SCREENSHOTS

Building Docker Image:

```
D:\dock>docker ps
CONTAINER ID    IMAGE       COMMAND     CREATED    STATUS      PORTS       NAMES

D:\dock>docker build -t html-server-image:v1 .
[+] Building 23.2s (7/7) FINISHED
 => [internal] load build definition from Dockerfile                                    2.3s
 => => transferring dockerfile: 31B                                                     0.1s
 => [internal] load .dockerignore                                                       2.1s
 => => transferring context: 2B                                                         0.0s
 => [internal] load metadata for docker.io/library/nginx:alpine                        17.2s
 => [internal] load build context                                                       0.3s
 => => transferring context: 1.79kB                                                     0.0s
 => CACHED [1/2] FROM docker.io/library/nginx:alpine@sha256:da9c94bec1da829ebd52431a84502ec471c8e548ffb2cedbf3626  0.0s
 => [2/2] COPY . /usr/share/nginx/html                                                  3.1s
 => exporting to image                                                                  0.7s
 => => exporting layers                                                                 0.5s
 => => writing image sha256:2d31e31bda846334f6f7dfd2aafdcbd81b63441a88e334fbf7e58ee1487c9325  0.0s
 => => naming to docker.io/library/html-server-image:v1                                 0.0s

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

D:\dock>docker images
REPOSITORY                      TAG         IMAGE ID        CREATED         SIZE
html-server-image               v1          2d31e31bda84    8 seconds ago   24.5MB
<none>                          <none>      2cd8315f2d04    2 hours ago     24.5MB
<none>                          <none>      02cb844af9a8    3 hours ago     142MB
<none>                          <none>      f32ae29d6e01    4 hours ago     23.4MB
project                         1           4db25c246f5c    4 hours ago     5.59MB
nginx                           latest      c316d5a335a5    2 days ago      142MB
gcr.io/k8s-minikube/kicbase     v0.0.29     64d09634c60d    5 weeks ago     1.14GB

D:\dock>docker run -d -p 80:80 html-server-image:v1
c97d5914f5315ef6d66d76a44a53871740a552a074f9c89b95715722241ea02e

D:\dock>curl localhost/signup.html
```
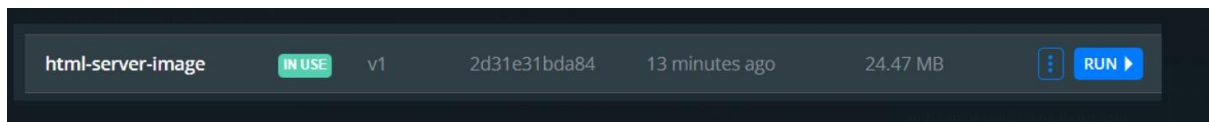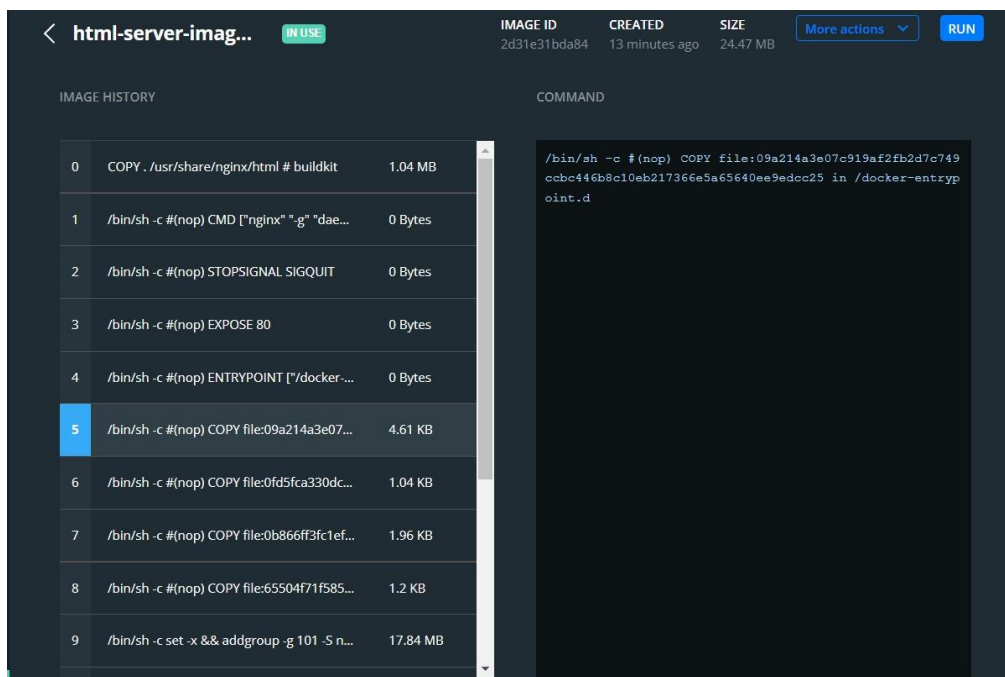
Image catching:

