WOJSKOWA AKADEMIA TECHNICZNA

**im. Jarosława Dąbrowskiego**

**WYDZIAŁ CYBERNETYKI**



STUDIA II°

Temat: **Sprawozdanie z realizacji ćwiczenia laboratoryjnego**

**INFORMATYKA**

…………………………………………………………………………

(kierunek studiów)

**INŻYNIERIA SYSTEMÓW**

…………………………………………………………………………

(specjalność)

|  |  |
| --- | --- |
| Wykonał: | Prowadzący: |
| **Radosław Relidzyński** | **mgr inż. Tomasz Gutowski** |

**Warszawa 2023**

1. Treść zadań
   1. Etap 1

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* 1. Etap 2

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* 1. Etap 3

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1. Rozwiązanie etapu I – zaliczone na zajęciach
   1. Kroki do wykonania:

1. Crear docker

docker system prune -a --volumes -f

2. Run register

docker run -d -p 5000:5000 --name registry registry:latest

3. Start minikube

minikube start

3. Create and apply pod

kubectl apply -f nginx-pod.yaml

4. Check pods

kubectl get pods

5. Create and apply service

kubectl apply -f nginx-service.yaml

6. Check services

kubectl get services

7. Check minikube ip

minikube ip

8. Add service label to pod

labels:

app: nginx

9. restart pod

kubectl delete pod nginx-pod

kubectl apply -f nginx-pod.yaml

10. Check service url

minikube service nginx-service --url

11. Open url

http://127.0.0.1:43665/

12. Create and apply deployment

kubectl apply -f nginx-deployment.yaml

* 1. Kod poda:

apiVersion: v1  
kind: Pod  
metadata:  
 name: nginx-pod  
 labels:  
 app: nginx  
spec:  
 containers:  
 - name: nginx  
 image: nginx:latest  
 ports:  
 - containerPort: 80

* 1. Kod serwisu:

apiVersion: v1  
kind: Service  
metadata:  
 name: nginx-service  
spec:  
 selector:  
 app: nginx  
 ports:  
 - protocol: TCP  
 port: 80  
 targetPort: 80  
 type: NodePort

* 1. Kod deploymentu

apiVersion: apps/v1  
kind: Deployment  
metadata:  
 name: nginx-deployment  
spec:  
 replicas: 3  
 selector:  
 matchLabels:  
 app: nginx  
 template:  
 metadata:  
 labels:  
 app: nginx  
 spec:  
 containers:  
 - name: nginx  
 image: nginx:latest  
 ports:  
 - containerPort: 80

1. Rozwiązanie etapu II
   1. Kod poda z Persistent Volume

apiVersion: v1  
kind: PersistentVolume  
metadata:  
 name: nginx-pv  
spec:  
 capacity:  
 storage: 1Gi  
 accessModes:  
 - ReadWriteOnce  
 persistentVolumeReclaimPolicy: Retain  
 hostPath:  
 path: "/mnt/data"  
---  
apiVersion: v1  
kind: PersistentVolumeClaim  
metadata:  
 name: nginx-pvc  
spec:  
 accessModes:  
 - ReadWriteOnce  
 resources:  
 requests:  
 storage: 1Gi  
---  
apiVersion: v1  
kind: Pod  
metadata:  
 name: nginx-pod  
 labels:  
 app: nginx  
spec:  
 containers:  
 - name: nginx  
 image: nginx:latest  
 ports:  
 - containerPort: 80  
 volumeMounts:  
 - mountPath: "/usr/share/nginx/html"  
 name: nginx-storage  
 volumes:  
 - name: nginx-storage  
 persistentVolumeClaim:  
 claimName: nginx-pvc

* 1. Prezentacja działania poda z Persistent Volume

radek@Radoslaw:/mnt/c/Users/radek/OneDrive - Wojskowa Akademia Techniczna/magister/sem2/ClC/ClC\_Lab5/ClC\_Lab5/no\_fastapi$ kubectl get pods

