:

```
kubectl create deployment kubia-final
--image=rnhori/kubia-final
```

13. Creating Replication Controller for application:

```
kubectl scale deployment kubia-final --replicas 3
```

14. Running kubernetes

```
kubectl run kubia --image=rnhori/kubia-final --port=8080
```

15. Exposing sevice via loadbalancer

```
kubectl expose deployment kubia-final
--name=kubia-final --type=LoadBalancer --port 8080
```

16. Check if service is running public

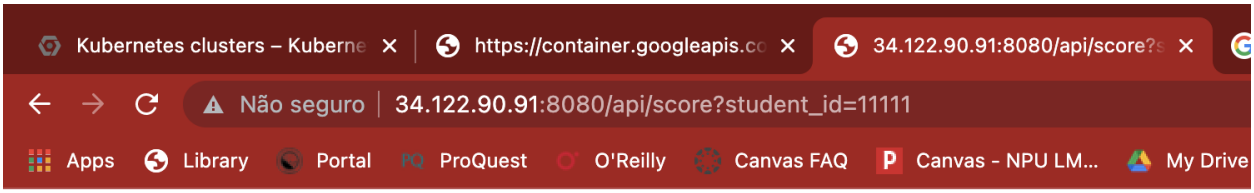
```
kubectl get service
```

```
horiguchi19618@cloudshell:~ (cs571-cloud-computing-project)$ kubectl create deployment kubia-final --image=rnhori/kubia-final
deployment.apps/kubia-final created
horiguchi19618@cloudshell:~ (cs571-cloud-computing-project)$ kubectl scale deployment kubia-final --replicas 3
deployment.apps/kubia-final scaled
horiguchi19618@cloudshell:~ (cs571-cloud-computing-project)$ kubectl run kubia --image=rnhori/kubia-final --port=8080
pod/kubia created
horiguchi19618@cloudshell:~ (cs571-cloud-computing-project)$ kubectl expose deployment kubia-final --name=kubia-final --type=LoadBalancer --port=8080
service/kubia-final exposed
horiguchi19618@cloudshell:~ (cs571-cloud-computing-project)$ kubectl get service
NAME          TYPE           CLUSTER-IP     EXTERNAL-IP   PORT(S)          AGE
kubernetes    ClusterIP      10.83.80.1     <none>        443/TCP          5m31s
kubia-final   LoadBalancer   10.83.86.141   <pending>     8080:31263/TCP   19s
```

17. External IP Address

```
horiguchi19618@cloudshell:~ (cs571-cloud-computing-project)$ kubectl get service
NAME          TYPE           CLUSTER-IP     EXTERNAL-IP     PORT(S)          AGE
kubernetes    ClusterIP      10.83.80.1     <none>          443/TCP          6m14s
kubia-final   LoadBalancer   10.83.86.141   34.122.90.91    8080:31263/TCP   62s
```

Response:




```
{"id":11111,"name":"Bruce Lee","score":84}
```