Layer Catching:

```
D:\dock>curl localhost/signup.html
<html>

	<head>
		<title>WEVERSE SIGN-UP</title>

	</head>


	<body bgcolor="lavender">


		<h1><b><center>WELCOME TO WEVERSE &#128156;</center></b></h1>
		<h3><center>A GLOBAL PLOTFORM FOR ALL THE FANS </center></h3>

		<br>
		<br>
		<br>

		<form bgcolor="lavender">
			<font face="times new roman" size="4" color="black">
			<center>

				NAME:              
				<input type="text" value="Firstname" size="25">
				<input type="text" value="Lastname" size="25">

				<br><br>


				DATE OF BIRTH:  

				DATE: 
				<select name="Date">
				<option>1 <option>2 <option>3 <option>4 <option>5 <option>6 <option>7
				<option>8 <option>9 <option>10 <option>11 <option>12 <option>13
				<option>14 <option>15 <option>16 <option>17 <option>18 <option>19
				<option>20 <option>21 <option>22 <option>23 <option>24 <option>25
				<option>26 <option>27 <option>28 <option>29 <option>30 <option>31
```
```
				<br><br>

				PASSWORD:         
				<input type="password" name="pwd"> 
				<br>
				(Atleast 8 characters)

				<br><br>


				RE-TYPE PASSWORD:    <input type="password" name="pwd">

				<br><br>


				<input type="checkbox" name="x">
				<b>By clicking this, you accept the terms and conditions of WEVERSE</b>

				<br><br>

				         


				<input type="Submit" value="SUBMIT">     

				<input type="reset" value="CLEAR">

			</center>

		</form>

	</body>

</html>


D:\dock>_
```

Docker Logs:

```
D:\dock>docker logs c97d5914f531
/docker-entrypoint.sh: /docker-entrypoint.d/ is not empty, will attempt to perform configuration
/docker-entrypoint.sh: Looking for shell scripts in /docker-entrypoint.d/
/docker-entrypoint.sh: Launching /docker-entrypoint.d/10-listen-on-ipv6-by-default.sh
10-listen-on-ipv6-by-default.sh: info: Getting the checksum of /etc/nginx/conf.d/default.conf
10-listen-on-ipv6-by-default.sh: info: Enabled listen on IPv6 in /etc/nginx/conf.d/default.conf
/docker-entrypoint.sh: Launching /docker-entrypoint.d/20-envsubst-on-templates.sh
/docker-entrypoint.sh: Launching /docker-entrypoint.d/30-tune-worker-processes.sh
/docker-entrypoint.sh: Configuration complete; ready for start up
2022/01/28 18:39:49 [notice] 1#1: using the "epoll" event method
2022/01/28 18:39:49 [notice] 1#1: nginx/1.21.6
2022/01/28 18:39:49 [notice] 1#1: built by gcc 10.3.1 20211027 (Alpine 10.3.1_git20211027)
2022/01/28 18:39:49 [notice] 1#1: OS: Linux 5.10.16.3-microsoft-standard-WSL2
2022/01/28 18:39:49 [notice] 1#1: getrlimit(RLIMIT_NOFILE): 1048576:1048576
2022/01/28 18:39:49 [notice] 1#1: start worker processes
2022/01/28 18:39:49 [notice] 1#1: start worker process 32
2022/01/28 18:39:49 [notice] 1#1: start worker process 33
2022/01/28 18:39:49 [notice] 1#1: start worker process 34
2022/01/28 18:39:49 [notice] 1#1: start worker process 35
2022/01/28 18:39:49 [notice] 1#1: start worker process 36
2022/01/28 18:39:49 [notice] 1#1: start worker process 37
2022/01/28 18:39:49 [notice] 1#1: start worker process 38
2022/01/28 18:39:49 [notice] 1#1: start worker process 39
172.17.0.1 - - [28/Jan/2022:18:40:09 +0000] "GET /signup.html HTTP/1.1" 200 2635 "-" "curl/7.79.1" "-"

D:\dock>
```

