Kuberenetes contd

Creating an AKS (Azure Kubernetes Service) Cluster

- This is managed k8s from Azure.
- To Create aks cluster, we will be using azure cli Refer Here
- Execute the following commands in azure cloud shell

```
export RANDOM_ID="$(openssl rand -hex 3)"
export MY_RESOURCE_GROUP_NAME="myAKSResourceGroup$RANDOM_ID"
export REGION="eastus"
export MY_AKS_CLUSTER_NAME="myAKSCluster$RANDOM_ID"
export MY_DNS_LABEL="ltdevops$RANDOM_ID"
az group create --name $MY_RESOURCE_GROUP_NAME --location $REGION
az aks create \
    --resource-group $MY_RESOURCE_GROUP_NAME \
    --name $MY_AKS_CLUSTER_NAME \
    --node-count 1 \
    --generate-ssh-keys \
    --node-vm-size 'Standard_B2s'
```

- On Windows systems install kubectl Refer Here
- On other os `az aks install-cli`
- To get the kubectl credentials

```
az aks get-credentials --resource-group $MY_RESOURCE_GROUP_NAME --name
$MY_AKS_CLUSTER_NAME
```

- On windows systems, open git bash and execute `source <(kubectl completion bash)` for autocompletion
- on linux or mac

```
source <(kubectl completion bash)
echo "source <(kubectl completion bash)" >> ~/.bashrc
```

- To delete aks cluster. delete the resource group

```
az group delete --name $MY_RESOURCE_GROUP_NAME --yes --no-wait
```

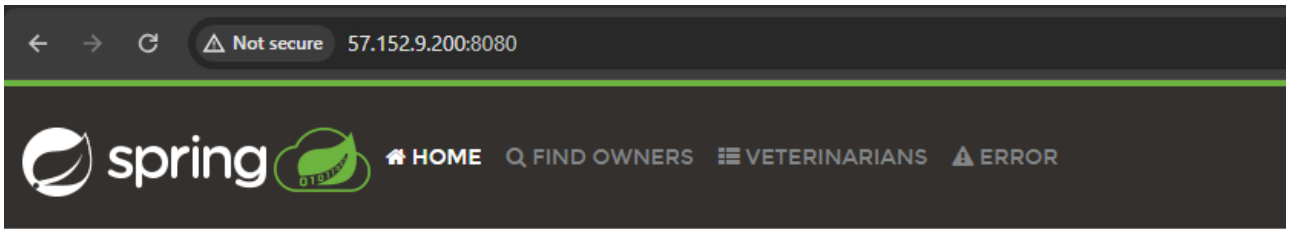
Service Activity 1: Lets create a spring petclinic rs with loadbalancer service.