NAME READY STATUS RESTARTS AGE

nginx-pod 1/1 Running 0 55m

nginx-statefulset-1 1/1 Running 0 52m

nginx-statefulset-2 1/1 Running 0 52m

radek@Radoslaw:/mnt/c/Users/radek/OneDrive - Wojskowa Akademia Techniczna/magister/sem2/ClC/ClC\_Lab5/ClC\_Lab5/no\_fastapi$ kubectl get pv

NAME CAPACITY ACCESS MODES RECLAIM POLICY STATUS CLAIM STORAGECLASS VOLUMEATTRIBUTESCLASS REASON AGE

nginx-pv 1Gi RWO Retain Available <unset> 55m

pvc-87314ddf-3b16-452c-b3b5-a440bee09ecd 1Gi RWO Delete Bound default/nginx-storage-nginx-statefulset-0 standard <unset> 52m

pvc-b6dc0d79-beef-4d8a-83c1-023d9c3c34ea 1Gi RWO Delete Bound default/nginx-storage-nginx-statefulset-1 standard <unset> 52m

pvc-bc785e1d-c4db-4600-9b20-ea9a382da5fd 1Gi RWO Delete Bound default/nginx-pvc standard <unset> 55m

pvc-e68e0227-add1-487f-a362-a50d28f0884f 1Gi RWO Delete Bound default/nginx-storage-nginx-statefulset-2 standard <unset> 52m

radek@Radoslaw:/mnt/c/Users/radek/OneDrive - Wojskowa Akademia Techniczna/magister/sem2/ClC/ClC\_Lab5/ClC\_Lab5/no\_fastapi$

radek@Radoslaw:/mnt/c/Users/radek/OneDrive - Wojskowa Akademia Techniczna/magister/sem2/ClC/ClC\_Lab5/ClC\_Lab5/no\_fastapi$

radek@Radoslaw:/mnt/c/Users/radek/OneDrive - Wojskowa Akademia Techniczna/magister/sem2/ClC/ClC\_Lab5/ClC\_Lab5/no\_fastapi$

radek@Radoslaw:/mnt/c/Users/radek/OneDrive - Wojskowa Akademia Techniczna/magister/sem2/ClC/ClC\_Lab5/ClC\_Lab5/no\_fastapi$ kubectl get pv

NAME CAPACITY ACCESS MODES RECLAIM POLICY STATUS CLAIM STORAGECLASS VOLUMEATTRIBUTESCLASS REASON AGE

nginx-pv 1Gi RWO Retain Available <unset> 55m

pvc-87314ddf-3b16-452c-b3b5-a440bee09ecd 1Gi RWO Delete Bound default/nginx-storage-nginx-statefulset-0 standard <unset> 52m

pvc-b6dc0d79-beef-4d8a-83c1-023d9c3c34ea 1Gi RWO Delete Bound default/nginx-storage-nginx-statefulset-1 standard <unset> 52m

pvc-bc785e1d-c4db-4600-9b20-ea9a382da5fd 1Gi RWO Delete Bound default/nginx-pvc standard <unset> 55m

pvc-e68e0227-add1-487f-a362-a50d28f0884f 1Gi RWO Delete Bound default/nginx-storage-nginx-statefulset-2 standard <unset> 52m

radek@Radoslaw:/mnt/c/Users/radek/OneDrive - Wojskowa Akademia Techniczna/magister/sem2/ClC/ClC\_Lab5/ClC\_Lab5/no\_fastapi$ kubectl get pvc

NAME STATUS VOLUME CAPACITY ACCESS MODES STORAGECLASS VOLUMEATTRIBUTESCLASS AGE

nginx-pvc Bound pvc-bc785e1d-c4db-4600-9b20-ea9a382da5fd 1Gi RWO standard <unset> 55m

nginx-storage-nginx-statefulset-0 Bound pvc-87314ddf-3b16-452c-b3b5-a440bee09ecd 1Gi RWO standard <unset> 53m

nginx-storage-nginx-statefulset-1 Bound pvc-b6dc0d79-beef-4d8a-83c1-023d9c3c34ea 1Gi RWO standard <unset> 52m

nginx-storage-nginx-statefulset-2 Bound pvc-e68e0227-add1-487f-a362-a50d28f0884f 1Gi RWO standard <unset> 52m