Executing into the container

```
D:\dock>docker exec -it c97d5914f531
"docker exec" requires at least 2 arguments.
See 'docker exec --help'.

Usage:  docker exec [OPTIONS] CONTAINER COMMAND [ARG...]

Run a command in a running container

D:\dock>
```
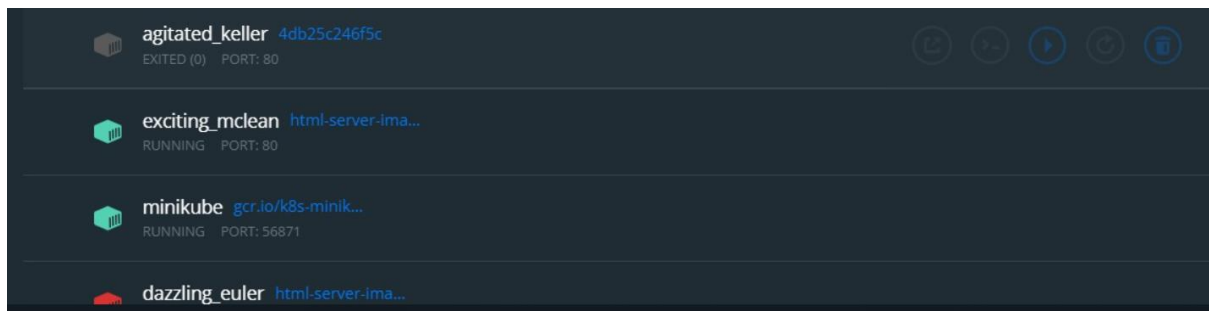
```
PS D:\dock> docker exec -it exciting_mclean sh
/ # ls
bin                     home            proc            sys
dev                     lib             root            tmp
docker-entrypoint.d     media           run             usr
docker-entrypoint.sh    mnt             sbin            var
etc                     opt             srv
/ #
```

Container:

Container Service Exposure :

Webpage:

EXERCISE 2:

AIM :

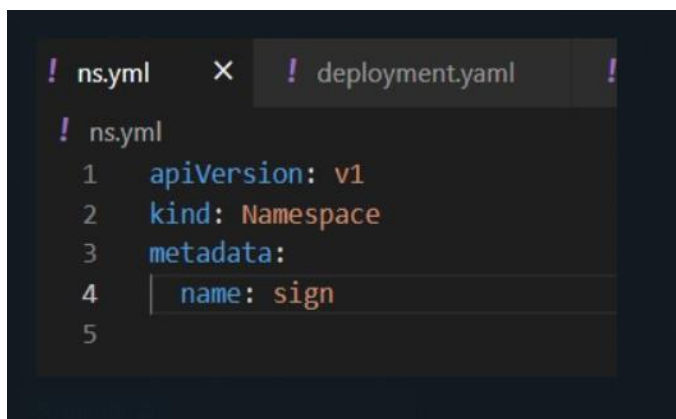To host html website using kubernetes and to make changes in the code and deploying it again using rollback strategy

STEPS:

1) Installing kubernetes for windows with minikube
2) After completion of installation launching the local cluster
3) Creating namespace
4) Deployment of pod in that namespace
5) Setting the replica factor
6) Exposing the service and to make it accessible by pods or from the external
7) To Set the resource limit and show what happens when the limit reached, exceeded.
8) Making changes in the code and deploying it again using rollback strategy