- image: `shaikkhajaibrahim/spcjan2024:1.0`

- Refer Here for the changes done
- apply

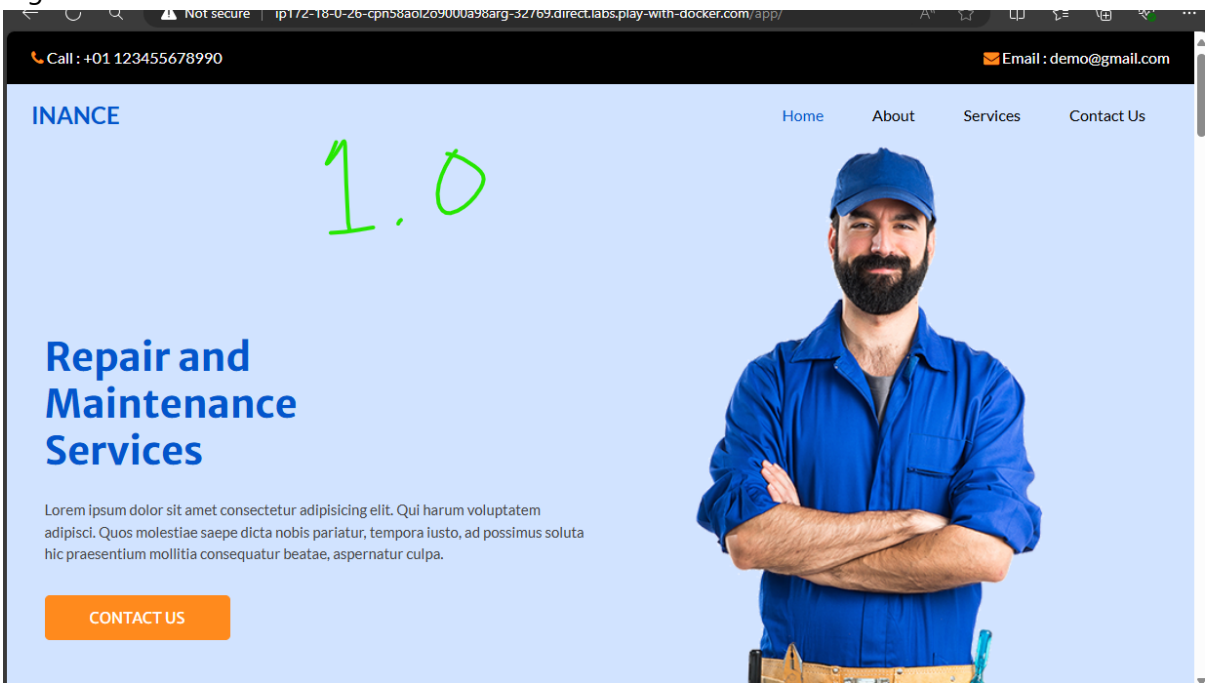
```
Dell@DESKTOP-TM7SH71 MINGW64 /c/khajaclassroom/devops/k8s/june24/svc (master)
$ kubectl apply -f spc/spc.yaml
replicaset.apps/spc-rs created
service/spc-svc created

Dell@DESKTOP-TM7SH71 MINGW64 /c/khajaclassroom/devops/k8s/june24/svc (master)
$ kubectl get all
NAME                READY   STATUS              RESTARTS   AGE
pod/spc-rs-b6bs8    0/1     ContainerCreating   0          6s
pod/spc-rs-ddfx9    0/1     ContainerCreating   0          6s

NAME                 TYPE           CLUSTER-IP     EXTERNAL-IP   PORT(S)          AGE
service/kubernetes   ClusterIP      10.0.0.1       <none>        443/TCP          29m
service/spc-svc      LoadBalancer   10.0.113.115   <pending>     8080:31029/TCP   6s

NAME                      DESIRED   CURRENT   READY   AGE
replicaset.apps/spc-rs    2         2         0       8s

Dell@DESKTOP-TM7SH71 MINGW64 /c/khajaclassroom/devops/k8s/june24/svc (master)
$
```