***radek@Radoslaw:/mnt/c/Users/radek/OneDrive - Wojskowa Akademia Techniczna/magister/sem2/ClC/ClC\_Lab5/ClC\_Lab5/no\_fastapi$ kubectl exec -it nginx-pod -- /bin/sh***

***# df -h | grep /usr/share/nginx/html***

***# ls -lah /usr/share/nginx/html***

***total 8.0K***

***drwxrwxrwx 2 root root 4.0K Feb 4 20:31 .***

***drwxr-xr-x 3 root root 4.0K Feb 4 04:25 ..***

***# echo "Test Persistent Volume" > /usr/share/nginx/html/index.html***

***# exit***

***radek@Radoslaw:/mnt/c/Users/radek/OneDrive - Wojskowa Akademia Techniczna/magister/sem2/ClC/ClC\_Lab5/ClC\_Lab5/no\_fastapi$ kubectl port-forward pod/nginx-pod 8080:80***

***Forwarding from 127.0.0.1:8080 -> 80***

***Forwarding from [::1]:8080 -> 80***

***Handling connection for 8080***

A screenshot of a computer

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* 1. Kod deployment przekształconego w StatefulSet

apiVersion: apps/v1  
kind: StatefulSet  
metadata:  
 name: nginx-statefulset  
spec:  
 serviceName: "nginx"  
 replicas: 3  
 selector:  
 matchLabels:  
 app: nginx  
 template:  
 metadata:  
 labels:  
 app: nginx  
 spec:  
 containers:  
 - name: nginx  
 image: nginx:latest  
 ports:  
 - containerPort: 80  
 volumeMounts:  
 - name: nginx-storage  
 mountPath: /usr/share/nginx/html  
 volumeClaimTemplates:  
 - metadata:  
 name: nginx-storage  
 spec:  
 accessModes: [ "ReadWriteOnce" ]  
 resources:  
 requests:  
 storage: 1Gi  
---  
apiVersion: v1  
kind: PersistentVolume  
metadata:  
 name: nginx-pv  
spec:  
 capacity:  
 storage: 1Gi  
 accessModes:  
 - ReadWriteOnce  
 persistentVolumeReclaimPolicy: Retain  
 hostPath:  
 path: "/mnt/data"

* 1. Prezentacja działania StetfulSet

radek@Radoslaw:/mnt/c/Users/radek/OneDrive - Wojskowa Akademia Techniczna/magister/sem2/ClC/ClC\_Lab5/ClC\_Lab5/no\_fastapi$ kubectl apply -f nginx-statefulset.yaml

statefulset.apps/nginx-statefulset configured

persistentvolume/nginx-pv unchanged

radek@Radoslaw:/mnt/c/Users/radek/OneDrive - Wojskowa Akademia Techniczna/magister/sem2/ClC/ClC\_Lab5/ClC\_Lab5/no\_fastapi$ kubectl get statefulset

NAME READY AGE

nginx-statefulset 3/3 62m

radek@Radoslaw:/mnt/c/Users/radek/OneDrive - Wojskowa Akademia Techniczna/magister/sem2/ClC/ClC\_Lab5/ClC\_Lab5/no\_fastapi$ kubectl get pods -l app=nginx

