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LAB EXERCISE 11- DEPLOYMENTS WITH ROLLING UPDATE AND RECREATE STRATEGIES

UNDERSTAND HOW TO USE THE ROLLING UPDATE AND RECREATE STRATEGIES FOR DEPLOYING APPLICATIONS USING KUBERNETES DEPLOYMENTS.

STEP 1: CREATE A DEPLOYMENT WITH ROLLING UPDATE STRATEGY

CREATE A YAML FILE FOR THE DEPLOYMENT:

CREATE A FILE NAMED **NGINX-DEPLOYMENT-ROLLING.YAML** WITH THE FOLLOWING CONTENT:

```
APIVERSION: APPS/V1
KIND: DEPLOYMENT
METADATA:
  NAME: NGINX-DEPLOYMENT-ROLLING
SPEC:
  REPLICAS: 10
  MINREADYSECONDS: 10
  SELECTOR:
    MATCHLABELS:
      APP: WEB
  STRATEGY:
    TYPE: ROLLINGUPDATE
    ROLLINGUPDATE:
      MAXUNAVAILABLE: 1
      MAXSURGE: 5
  TEMPLATE:
    METADATA:
      LABELS:
```

APP: WEB

SPEC:

CONTAINERS:

- NAME: NGINX

IMAGE: HKSHITESH/KUBEDEMO:1.0

PORTS:

- CONTAINERPORT: 80

APPLY THE DEPLOYMENT:

KUBECTL APPLY -F NGINX-DEPLOYMENT-ROLLING.YAML ; WATCH "KUBECTL GET RS -O WIDE"

```
PS D:\Coding\ClassWork> kubectl get rs -o wide -w
```

NAME	DESIRED	CURRENT	READY	AGE	CONTAINERS	IMAGES	SELECTOR
nginx-deployment-rolling-85cf8767cc	10	10	10	2m20s	nginx	hkshitesh/kubedemo:1.0	app=web,pod-template-hash=85cf8767cc

VERIFY THE DEPLOYMENT:

KUBECTL GET DEPLOYMENTS

KUBECTL GET PODS -L APP=WEB

```
PS D:\Coding\ClassWork> kubectl get deployments
```

NAME	READY	UP-TO-DATE	AVAILABLE	AGE
nginx-deployment-rolling	10/10	10	10	2m57s

```
PS D:\Coding\ClassWork> kubectl get pods -l app=web
```

NAME	READY	STATUS	RESTARTS	AGE
nginx-deployment-rolling-85cf8767cc-7q4v5	1/1	Running	0	2m57s
nginx-deployment-rolling-85cf8767cc-8phk7	1/1	Running	0	2m57s
nginx-deployment-rolling-85cf8767cc-bb9x2	1/1	Running	0	2m57s
nginx-deployment-rolling-85cf8767cc-cg4j4	1/1	Running	0	2m57s
nginx-deployment-rolling-85cf8767cc-dw64s	1/1	Running	0	2m57s
nginx-deployment-rolling-85cf8767cc-kqn19	1/1	Running	0	2m57s
nginx-deployment-rolling-85cf8767cc-l2tzj	1/1	Running	0	2m57s
nginx-deployment-rolling-85cf8767cc-tt5r5	1/1	Running	0	2m57s
nginx-deployment-rolling-85cf8767cc-vzq5x	1/1	Running	0	2m57s
nginx-deployment-rolling-85cf8767cc-xk5bj	1/1	Running	0	2m57s

UPDATE THE DEPLOYMENT TO A NEW IMAGE:

KUBECTL SET IMAGE DEPLOYMENT/NGINX-DEPLOYMENT-ROLLING NGINX= HKSHITESH/KUBEDEMO:2.0

```
PS D:\Coding\ClassWork> kubectl set image deployment/nginx-deployment-rolling nginx=hkshitesh/kubedemo:2.0
deployment.apps/nginx-deployment-rolling image updated
```

MONITOR THE ROLLING UPDATE:

KUBECTL ROLLOUT STATUS DEPLOYMENT NGINX-DEPLOYMENT-ROLLING

```
PS D:\Coding\ClassWork> kubectl rollout status deployment nginx-deployment-rolling
Waiting for deployment "nginx-deployment-rolling" rollout to finish: 6 out of 10 new replicas have been updated...
Waiting for deployment "nginx-deployment-rolling" rollout to finish: 6 out of 10 new replicas have been updated...
Waiting for deployment "nginx-deployment-rolling" rollout to finish: 6 out of 10 new replicas have been updated...
Waiting for deployment "nginx-deployment-rolling" rollout to finish: 6 out of 10 new replicas have been updated...
Waiting for deployment "nginx-deployment-rolling" rollout to finish: 7 out of 10 new replicas have been updated...
Waiting for deployment "nginx-deployment-rolling" rollout to finish: 7 out of 10 new replicas have been updated...
Waiting for deployment "nginx-deployment-rolling" rollout to finish: 7 out of 10 new replicas have been updated...
Waiting for deployment "nginx-deployment-rolling" rollout to finish: 7 out of 10 new replicas have been updated...
Waiting for deployment "nginx-deployment-rolling" rollout to finish: 7 out of 10 new replicas have been updated...
Waiting for deployment "nginx-deployment-rolling" rollout to finish: 8 out of 10 new replicas have been updated...
Waiting for deployment "nginx-deployment-rolling" rollout to finish: 8 out of 10 new replicas have been updated...
Waiting for deployment "nginx-deployment-rolling" rollout to finish: 8 out of 10 new replicas have been updated...
```

VERIFY THE UPDATED PODS:

KUBECTL GET PODS -L APP=WEB -O WIDE

```
PS D:\Coding\ClassWork> kubectl get pods -l app=web -o wide
NAME                                READY   STATUS    RESTARTS   AGE   IP              NODE                                NOMINATED NODE   READINESS GATES
nginx-deployment-rolling-8587c95656-2xqss   1/1     Running   0          48s   10.244.0.29     kind-control-plane                 <none>            <none>
nginx-deployment-rolling-8587c95656-2z6g8   1/1     Running   0          68s   10.244.0.27     kind-control-plane                 <none>            <none>
nginx-deployment-rolling-8587c95656-8rp6q   1/1     Running   0          69s   10.244.0.26     kind-control-plane                 <none>            <none>
nginx-deployment-rolling-8587c95656-f5vcg   1/1     Running   0          69s   10.244.0.28     kind-control-plane                 <none>            <none>
nginx-deployment-rolling-8587c95656-hpntg   1/1     Running   0          42s   10.244.0.30     kind-control-plane                 <none>            <none>
nginx-deployment-rolling-8587c95656-nvmrg   1/1     Running   0          37s   10.244.0.32     kind-control-plane                 <none>            <none>
nginx-deployment-rolling-8587c95656-q9xmn   1/1     Running   0          69s   10.244.0.24     kind-control-plane                 <none>            <none>
nginx-deployment-rolling-8587c95656-rpt4t   1/1     Running   0          39s   10.244.0.31     kind-control-plane                 <none>            <none>
nginx-deployment-rolling-8587c95656-swhk4   1/1     Running   0          69s   10.244.0.23     kind-control-plane                 <none>            <none>
nginx-deployment-rolling-8587c95656-t7dqx   1/1     Running   0          69s   10.244.0.25     kind-control-plane                 <none>            <none>
```

STEP 2: CREATE A DEPLOYMENT WITH RECREATE STRATEGY

CREATE A YAML FILE FOR THE DEPLOYMENT:

CREATE A FILE NAMED **NGINX-DEPLOYMENT-RECREATE.YAML** WITH THE FOLLOWING CONTENT:

```
APIVERSION: APPS/V1
KIND: DEPLOYMENT
METADATA:
  NAME: NGINX-DEPLOYMENT-RECREATE
SPEC:
  REPLICAS: 10
```