- Wait till the pods are ready



- Test application image shaikkhajaibrahim/dmtest, url `/app`

- tag: 1.0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Email : demo@gmail.com
INANCE
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Services
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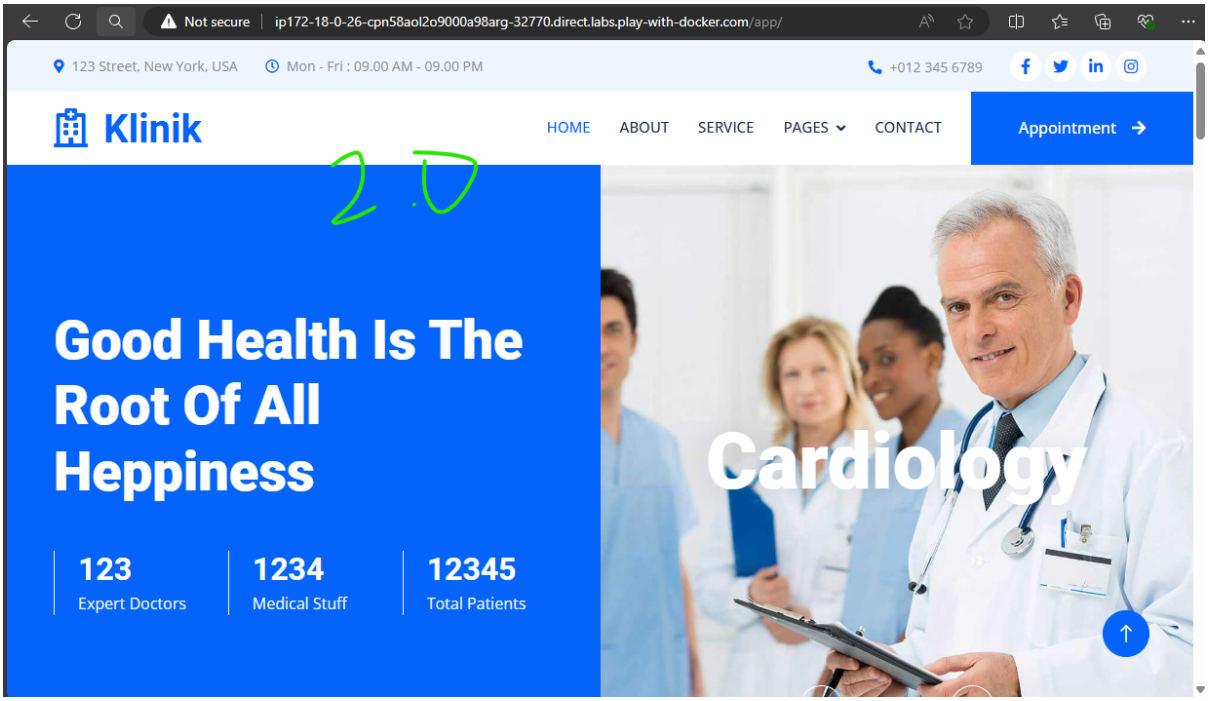
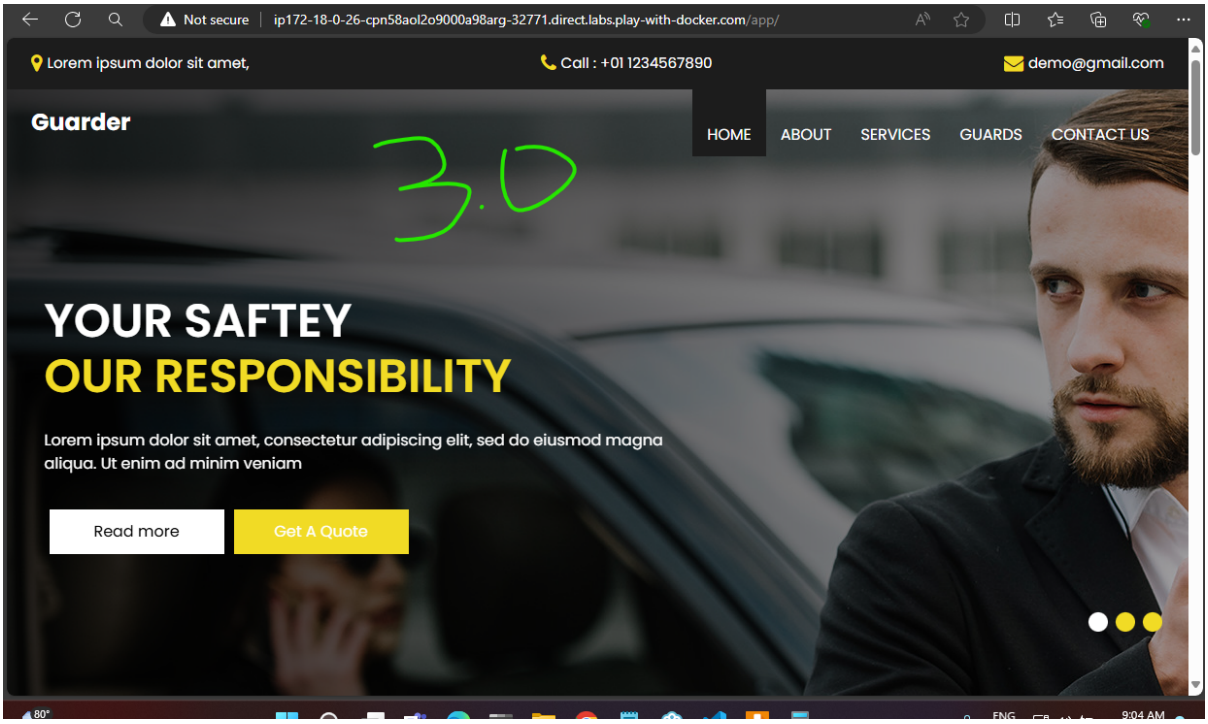
1.0
Repair and Maintenance Services
Lorem ipsum dolor sit amet consectetur adipisicing elit. Qui harum voluptatem adipisci. Quos molestiae saepe dicta nobis pariatur, tempora iusto, ad possimus soluta hic praesentium mollitia consequatur beatae, aspernatur culpa.
CONTACT US

