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Project Name	Project - Personal Expense Tracker

IBM Assignment 4
Docker and Kubernetes

1. Pull an image from docker hub and run in in docker playground

```
root@DESKTOP-1E0EB36:~# docker pull redis
Using default tag: latest
latest: Pulling from library/redis
Digest: sha256:c95835a74c37b3a784fb55f7b2c211bd20c650d5e55dae422c3caa9c01eb39fa
Status: Downloaded newer image for redis:latest
docker.io/library/redis:latest
root@DESKTOP-1E0EB36:~# docker images
REPOSITORY                    TAG        IMAGE ID      CREATED       SIZE
docker101tutorial             latest     1b62eaef2424  7 hours ago   28.9MB
jeetgolecha/docker101tutorial latest     1b62eaef2424  7 hours ago   28.9MB
alpine/git                    latest     42a1cda0ba24  2 days ago    43.6MB
mongo                         latest     1cca5cf68239  2 weeks ago   695MB
redis                         latest     f8528f17261c  2 weeks ago   117MB
<none>                        <none>     191c4017dcdd  2 years ago   89.3MB
root@DESKTOP-1E0EB36:~#
```

```
root@DESKTOP-1E0EB36:~# docker run redis
1:C 22 Oct 2022 10:51:19.603 # oO0oo0O0oO00o Redis is starting oO0oo0O0oO00o
1:C 22 Oct 2022 10:51:19.603 # Redis version=7.0.5, bits=64, commit=00000000, modified=0, pid=1, just started
1:C 22 Oct 2022 10:51:19.603 # Warning: no config file specified, using the default config. In order to specify
 file use redis-server /path/to/redis.conf
1:M 22 Oct 2022 10:51:19.605 * monotonic clock: POSIX clock_gettime
1:M 22 Oct 2022 10:51:19.606 * Running mode=standalone, port=6379.
1:M 22 Oct 2022 10:51:19.606 # Server initialized
1:M 22 Oct 2022 10:51:19.606 # WARNING overcommit_memory is set to 0! Background save may fail under low memory
n. To fix this issue add 'vm.overcommit_memory = 1' to /etc/sysctl.conf and then reboot or run the command 'sys
ercommit_memory=1' for this to take effect.
1:M 22 Oct 2022 10:51:19.608 * Ready to accept connections
```

```
 root@DESKTOP-1E0EB36: ~
root@DESKTOP-1E0EB36:~# docker ps
CONTAINER ID   IMAGE      COMMAND             CREATED         STATUS         PORTS
  NAMES
491a9d03e11b   redis      "docker-entrypoint.s…"  39 seconds ago  Up 36 seconds  6379/tcp
  musing_wiles
```
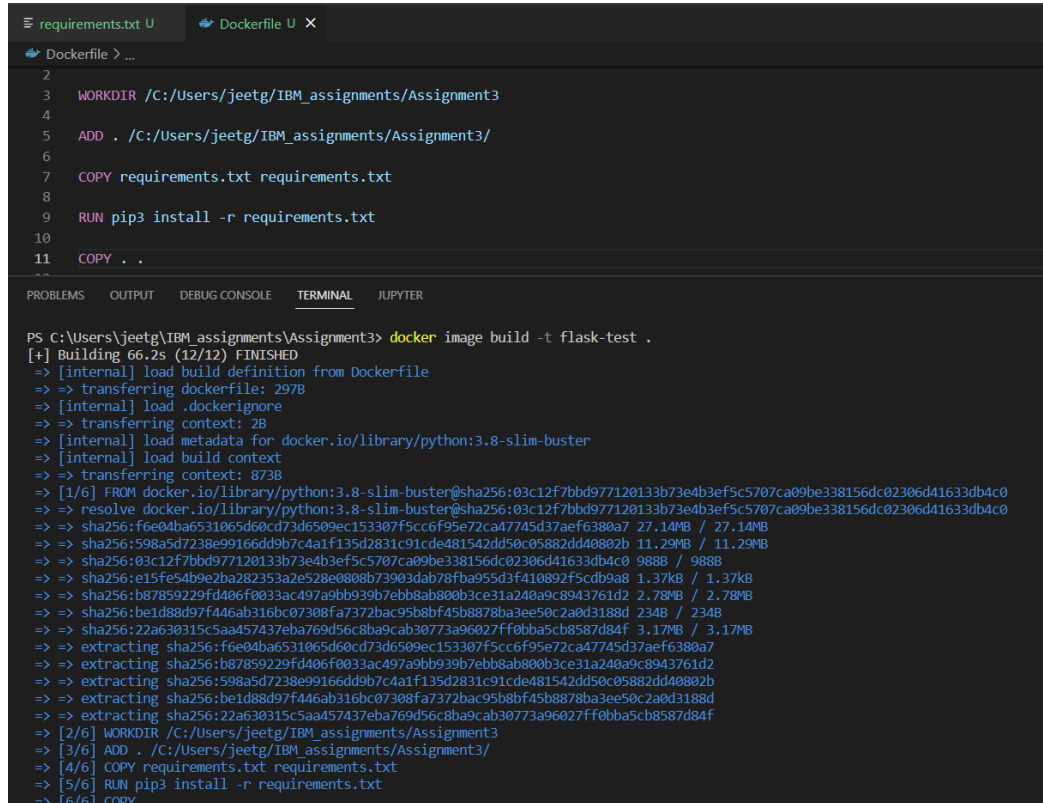
2. Create a docker file for job portal application and and deploy it in docker desktop application