Initializing and starting minikube

```
D:\dock>minikube start
* minikube v1.25.1 on Microsoft Windows 10 Home Single Language 10.0.19043 Build 19043
* Using the docker driver based on existing profile
* Starting control plane node minikube in cluster minikube
* Pulling base image ...
* docker "minikube" container is missing, will recreate.
* Creating docker container (CPUs=2, Memory=2200MB) ...
! Executing "docker container inspect minikube --format={{.State.Status}}" took an unusually long time: 2.064771s
* Restarting the docker service may improve performance.
* Preparing Kubernetes v1.23.1 on Docker 20.10.12 ...
  - kubelet.housekeeping-interval=5m
  - Generating certificates and keys ...
  - Booting up control plane ...
  - Configuring RBAC rules ...
* Verifying Kubernetes components...
* Enabled addons: storage-provisioner, default-storageclass
* Done! kubectl is now configured to use "minikube" cluster and "default" namespace by default
```

Creating namespaces

```
! ns.yml    ×    ! deployment.yaml    !

! ns.yml
  1    apiVersion: v1
  2    kind: Namespace
  3    metadata:
  4      name: sign
  5
```

```
D:\dock>kubectl get namespaces
NAME              STATUS   AGE
default           Active   2m48s
kube-node-lease   Active   3m10s
kube-public       Active   3m11s
kube-system       Active   3m13s

D:\dock>kubectl apply -f ns.yml
error: error parsing ns.yml: error converting YAML to JSON: yaml: line 3: mapping values are not allowed in this context

D:\dock>kubectl apply -f ns.yml
error: error parsing ns.yml: error converting YAML to JSON: yaml: line 5: could not find expected ':'

D:\dock>kubectl apply -f ns.yml
namespace/sign created

D:\dock>kubectl get namespaces
NAME              STATUS   AGE
default           Active   4m26s
kube-node-lease   Active   4m48s
kube-public       Active   4m49s
kube-system       Active   4m51s
sign              Active   5s
```

Deployment of yaml file(Creating of pod)

```
D:\dock>kubectl apply -f deployment.yaml
deployment.apps/sign-deployment created

D:\dock>kubectl get deployment -n sign
NAME              READY   UP-TO-DATE   AVAILABLE   AGE
sign-deployment   0/1     1            0           12s
```

Pod deployment:

```
D:\dock>kubectl apply -f deployment.yaml
deployment.apps/sign-deployment unchanged

D:\dock>kubectl get pods -n sign
NAME                               READY   STATUS             RESTARTS   AGE
sign-deployment-58b95f9786-m7dw4   0/1     ErrImageNeverPull   0          2m29s
```

```yaml
deployment.yaml
1   apiVersion: apps/v1
2   kind: Deployment
3   metadata:
4     labels:
5       app: sign
6     name: sign-deployment
7     namespace: sign
8   spec:
9     replicas: 1
10    selector:
11      matchLabels:
12        app: sign
13    template:
14      metadata:
15        labels:
16          app: sign
17      spec:
18        containers:
19          - image: "html-server-image:v1"
20            imagePullPolicy: Never
21            name: sign
22            ports:
23              - containerPort: 80
```

Deploying pod with 2 replicas

```
D:\dock>kubectl get deployment -n sign
NAME             READY   UP-TO-DATE   AVAILABLE   AGE
sign-deployment  0/1     1            0           57m

D:\dock>kubectl apply -f deployment.yaml
deployment.apps/sign-deployment configured

D:\dock>kubectl get pods -n sign
NAME                              READY   STATUS             RESTARTS   AGE
sign-deployment-58b95f9786-6brw4  0/1     ErrImageNeverPull  0          14s
sign-deployment-58b95f9786-m7dw4  0/1     ErrImageNeverPull  0          58m
```