- tag: 2.0

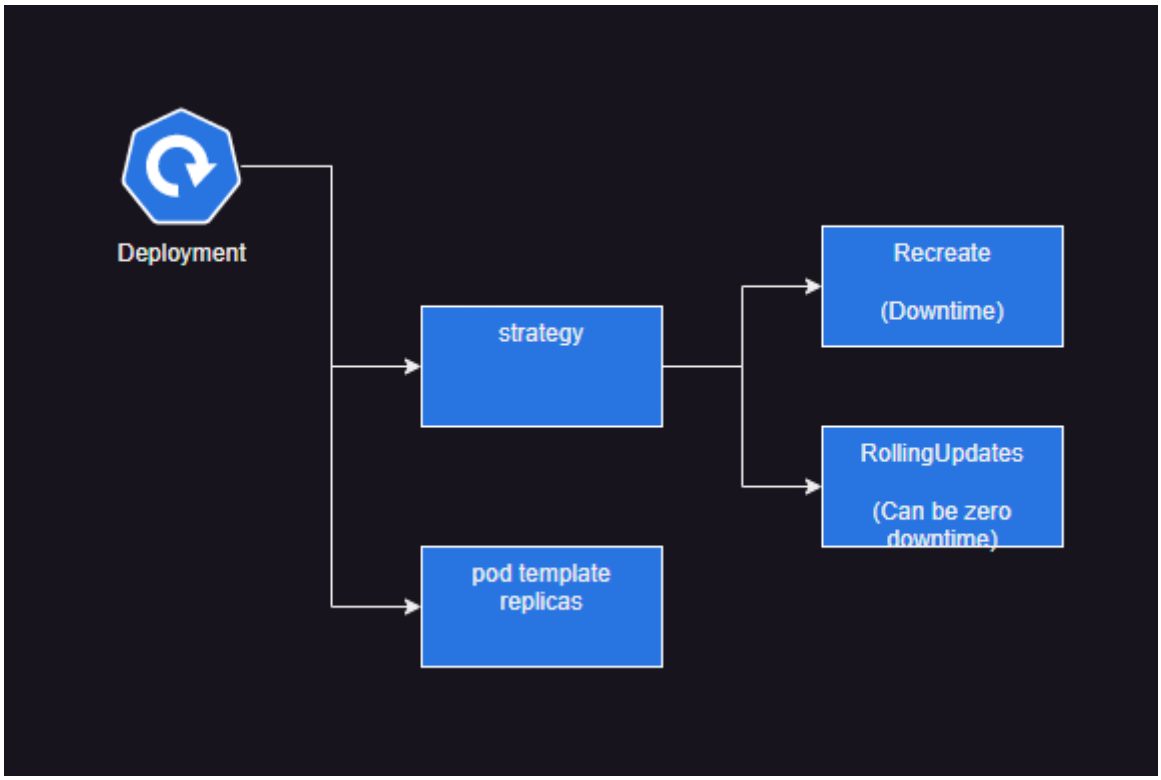

Not secure
ip172-18-0-26-cpn58aol2o9000a98arg-32770.direct.labs.play-with-docker.com/app/
123 Street, New York, USA
Mon - Fri : 09.00 AM - 09.00 PM
+012 345 6789
Klinik
HOME
ABOUT
SERVICE
PAGES
CONTACT
Appointment
2.0
Good Health Is The Root Of All Heppiness
123
Expert Doctors
1234
Medical Stuff
12345
Total Patients
Cardiology

