Summary

- Types of strategy in deployment
    - Ramped deployment (Rolling update)
    - Recreate deployment
    - Blue-green deployment
    - Canary deployment
    - A/B testing deployment

- V1 V2 V3 → Rolling from version 1 to version 2 is called Roll-out
- V1 V2 V3 → Rolling from version 3 to version 2 is called Roll-back

- Recreate & rolling deployment strategies in Kubernetes
    - Recreate:- First remove all the older pods then launch new pods
        - Drawbacks→User loses the connectivity
          →Has downtime
        - Use-case:- If the bug/security vulnerabilities come up so we have to forcefully remove all the older versions of the pods & launch with an updated image
    - Rolling updates:- Removing one by one older pod and launching new pods simultaneously
- We always launch the pod in Kubernetes with the keyword called deployment
- As soon as we launch deployment internally they launch a replica set and ask a replica set to launch the pod

- Creating deployment & checking replica set

```
C:\Users\Vimal Daga>kubectl create deployment  myd  --image=httpd
deployment.apps/myd created

C:\Users\Vimal Daga>kubectl  get deployment
NAME    READY   UP-TO-DATE   AVAILABLE   AGE
myd     0/1     1            0           5s

C:\Users\Vimal Daga>kubectl  get rc
No resources found in default namespace.

C:\Users\Vimal Daga>kubectl  get rs
NAME              DESIRED   CURRENT   READY   AGE
myd-7cf9bb6c54    1         1         0       13s

C:\Users\Vimal Daga>kubectl  get rs
NAME              DESIRED   CURRENT   READY   AGE
myd-7cf9bb6c54    1         1         1       31s

C:\Users\Vimal Daga>kubectl  get pod
NAME                    READY   STATUS    RESTARTS   AGE
myd-7cf9bb6c54-79pcz    1/1     Running   0          37s
```

- The default strategy deployment use is a rolling update

```
C:\Users\Vimal Daga>kubectl  describe  deployment
Name:                   myd
Namespace:              default
CreationTimestamp:      Tue, 04 Jan 2022 22:19:17 +0530
Labels:                 app=myd
Annotations:            deployment.kubernetes.io/revision: 1
Selector:               app=myd
Replicas:               1 desired | 1 updated | 1 total | 1 available | 0 unavailable
StrategyType:           RollingUpdate
MinReadySeconds:        0
RollingUpdateStrategy:  25% max unavailable, 25% max surge
Pod Template:
  Labels:  app=myd
  Containers:
   httpd:
    Image:        httpd
```

- Practical:-Deployment using a rolling update strategy
  - Creating webpage

```
[root@localhost ~]# mkdir /webcode
mkdir: cannot create directory '/webcode': File exists
[root@localhost ~]# mkdir /webcode1
[root@localhost ~]# cd /webcode1
[root@localhost webcode1]# vim index.html
[root@localhost webcode1]# cat index.html
first copy ...
[root@localhost webcode1]#
```

  - Creating docker file

```
FROM vimal13/apache-webserver-php

COPY index.html    /var/www/html
```

- Building an image & pushing it to the docker hub

```
[root@localhost webcode1]# podman  build -t myweb:v1  /webcode1
STEP 1: FROM vimal13/apache-webserver-php
STEP 2: COPY index.html   /var/www/html
STEP 3: COMMIT myweb:v1
--> 1072436311a
1072436311aee48a6a422a9913585af84e33e1ab24b839d5ebb38b1afb801ac1
[root@localhost webcode1]# podman tag myweb:v1   vimal13/myweb:v1
[root@localhost webcode1]# podman login
Username: vimal13
Password:
Login Succeeded!
[root@localhost webcode1]# podman push    vimal13/myweb:v1
Getting image source signatures
Copying blob 434f65fb793d done
Copying blob 734bde008f37 skipped: already exists
Copying blob e52810c22858 skipped: already exists
Copying blob b362758f4793 skipped: already exists
```