NAME READY STATUS RESTARTS AGE

nginx-pod 1/1 Running 0 65m

nginx-statefulset-0 1/1 Running 0 62m

nginx-statefulset-1 1/1 Running 0 62m

nginx-statefulset-2 1/1 Running 0 62m

radek@Radoslaw:/mnt/c/Users/radek/OneDrive - Wojskowa Akademia Techniczna/magister/sem2/ClC/ClC\_Lab5/ClC\_Lab5/no\_fastapi$ kubectl get pv

kubectl get pvc

NAME CAPACITY ACCESS MODES RECLAIM POLICY STATUS CLAIM STORAGECLASS VOLUMEATTRIBUTESCLASS REASON AGE

nginx-pv 1Gi RWO Retain Available <unset>

65m

pvc-87314ddf-3b16-452c-b3b5-a440bee09ecd 1Gi RWO Delete Bound default/nginx-storage-nginx-statefulset-0 standard <unset>

62m

pvc-b6dc0d79-beef-4d8a-83c1-023d9c3c34ea 1Gi RWO Delete Bound default/nginx-storage-nginx-statefulset-1 standard <unset>

62m

pvc-bc785e1d-c4db-4600-9b20-ea9a382da5fd 1Gi RWO Delete Bound default/nginx-pvc standard <unset>

65m

pvc-e68e0227-add1-487f-a362-a50d28f0884f 1Gi RWO Delete Bound default/nginx-storage-nginx-statefulset-2 standard <unset>

62m

NAME STATUS VOLUME CAPACITY ACCESS MODES STORAGECLASS VOLUMEATTRIBUTESCLASS AGE

nginx-pvc Bound pvc-bc785e1d-c4db-4600-9b20-ea9a382da5fd 1Gi RWO standard <unset> 65m

nginx-storage-nginx-statefulset-0 Bound pvc-87314ddf-3b16-452c-b3b5-a440bee09ecd 1Gi RWO standard <unset> 62m

nginx-storage-nginx-statefulset-1 Bound pvc-b6dc0d79-beef-4d8a-83c1-023d9c3c34ea 1Gi RWO standard <unset> 62m

nginx-storage-nginx-statefulset-2 Bound pvc-e68e0227-add1-487f-a362-a50d28f0884f 1Gi RWO standard <unset> 62m

radek@Radoslaw:/mnt/c/Users/radek/OneDrive - Wojskowa Akademia Techniczna/magister/sem2/ClC/ClC\_Lab5/ClC\_Lab5/no\_fastapi$ kubectl exec -it nginx-statefulset-0 -- /bin/sh

# ls -l /usr/share/nginx/html

total 0

#

# exit

radek@Radoslaw:/mnt/c/Users/radek/OneDrive - Wojskowa Akademia Techniczna/magister/sem2/ClC/ClC\_Lab5/ClC\_Lab5/no\_fastapi$ kubectl logs nginx-statefulset-0

/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: Sourcing /docker-entrypoint.d/15-local-resolvers.envsh

/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

2025/02/04 20:34:21 [notice] 1#1: using the "epoll" event method

2025/02/04 20:34:21 [notice] 1#1: nginx/1.27.3

2025/02/04 20:34:21 [notice] 1#1: built by gcc 12.2.0 (Debian 12.2.0-14)

2025/02/04 20:34:21 [notice] 1#1: OS: Linux 5.15.167.4-microsoft-standard-WSL2

2025/02/04 20:34:21 [notice] 1#1: getrlimit(RLIMIT\_NOFILE): 1048576:1048576

2025/02/04 20:34:21 [notice] 1#1: start worker processes

2025/02/04 20:34:21 [notice] 1#1: start worker process 29

2025/02/04 20:34:21 [notice] 1#1: start worker process 30

2025/02/04 20:34:21 [notice] 1#1: start worker process 31

2025/02/04 20:34:21 [notice] 1#1: start worker process 32

2025/02/04 20:34:21 [notice] 1#1: start worker process 33

2025/02/04 20:34:21 [notice] 1#1: start worker process 34

2025/02/04 20:34:21 [notice] 1#1: start worker process 35

2025/02/04 20:34:21 [notice] 1#1: start worker process 36

radek@Radoslaw:/mnt/c/Users/radek/OneDrive - Wojskowa Akademia Techniczna/magister/sem2/ClC/ClC\_Lab5/ClC\_Lab5/no\_fastapi$