- tag: 3.0



Deployment

- Refer Here for official docs

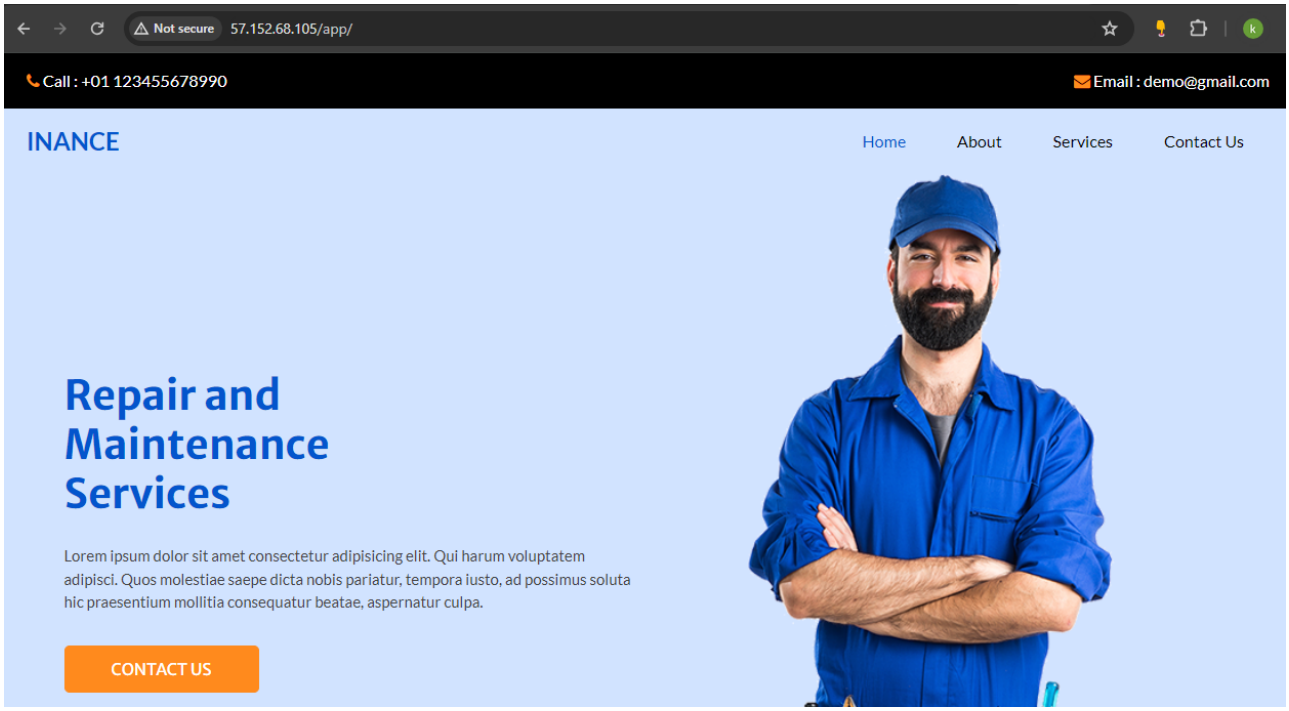


- Lets create a deployment of webapp `shaikkhajaibrahim/dmtest:1.0` with 4 replicas and service of type LoadBalancer