- Creating deployment & scaling pods

```
C:\Users\Vimal Daga>kubectl  create deployment myd --image=vimal13/myweb:v1
deployment.apps/myd created

C:\Users\Vimal Daga>kubectl get po
NAME                   READY   STATUS    RESTARTS   AGE
myd-d84845499-jqt27    1/1     Running   0          22s

C:\Users\Vimal Daga>kubectl scale deploy  myd --replicas=3
deployment.apps/myd scaled

C:\Users\Vimal Daga>kubectl get po
NAME                   READY   STATUS    RESTARTS   AGE
myd-d84845499-4gjq6    1/1     Running   0          7s
myd-d84845499-jqt27    1/1     Running   0          50s
myd-d84845499-skv6g    1/1     Running   0          7s

C:\Users\Vimal Daga>kubectl get rs
NAME             DESIRED   CURRENT   READY   AGE
myd-d84845499    3         3         3       53s
```

- Exposing deployment

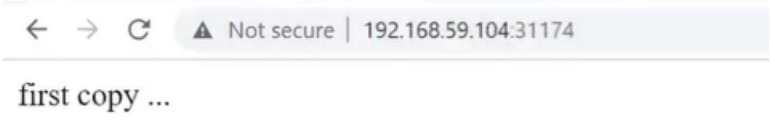
```
C:\Users\Vimal Daga>kubectl expose deploy  myd --type=NodePort --port=80
service/myd exposed

C:\Users\Vimal Daga>kubectl get svc
NAME         TYPE        CLUSTER-IP      EXTERNAL-IP   PORT(S)        AGE
kubernetes   ClusterIP   10.96.0.1       <none>        443/TCP        8m25s
myd          NodePort    10.96.197.210   <none>        80:31174/TCP   9s

C:\Users\Vimal Daga>minikube ip
192.168.59.104

C:\Users\Vimal Daga>
```

- Accessing webpage



first copy ...

- Creating a new version of the image

```
[root@localhost webcode1]# podman  build -t myweb:v2  /webcode1
STEP 1: FROM vimal13/apache-webserver-php
STEP 2: COPY index.html   /var/www/html
--> Using cache b2c2813b42e555f4456722e5fa535650acc4906e6855e14123d3e97b6264da76
STEP 3: COMMIT myweb:v2
--> b2c2813b42e
b2c2813b42e555f4456722e5fa535650acc4906e6855e14123d3e97b6264da76
[root@localhost webcode1]# podman tag myweb:v2   vimal13/myweb:v2
[root@localhost webcode1]# podman push    vimal13/myweb:v2
Getting image source signatures
Copying blob 982a5b7812cf [--------------------------------------] 8.0b / 3.5KiB
```

- Updating deployment

```
C:\Users\Vimal Daga>kubectl set image   deploy/myd  myweb=vimal13/myweb:v2
deployment.apps/myd image updated

C:\Users\Vimal Daga>
```

- Rolling update of pods

```
C:\Users\Vimal Daga>kubectl get pods
NAME                  READY   STATUS              RESTARTS   A
E
myd-885cf8d8b-4g7tm   1/1     Running             0          5

myd-885cf8d8b-wzd76   0/1     ContainerCreating   0          1

myd-d84845499-4gjq6   1/1     Running             0          1
m
myd-d84845499-jqt27   1/1     Running             0          1
m
myd-d84845499-skv6g   1/1     Terminating         0          1
m

C:\Users\Vimal Daga>
```

- Without downtime, we reached version two

```
C:\Users\Vimal Daga>curl http://192.168.59.104:3117
first copy ...

C:\Users\Vimal Daga>curl http://192.168.59.104:3117
first copy ...
sec copy ..

C:\Users\Vimal Daga>curl http://192.168.59.104:3117
first copy ...
sec copy ..
```

- Practical:- Rolling back of deployment
  - Rolling back

```
C:\Users\Vimal Daga>kubectl rollout  history   deploy myd
deployment.apps/myd
REVISION  CHANGE-CAUSE
1         <none>
2         <none>
3         <none>


C:\Users\Vimal Daga>kubectl rollout undo    deploy myd --to-revision=1
deployment.apps/myd rolled back

C:\Users\Vimal Daga>
```

  - Accessing a webpage from the curl command

```
C:\Users\Vimal Daga>curl http://192.168.59.104:
first copy ...
sec copy ..

C:\Users\Vimal Daga>curl http://192.168.59.104:
first copy ...

C:\Users\Vimal Daga>curl http://192.168.59.104:
first copy ...
```