Creating/Building a docker image:

Image successfully created, running the image to containerize it:

```
=> => sha256:be1d88d97f446ab316bc07308fa7372bac95b8bf45b8878ba3ee50c2a0d3188d 234B / 234B
=> => sha256:22a630315c5aa457437eba769d56c8ba9cab30773a96027ff0bba5cb8587d84f 3.17MB / 3.17MB
=> => extracting sha256:f6e04ba6531065d60cd73d6509ec153307f5cc6f95e72ca47745d37aef6380a7
=> => extracting sha256:b87859229fd406f0033ac497a9bb939b7ebb8ab800b3ce31a240a9c8943761d2
=> => extracting sha256:598a5d7238e99166dd9b7c4a1f135d2831c91cde481542dd50c05882dd40802b
=> => extracting sha256:be1d88d97f446ab316bc07308fa7372bac95b8bf45b8878ba3ee50c2a0d3188d
=> => extracting sha256:22a630315c5aa457437eba769d56c8ba9cab30773a96027ff0bba5cb8587d84f
=> [2/6] WORKDIR /C:/Users/jeetg/IBM_assignments/Assignment3
=> [3/6] ADD . /C:/Users/jeetg/IBM_assignments/Assignment3/
=> [4/6] COPY requirements.txt requirements.txt
=> [5/6] RUN pip3 install -r requirements.txt
=> [6/6] COPY . .
=> exporting to image
=> => exporting layers
=> => writing image sha256:60e36f38e1924237d1e69304d974d617f9d24b9502622e93914f68cdb6c09f0c
=> => naming to docker.io/library/flask-test
PS C:\Users\jeetg\IBM_assignments\Assignment3> docker image ls
REPOSITORY                        TAG       IMAGE ID       CREATED              SIZE
flask-test                        latest    60e36f38e192   About a minute ago   129MB
jeetgolecha/docker101tutorial     latest    1b62eaef2424   9 hours ago          28.9MB
docker101tutorial                 latest    1b62eaef2424   9 hours ago          28.9MB
alpine/git                        latest    42a1cda0ba24   2 days ago           43.6MB
mongo                             latest    1cca5cf68239   2 weeks ago          695MB
redis                             latest    f8528f17261c   2 weeks ago          117MB
<none>                            <none>    191c4017dcdd   2 years ago          89.3MB
PS C:\Users\jeetg\IBM_assignments\Assignment3> docker run -p 5000:5000 -d flask-test
6c28d48fc180d00fbd81cecb9a05ce98e290df3abc168ddc8b7cf1495a4810b8
PS C:\Users\jeetg\IBM_assignments\Assignment3>
```