- create a deployment based of specs Refer Here for changes

```
Dell@DESKTOP-TM7SH71 MINGW64 /c/khajaclassroom/devops/k8s/june24/deploy/app (master)
$ kubectl apply -f app-deployment.yaml
deployment.apps/app-deploy created

Dell@DESKTOP-TM7SH71 MINGW64 /c/khajaclassroom/devops/k8s/june24/deploy/app (master)
$ kubectl get deployments.apps
NAME         READY   UP-TO-DATE   AVAILABLE   AGE
app-deploy   0/4     4            0           8s

Dell@DESKTOP-TM7SH71 MINGW64 /c/khajaclassroom/devops/k8s/june24/deploy/app (master)
$ kubectl get deployments.apps -w
NAME         READY   UP-TO-DATE   AVAILABLE   AGE
app-deploy   1/4     4            0           16s
app-deploy   1/4     4            1           18s
app-deploy   2/4     4            1           20s
app-deploy   3/4     4            1           20s
app-deploy   4/4     4            1           20s
app-deploy   4/4     4            4           22s
```

```
Dell@DESKTOP-TM7SH71 MINGW64 /c/khajaclassroom/devops/k8s/june24/deploy/app (master)
$ kubectl apply -f app-svc.yaml
service/app-svc created

Dell@DESKTOP-TM7SH71 MINGW64 /c/khajaclassroom/devops/k8s/june24/deploy/app (master)
$ kubectl get svc
NAME         TYPE           CLUSTER-IP     EXTERNAL-IP     PORT(S)        AGE
app-svc      LoadBalancer   10.0.69.158    57.152.68.105   80:32679/TCP   9s
kubernetes   ClusterIP      10.0.0.1       <none>          443/TCP        89m

Dell@DESKTOP-TM7SH71 MINGW64 /c/khajaclassroom/devops/k8s/june24/deploy/app (master)
```



- Deployment create RS which in turn will create pods

```
Dell@DESKTOP-TM7SH71 MINGW64 /c/khajaclassroom/devops/k8s/june24/deploy/app (master)
$ kubectl get all
NAME                              READY   STATUS    RESTARTS   AGE
pod/app-deploy-6d54bff8f5-9pjm9   1/1     Running   0          4m24s
pod/app-deploy-6d54bff8f5-bgghq   1/1     Running   0          4m24s
pod/app-deploy-6d54bff8f5-tg859   1/1     Running   0          4m24s
pod/app-deploy-6d54bff8f5-x4gvp   1/1     Running   0          4m24s

NAME                 TYPE           CLUSTER-IP    EXTERNAL-IP     PORT(S)        AGE
service/app-svc      LoadBalancer   10.0.69.158   57.152.68.105   80:32679/TCP   104s
service/kubernetes   ClusterIP      10.0.0.1      <none>          443/TCP        90m

NAME                         READY   UP-TO-DATE   AVAILABLE   AGE
deployment.apps/app-deploy   4/4     4            4           4m25s

NAME                                    DESIRED   CURRENT   READY   AGE
replicaset.apps/app-deploy-6d54bff8f5   4         4         4       4m25s

Dell@DESKTOP-TM7SH71 MINGW64 /c/khajaclassroom/devops/k8s/june24/deploy/app (master)
$
```

- When we work with deployments we will have access to new set of commands `kubectl rollout`

```
Dell@DESKTOP-TM7SH71 MINGW64 /c/khajaclassroom/devops/k8s/june24/deploy/app (master)
$ kubectl rollout status deployment/app-deploy
deployment "app-deploy" successfully rolled out

Dell@DESKTOP-TM7SH71 MINGW64 /c/khajaclassroom/devops/k8s/june24/deploy/app (master)
$ kubectl rollout history deployment/app-deploy
deployment.apps/app-deploy
REVISION  CHANGE-CAUSE
1         <none>
```