SELECTOR:

MATCHLABELS:

APP: WEB

STRATEGY:

TYPE: RECREATE

TEMPLATE:

METADATA:

LABELS:

APP: WEB

SPEC:

CONTAINERS:

- NAME: NGINX

IMAGE: NGINX: HKSHITESH/KUBEDEMO:1.0

PORTS:

- CONTAINERPORT: 80

APPLY THE DEPLOYMENT:

KUBECTL APPLY -F NGINX-DEPLOYMENT-RECREATE.YAML ; WATCH "KUBECTL GET RS -O WIDE"

```
PS D:\Coding\ClassWork> kubectl apply -f nginx-deployment-recreate.yaml ; kubectl get rs -o wide -w
deployment.apps/nginx-deployment-recreate created
NAME                                DESIRED    CURRENT    READY    AGE      CONTAINERS    IMAGES                                SELECTOR
nginx-deployment-recreate-85cf8767cc 10         10         0        0s      nginx        hkshitesh/kubedemo:1.0             app=web,pod-template-hash=85cf8767cc
nginx-deployment-rolling-8587c95656 10         10         10       2m57s   nginx        hkshitesh/kubedemo:2.0             app=web,pod-template-hash=8587c95656
nginx-deployment-rolling-85cf8767cc 0          0          0        6m34s   nginx        hkshitesh/kubedemo:1.0             app=web,pod-template-hash=85cf8767cc
nginx-deployment-recreate-85cf8767cc 10         10         1        <invalid> nginx        hkshitesh/kubedemo:1.0             app=web,pod-template-hash=85cf8767cc
nginx-deployment-recreate-85cf8767cc 10         10         2        <invalid> nginx        hkshitesh/kubedemo:1.0             app=web,pod-template-hash=85cf8767cc
nginx-deployment-recreate-85cf8767cc 10         10         3        <invalid> nginx        hkshitesh/kubedemo:1.0             app=web,pod-template-hash=85cf8767cc
nginx-deployment-recreate-85cf8767cc 10         10         4        <invalid> nginx        hkshitesh/kubedemo:1.0             app=web,pod-template-hash=85cf8767cc
nginx-deployment-recreate-85cf8767cc 10         10         5        <invalid> nginx        hkshitesh/kubedemo:1.0             app=web,pod-template-hash=85cf8767cc
nginx-deployment-recreate-85cf8767cc 10         10         6        <invalid> nginx        hkshitesh/kubedemo:1.0             app=web,pod-template-hash=85cf8767cc
nginx-deployment-recreate-85cf8767cc 10         10         7        <invalid> nginx        hkshitesh/kubedemo:1.0             app=web,pod-template-hash=85cf8767cc
nginx-deployment-recreate-85cf8767cc 10         10         8        <invalid> nginx        hkshitesh/kubedemo:1.0             app=web,pod-template-hash=85cf8767cc
nginx-deployment-recreate-85cf8767cc 10         10         9        <invalid> nginx        hkshitesh/kubedemo:1.0             app=web,pod-template-hash=85cf8767cc
nginx-deployment-recreate-85cf8767cc 10         10         10       <invalid> nginx        hkshitesh/kubedemo:1.0             app=web,pod-template-hash=85cf8767cc
```

VERIFY THE DEPLOYMENT:

KUBECTL GET DEPLOYMENTS

KUBECTL GET PODS -L APP=NGINX-RECREATE

```
PS D:\Coding\ClassWork> kubectl get pods -l app=web
```