Service Exposure:

```yaml
service.yaml

1    apiVersion: v1
2    kind: Service
3    metadata:
4      name: sign-service
5      namespace: sign
6    spec:
7      selector:
8        app: sign
9      type: LoadBalancer
10     ports:
11       - protocol: TCP
12         port: 8080
13         targetPort: 80
14         nodePort: 30000
```

```
D:\dock>kubectl  get service
NAME            TYPE        CLUSTER-IP    EXTERNAL-IP   PORT(S)    AGE
kubernetes      ClusterIP   10.96.0.1     <none>        443/TCP    20m
```

```
D:\dock>kubectl  get service -n sign
No resources found in sign namespace.
```

```
D:\dock>kubectl apply -f service.yaml
service/sign-service created
```

```
D:\dock>kubectl  get service -n sign
NAME            TYPE           CLUSTER-IP       EXTERNAL-IP   PORT(S)          AGE
sign-service    LoadBalancer   10.110.162.248   <pending>     8080:30000/TCP   29s
```

```
D:\dock>minikube service sign-service -n sign
! Executing "docker container inspect minikube --format={{.State.Status}}" took an unusually long time: 6.806186s
* Restarting the docker service may improve performance.
|-----------|--------------|-------------|------------------------|
| NAMESPACE |     NAME     | TARGET PORT |          URL           |
|-----------|--------------|-------------|------------------------|
| sign      | sign-service |        8080 | http://192.168.49.2:30000 |
|-----------|--------------|-------------|------------------------|
* Starting tunnel for service sign-service.
|-----------|--------------|-------------|------------------------|
| NAMESPACE |     NAME     | TARGET PORT |          URL           |
|-----------|--------------|-------------|------------------------|
| sign      | sign-service |             | http://127.0.0.1:63310 |
|-----------|--------------|-------------|------------------------|
* Opening service sign/sign-service in default browser...
! Because you are using a Docker driver on windows, the terminal needs to be open to run it.
```

Hosting webpage :

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NAME: [Firstname] [Lastname]

DATE OF BIRTH: DATE: [1 ▾]   MONTH: [January ▾]   YEAR: [Year]

GENDER: ○ Male ○ Female ○ Not willing to say

E-MAIL ID: [E-mail]

USERNAME: [   ]

PASSWORD: [   ]
(Atleast 8 characters)

RE-TYPE PASSWORD: [   ]

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[SUBMIT] [CLEAR]

Resource limitation:

```
D:\dock>kubectl describe pod sign-deployment-58b95f9786-m7dw4 -n sign
Name:          sign-deployment-58b95f9786-m7dw4
Namespace:     sign
Priority:      0
Node:          minikube/192.168.49.2
Start Time:    Sat, 29 Jan 2022 00:33:01 +0530
Labels:        app=sign
               pod-template-hash=58b95f9786
Annotations:   <none>
Status:        Pending
IP:            172.17.0.2
IPs:
  IP:          172.17.0.2
Controlled By: ReplicaSet/sign-deployment-58b95f9786
Containers:
  sign:
    Container ID:
    Image:         html-server-image:v1
    Image ID:
    Port:          80/TCP
    Host Port:     0/TCP
    State:         Waiting
      Reason:      ErrImageNeverPull
    Ready:         False
    Restart Count: 0
    Environment:   <none>
    Mounts:
      /var/run/secrets/kubernetes.io/serviceaccount from kube-api-access-zbcl6 (ro)
Conditions:
  Type              Status
  Initialized       True
  Ready             False
  ContainersReady   False
  PodScheduled      True
```

```
Volumes:
  kube-api-access-zbcl6:
    Type:                   Projected (a volume that contains injected data from multiple sources)
    TokenExpirationSeconds: 3607
    ConfigMapName:          kube-root-ca.crt
    ConfigMapOptional:      <nil>
    DownwardAPI:            true
QoS Class:                  BestEffort
Node-Selectors:             <none>
Tolerations:                node.kubernetes.io/not-ready:NoExecute op=Exists for 300s
                            node.kubernetes.io/unreachable:NoExecute op=Exists for 300s
Events:
  Type     Reason             Age                  From               Message
  ----     ------             ----                 ----               -------
  Normal   Scheduled          16m                  default-scheduler  Successfully assigned sign/sign-deployment-58b95f9786-m7dw4 to minikube
  Warning  Failed             14m (x12 over 16m)   kubelet            Error: ErrImageNeverPull
  Warning  ErrImageNeverPull  64s (x73 over 16m)   kubelet            Container image "html-server-image:v1" is not present with pull policy of Never
```

Roll back strategy :