- Now lets make change in deployment yaml to use version 2.0 Refer Here

- Now apply the changes, watch deployment and view the rollout status and history

```
Dell@DESKTOP-TM7SH71 MINGW64 /c/khajaclassroom/devops/k8s/june24/deploy/app (master)
$ kubectl apply -f app-deployment.yaml
deployment.apps/app-deploy configured

Dell@DESKTOP-TM7SH71 MINGW64 /c/khajaclassroom/devops/k8s/june24/deploy/app (master)
$ kubectl rollout status deployment/app-deploy
Waiting for deployment "app-deploy" rollout to finish: 2 out of 4 new replicas have been update
...
Waiting for deployment "app-deploy" rollout to finish: 2 out of 4 new replicas have been update
...
Waiting for deployment "app-deploy" rollout to finish: 2 out of 4 new replicas have been update
...
Waiting for deployment "app-deploy" rollout to finish: 2 out of 4 new replicas have been update
...
Waiting for deployment "app-deploy" rollout to finish: 2 out of 4 new replicas have been update
...
Waiting for deployment "app-deploy" rollout to finish: 1 old replicas are pending termination..
Waiting for deployment "app-deploy" rollout to finish: 1 old replicas are pending termination..
Waiting for deployment "app-deploy" rollout to finish: 1 old replicas are pending termination..
Waiting for deployment "app-deploy" rollout to finish: 1 old replicas are pending termination..
deployment "app-deploy" successfully rolled out

Dell@DESKTOP-TM7SH71 MINGW64 /c/khajaclassroom/devops/k8s/june24/deploy/app (master)
$
```

```
shaik [ ~ ]$ kubectl get deploy -w
NAME         READY   UP-TO-DATE   AVAILABLE   AGE
app-deploy   4/4     4            4           11m
^Cshaik [ ~ ]$ kubectl get deploy -o wide -w
NAME         READY   UP-TO-DATE   AVAILABLE   AGE   CONTAINERS   IMAGES                              SELECTOR
app-deploy   4/4     4            4           12m   app          shaikkhajaibrahim/dmtest:1.0        app=web
app-deploy   4/4     4            4           12m   app          shaikkhajaibrahim/dmtest:2.0        app=web
app-deploy   4/4     4            4           12m   app          shaikkhajaibrahim/dmtest:2.0        app=web
app-deploy   3/4     1            3           12m   app          shaikkhajaibrahim/dmtest:2.0        app=web
app-deploy   3/4     1            3           12m   app          shaikkhajaibrahim/dmtest:2.0        app=web
app-deploy   3/4     2            3           12m   app          shaikkhajaibrahim/dmtest:2.0        app=web
app-deploy   4/4     2            3           12m   app          shaikkhajaibrahim/dmtest:2.0        app=web
app-deploy   5/4     2            3           12m   app          shaikkhajaibrahim/dmtest:2.0        app=web
app-deploy   5/4     2            5           12m   app          shaikkhajaibrahim/dmtest:2.0        app=web
app-deploy   3/4     2            3           12m   app          shaikkhajaibrahim/dmtest:2.0        app=web
app-deploy   3/4     4            3           12m   app          shaikkhajaibrahim/dmtest:2.0        app=web
app-deploy   4/4     4            3           13m   app          shaikkhajaibrahim/dmtest:2.0        app=web
app-deploy   5/4     4            3           13m   app          shaikkhajaibrahim/dmtest:2.0        app=web
app-deploy   5/4     4            5           13m   app          shaikkhajaibrahim/dmtest:2.0        app=web
app-deploy   4/4     4            4           13m   app          shaikkhajaibrahim/dmtest:2.0        app=web
```

```
Windows PowerShell | MINGW64:/c/khajaclassroom, | Azure

Dell@DESKTOP-TM7SH71 MINGW64 /c/khajaclassroom/devops/k8s/june24/deploy/app (master)
$ kubectl rollout history deployment/app-deploy
deployment.apps/app-deploy
REVISION  CHANGE-CAUSE
1         <none>
2         <none>


Dell@DESKTOP-TM7SH71 MINGW64 /c/khajaclassroom/devops/k8s/june24/deploy/app (master)
$
```

- Try `1.0 => 2.0 => 3.0 => 1.0 => 2.0 => 3.0`