NAME	READY	STATUS	RESTARTS	AGE
nginx-deployment-recreate-85cf8767cc-92jbn	1/1	Running	0	48s
nginx-deployment-recreate-85cf8767cc-9sgp8	1/1	Running	0	48s
nginx-deployment-recreate-85cf8767cc-d4645	1/1	Running	0	48s
nginx-deployment-recreate-85cf8767cc-j48vf	1/1	Running	0	48s
nginx-deployment-recreate-85cf8767cc-j8x7t	1/1	Running	0	48s
nginx-deployment-recreate-85cf8767cc-kg5qp	1/1	Running	0	48s
nginx-deployment-recreate-85cf8767cc-nhlkm	1/1	Running	0	48s
nginx-deployment-recreate-85cf8767cc-pjqtt	1/1	Running	0	48s
nginx-deployment-recreate-85cf8767cc-t2mw7	1/1	Running	0	48s
nginx-deployment-recreate-85cf8767cc-xpbhz	1/1	Running	0	48s
nginx-deployment-rolling-8587c95656-2xqss	1/1	Running	0	3m24s
nginx-deployment-rolling-8587c95656-2z6g8	1/1	Running	0	3m44s
nginx-deployment-rolling-8587c95656-8rp6q	1/1	Running	0	3m45s
nginx-deployment-rolling-8587c95656-f5vcg	1/1	Running	0	3m45s
nginx-deployment-rolling-8587c95656-hpntg	1/1	Running	0	3m18s
nginx-deployment-rolling-8587c95656-nvmrg	1/1	Running	0	3m13s
nginx-deployment-rolling-8587c95656-q9xmn	1/1	Running	0	3m45s
nginx-deployment-rolling-8587c95656-rpt4t	1/1	Running	0	3m15s
nginx-deployment-rolling-8587c95656-swhk4	1/1	Running	0	3m45s
nginx-deployment-rolling-8587c95656-t7dqx	1/1	Running	0	3m45s

UPDATE THE DEPLOYMENT TO A NEW IMAGE:

```
PS D:\Coding\ClassWork> kubectl set image deployment/nginx-deployment-recreate nginx=nginx:1.21.1
deployment.apps/nginx-deployment-recreate image updated
```

MONITOR THE UPDATE:

KUBECTL ROLLOUT STATUS DEPLOYMENT NGINX-DEPLOYMENT-RECREATE

```
PS D:\Coding\ClassWork> kubectl rollout status deployment nginx-deployment-recreate
Waiting for deployment "nginx-deployment-recreate" rollout to finish: 1 of 10 updated replicas are available...
Waiting for deployment "nginx-deployment-recreate" rollout to finish: 2 of 10 updated replicas are available...
Waiting for deployment "nginx-deployment-recreate" rollout to finish: 3 of 10 updated replicas are available...
Waiting for deployment "nginx-deployment-recreate" rollout to finish: 4 of 10 updated replicas are available...
Waiting for deployment "nginx-deployment-recreate" rollout to finish: 5 of 10 updated replicas are available...
Waiting for deployment "nginx-deployment-recreate" rollout to finish: 6 of 10 updated replicas are available...
Waiting for deployment "nginx-deployment-recreate" rollout to finish: 7 of 10 updated replicas are available...
Waiting for deployment "nginx-deployment-recreate" rollout to finish: 8 of 10 updated replicas are available...
Waiting for deployment "nginx-deployment-recreate" rollout to finish: 9 of 10 updated replicas are available...
deployment "nginx-deployment-recreate" successfully rolled out
```

VERIFY THE UPDATED PODS:

KUBECTL GET PODS -L APP=NGINX-RECREATE -O WIDE

```
PS D:\Coding\ClassWork> kubectl get pods -l app=web -o wide
```