Version 2:


```
D:\dock>docker build -t  html-server-image:v2 .
[+] Building 26.4s (7/7) FINISHED
 => [internal] load build definition from Dockerfile
 => => transferring dockerfile: 31B
 => [internal] load .dockerignore
 => => transferring context: 2B
 => [internal] load metadata for docker.io/library/nginx:alpine
 => [internal] load build context
 => => transferring context: 4.39kB
 => CACHED [1/2] FROM docker.io/library/nginx:alpine@sha256:da9c94bec1da829ebd52431a84502ec471c8e548ffb2cedbf36260fd9bd1d4d3
 => [2/2] COPY . /usr/share/nginx/html
 => exporting to image
 => => exporting layers
 => => writing image sha256:6a52285ff16d7d13c0941775a23452fbf2c146281757618a13b5cf83f2eac906
 => => naming to docker.io/library/html-server-image:v2

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

D:\dock>kubectl apply -f deployment.yaml
deployment.apps/sign-deployment unchanged

D:\dock>kubectl get deployment -n sign
NAME              READY   UP-TO-DATE   AVAILABLE   AGE
sign-deployment   0/1     1            0           47m

D:\dock>minikube service sign-service -n sign
|-----------|--------------|-------------|--------------------------|
| NAMESPACE |     NAME     | TARGET PORT |           URL            |
|-----------|--------------|-------------|--------------------------|
| sign      | sign-service |        8080 | http://192.168.49.2:30000 |
|-----------|--------------|-------------|--------------------------|
* Starting tunnel for service sign-service.
|-----------|--------------|-------------|--------------------------|
| NAMESPACE |     NAME     | TARGET PORT |           URL            |
|-----------|--------------|-------------|--------------------------|
| sign      | sign-service |             | http://127.0.0.1:56448   |
|-----------|--------------|-------------|--------------------------|
* Opening service sign/sign-service in default browser...
! Because you are using a Docker driver on windows, the terminal needs to be open to run it.
* Stopping tunnel for service sign-service.
```

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NAME: [Firstname] [Lastname]

DATE OF BIRTH: DATE: [1 ▾] MONTH: [January ▾] YEAR: [Year]

E-MAIL ID: [E-mail]

USERNAME: [_____]

PASSWORD: [_____]
(Atleast 8 characters)

RE-TYPE PASSWORD: [_____]

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[SUBMIT] [CLEAR]

Rollback to version 1 :

```
D:\dock>kubectl rollout history deploy sign-deployment -n sign
deployment.apps/sign-deployment
REVISION  CHANGE-CAUSE
1         <none>
```

```
D:\dock>kubectl rollout undo deploy sign-deployment --to-revision=1 -n sign
deployment.apps/sign-deployment skipped rollback (current template already matches revision 1)

D:\dock>minikube service sign-service -n sign
! Executing "docker container inspect minikube --format={{.State.Status}}" took an unusually long time: 3.1721367s
* Restarting the docker service may improve performance.
|-----------|--------------|-------------|--------------------------|
| NAMESPACE |     NAME     | TARGET PORT |           URL            |
|-----------|--------------|-------------|--------------------------|
| sign      | sign-service |        8080 | http://192.168.49.2:30000 |
|-----------|--------------|-------------|--------------------------|
* Starting tunnel for service sign-service.
|-----------|--------------|-------------|------------------------|
| NAMESPACE |     NAME     | TARGET PORT |          URL           |
|-----------|--------------|-------------|------------------------|
| sign      | sign-service |             | http://127.0.0.1:56808 |
|-----------|--------------|-------------|------------------------|
* Opening service sign/sign-service in default browser...
! Because you are using a Docker driver on windows, the terminal needs to be open to run it.
* Stopping tunnel for service sign-service.
```

WELCOME TO WEVERSE 💜

A GLOBAL PLOTFORM FOR ALL THE FANS

NAME: [Firstname] [Lastname]

DATE OF BIRTH: DATE: [1 ▾] MONTH: [January ▾] YEAR: [Year]

GENDER: ○ Male ○ Female ○ Not willing to say

E-MAIL ID: [E-mail]

USERNAME: [   ]

PASSWORD: [   ]
(Atleast 8 characters)

RE-TYPE PASSWORD: [   ]

☐ **By clicking this, you accept the terms and conditions of WEVERSE**

[SUBMIT]   [CLEAR]