← → C ⓘ localhost:5000

Flask Application

Login Page

Register Page

Update Password

3. Create an ibm container registry and deploy hello world app or the job portal application

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

OK

C:\Users\jeetg>docker tag flask-a4-jeet icr.io/jeet-name/flask-a4

C:\Users\jeetg>docker push icr.io/jeet-name/flask-a4
Using default tag: latest
The push refers to repository [icr.io/jeet-name/flask-a4]
9e49d2ba1b5c: Pushed
a2b7e47115a0: Pushing [===>                                      ]  10.98MB/156.4MB
9b3f1ae730a6: Pushed
7231e4cefdfd: Pushed
125c415dd064: Pushed
cfe05f7405a2: Pushed
a1e58b9ffda7: Pushed
4b3c39c2c8a9: Pushing [============================================>]  27.99MB/29.05MB
da1083ea5389: Pushed
f362f5e58c99: Pushing [============>                              ]  17.93MB/69.26MB
```

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

OK

C:\Users\jeetg>docker tag flask-a4-jeet icr.io/jeet-name/flask-a4

C:\Users\jeetg>docker push icr.io/jeet-name/flask-a4
Using default tag: latest
The push refers to repository [icr.io/jeet-name/flask-a4]
9e49d2ba1b5c: Pushed
a2b7e47115a0: Pushed
9b3f1ae730a6: Pushed
7231e4cefdfd: Pushed
125c415dd064: Pushed
cfe05f7405a2: Pushed
a1e58b9ffda7: Pushed
4b3c39c2c8a9: Pushed
da1083ea5389: Pushed
f362f5e58c99: Pushed
latest: digest: sha256:90fe06f7f424bd1687ca787cf47a09cc59fb86aa033012e076c7769dea6e58af size: 2412

C:\Users\jeetg>
```
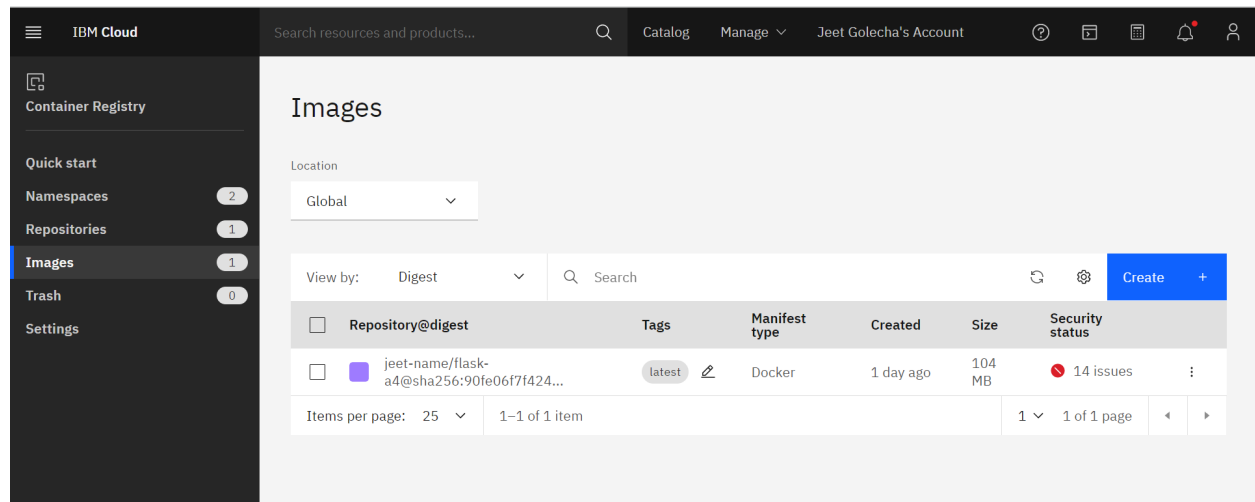
Deploying the application on the container registry:


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

Repository            Tag      Digest         Namespace     Created      Size     Security status
icr.io/jeet-name/flask-a4   latest   90fe06f7f424   jeet-name     1 day ago    104 MB   -