NAME	READY	STATUS	RESTARTS	AGE	IP	NODE	NOMINATED NODE	READINESS GATES
nginx-deployment-recreate-8755c7cc9-2f2t5	1/1	Running	0	80s	10.244.0.45	kind-control-plane	<none>	<none>
nginx-deployment-recreate-8755c7cc9-9dtwk	1/1	Running	0	80s	10.244.0.51	kind-control-plane	<none>	<none>
nginx-deployment-recreate-8755c7cc9-bzcc9	1/1	Running	0	80s	10.244.0.49	kind-control-plane	<none>	<none>
nginx-deployment-recreate-8755c7cc9-kpnp2	1/1	Running	0	80s	10.244.0.44	kind-control-plane	<none>	<none>
nginx-deployment-recreate-8755c7cc9-mzm14	1/1	Running	0	80s	10.244.0.47	kind-control-plane	<none>	<none>
nginx-deployment-recreate-8755c7cc9-n416c	1/1	Running	0	80s	10.244.0.46	kind-control-plane	<none>	<none>
nginx-deployment-recreate-8755c7cc9-txd24	1/1	Running	0	80s	10.244.0.43	kind-control-plane	<none>	<none>
nginx-deployment-recreate-8755c7cc9-x95vg	1/1	Running	0	80s	10.244.0.48	kind-control-plane	<none>	<none>
nginx-deployment-recreate-8755c7cc9-z8574	1/1	Running	0	80s	10.244.0.50	kind-control-plane	<none>	<none>
nginx-deployment-recreate-8755c7cc9-zcjhg	1/1	Running	0	80s	10.244.0.52	kind-control-plane	<none>	<none>
nginx-deployment-rolling-8587c95656-2xqss	1/1	Running	0	4m57s	10.244.0.29	kind-control-plane	<none>	<none>
nginx-deployment-rolling-8587c95656-2z6g8	1/1	Running	0	5m17s	10.244.0.27	kind-control-plane	<none>	<none>
nginx-deployment-rolling-8587c95656-8rp6q	1/1	Running	0	5m18s	10.244.0.26	kind-control-plane	<none>	<none>
nginx-deployment-rolling-8587c95656-f5vcg	1/1	Running	0	5m18s	10.244.0.28	kind-control-plane	<none>	<none>
nginx-deployment-rolling-8587c95656-hpntg	1/1	Running	0	4m51s	10.244.0.30	kind-control-plane	<none>	<none>
nginx-deployment-rolling-8587c95656-nvmrg	1/1	Running	0	4m46s	10.244.0.32	kind-control-plane	<none>	<none>
nginx-deployment-rolling-8587c95656-q9xmn	1/1	Running	0	5m18s	10.244.0.24	kind-control-plane	<none>	<none>
nginx-deployment-rolling-8587c95656-rpt4t	1/1	Running	0	4m48s	10.244.0.31	kind-control-plane	<none>	<none>
nginx-deployment-rolling-8587c95656-swhk4	1/1	Running	0	5m18s	10.244.0.23	kind-control-plane	<none>	<none>
nginx-deployment-rolling-8587c95656-t7dqx	1/1	Running	0	5m18s	10.244.0.25	kind-control-plane	<none>	<none>

STEP 3: CLEAN UP

DELETE THE DEPLOYMENTS:

```
KUBECTL DELETE DEPLOYMENT NGINX-DEPLOYMENT-ROLLING
```

```
KUBECTL DELETE DEPLOYMENT NGINX-DEPLOYMENT-RECREATE
```

```
PS D:\Coding\ClassWork> kubectl delete deployment nginx-deployment-rolling
deployment.apps "nginx-deployment-rolling" deleted from default namespace
PS D:\Coding\ClassWork> kubectl delete deployment nginx-deployment-recreate
deployment.apps "nginx-deployment-recreate" deleted from default namespace
```

VERIFY THAT ALL RESOURCES ARE CLEANED UP:

```
KUBECTL GET DEPLOYMENTS
```

```
KUBECTL GET PODS -L APP=NGINX
```

```
KUBECTL GET PODS -L APP=NGINX-RECREATE
```

```
PS D:\Coding\ClassWork> kubectl get pods -l app=web
```

NAME	READY	STATUS	RESTARTS	AGE
nginx-deployment-recreate-8755c7cc9-z8574	0/1	Completed	0	2m3s

```
PS D:\Coding\ClassWork> kubectl get pods -l app=web
```

NAME	READY	STATUS	RESTARTS	AGE
nginx-deployment-recreate-8755c7cc9-z8574	0/1	Completed	0	2m7s