OK
```
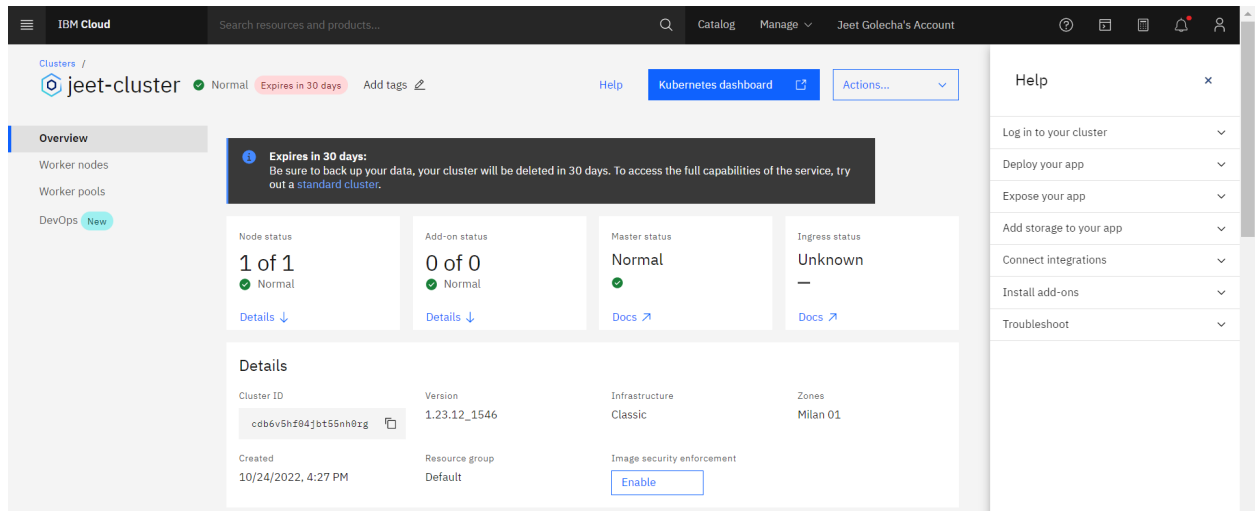
4. Create a kubernetes cluster in IBM cloud and deploy hello world image or the job portal image and also expose the same application to run in nodeport

Creating a cluster:
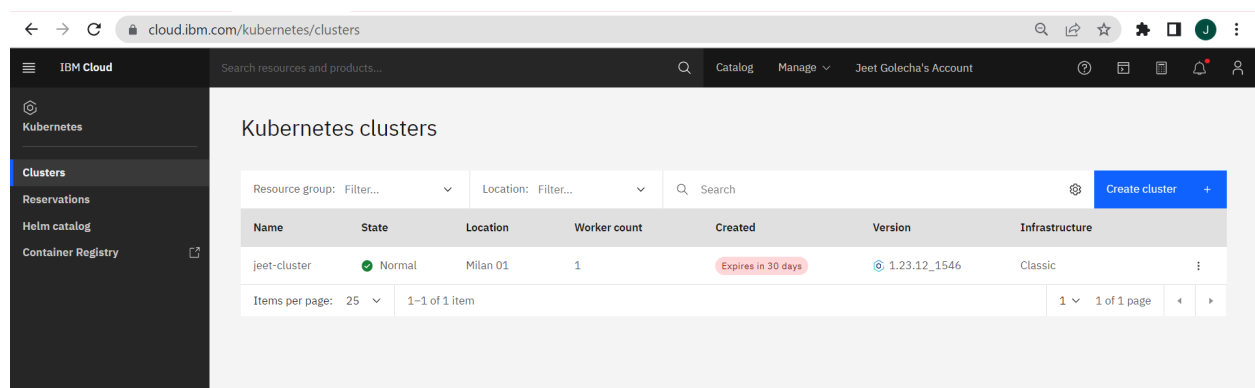
Configuring a cluster:

```
C:\Users\jeetg>ibmcloud ks cluster config -c cdb6v5hf04jbt55nh0rg
OK
The configuration for cdb6v5hf04jbt55nh0rg was downloaded successfully.

Added context for cdb6v5hf04jbt55nh0rg to the current kubeconfig file.
You can now execute 'kubectl' commands against your cluster. For example, run 'kubectl get nodes'.
If you are accessing the cluster for the first time, 'kubectl' commands might fail for a few seconds while RBAC synchron
izes.

C:\Users\jeetg>
```

```
C:\Users\jeetg>kubectl get nodes
NAME              STATUS    ROLES     AGE    VERSION
10.144.214.149    Ready     <none>    37m    v1.23.12+IKS

C:\Users\jeetg>ibmcloud cs workers --cluster cdb6v5hf04jbt55nh0rg
OK
ID                                                          Public IP        Private IP       Flavor    State     Status    Zone     Version
kube-cdb6v5hf04jbt55nh0rg-jeetcluster-default-00000019      159.122.177.240  10.144.214.149   free      normal    Ready     mil01    1.23.12_1548
```

Deploying the cluster:

```
C:\Users\jeetg>kubectl get services
NAME                     TYPE         CLUSTER-IP      EXTERNAL-IP    PORT(S)          AGE
job-portal-application   NodePort     172.21.24.125   <none>         5000:31037/TCP   73m
kubernetes               ClusterIP    172.21.0.1      <none>         443/TCP          129m

C:\Users\jeetg>ibmcloud cs workers --cluster cdb6v5hf04jbt55nh0rg
OK
ID                                                          Public IP        Private IP       Flavor    State     Status    Zone     Version
kube-cdb6v5hf04jbt55nh0rg-jeetcluster-default-00000019      159.122.177.240  10.144.214.149   free      normal    Ready     mil01    1.23.12_1548

C:\Users\jeetg>kubectl describe service job-portal-application
Name:                      job-portal-application
Namespace:                 default
Labels:                    <none>
Annotations:               <none>
Selector:                  app=job-portal-application
Type:                      NodePort
IP Family Policy:          SingleStack
IP Families:               IPv4
IP:                        172.21.24.125
IPs:                       172.21.24.125
Port:                      <unset>  5000/TCP
TargetPort:                5000/TCP
NodePort:                  <unset>  31037/TCP
Endpoints:                 <none>
Session Affinity:          None
External Traffic Policy:   Cluster
Events:                    <none>
```

Output

159.122.177.240:31037/register

Register Page

Email

Email

Username

Username

Rollnumber

RollNumber

Password

Password

Register

Already have an account? Log In