КИИИ домашна 6
Kubernetes

Install kubectl

```
C:\Users\Jony\Downloads>winget install -e --id Kubernetes.kubectl
```

```
C:\Users\Jony\Downloads>winget install -e --id Kubernetes.kubectl
The `msstore` source requires that you view the following agreements before using.
Terms of Transaction: https://aka.ms/microsoft-store-terms-of-transaction
The source requires the current machine's 2-letter geographic region to be sent to the
rly (ex. "US").

Do you agree to all the source agreements terms?
[Y] Yes  [N] No: y
Found kubectl [Kubernetes.kubectl] Version 1.26.3
This application is licensed to you by its owner.
Microsoft is not responsible for, nor does it grant any licenses to, third-party packa
Downloading https://dl.k8s.io/v1.26.3/bin/windows/amd64/kubectl.exe
                                    46.4 MB / 46.4 MB
Successfully verified installer hash
Starting package install...
Command line alias added: "kubectl"
Path environment variable modified; restart your shell to use the new value.
Successfully installed
```

```
C:\Users\Jony>kubectl
kubectl controls the Kubernetes cluster manager.

 Find more information at: https://kubernetes.io/docs/reference/kubectl/

Basic Commands (Beginner):
  create        Create a resource from a file or from stdin
  expose        Take a replication controller, service, deployment or pod and expose it as a new K
  run           Run a particular image on the cluster
  set           Set specific features on objects

Basic Commands (Intermediate):
  explain       Get documentation for a resource
  get           Display one or many resources
  edit          Edit a resource on the server
  delete        Delete resources by file names, stdin, resources and names, or by resources and la

Deploy Commands:
  rollout       Manage the rollout of a resource
  scale         Set a new size for a deployment, replica set, or replication controller
  autoscale     Auto-scale a deployment, replica set, stateful set, or replication controller

Cluster Management Commands:
  certificate   Modify certificate resources.
  cluster-info  Display cluster information
  top           Display resource (CPU/memory) usage
  cordon        Mark node as unschedulable
  uncordon      Mark node as schedulable
  drain         Drain node in preparation for maintenance
  taint         Update the taints on one or more nodes

Troubleshooting and Debugging Commands:
  describe      Show details of a specific resource or group of resources
  logs          Print the logs for a container in a pod
  attach        Attach to a running container
```

Install K8D

```
PS C:\WINDOWS\system32> choco install k3d
Chocolatey v1.3.1
Installing the following packages:
k3d
By installing, you accept licenses for the packages.
Progress: Downloading k3d 5.4.6... 100%

k3d v5.4.6 [Approved]
k3d package files install completed. Performing other installation steps.
 ShimGen has successfully created a shim for k3d.exe
 The install of k3d was successful.
  Software installed to 'C:\ProgramData\chocolatey\lib\k3d'

Chocolatey installed 1/1 packages.
 See the log for details (C:\ProgramData\chocolatey\logs\chocolatey.log).
PS C:\WINDOWS\system32>
```

```
PS C:\WINDOWS\system32> k3d
Usage:
  k3d [flags]
  k3d [command]

Available Commands:
  cluster      Manage cluster(s)
  completion   Generate completion scripts for [bash, zsh, fish, powershell | psh]
  config       Work with config file(s)
  help         Help about any command
  image        Handle container images.
  kubeconfig   Manage kubeconfig(s)
  node         Manage node(s)
  registry     Manage registry/registries
  version      Show k3d and default k3s version

Flags:
  -h, --help         help for k3d
      --timestamps   Enable Log timestamps
      --trace        Enable super verbose output (trace logging)
      --verbose      Enable verbose output (debug logging)
      --version      Show k3d and default k3s version

Use "k3d [command] --help" for more information about a command.
```

Spin up your first Kubernetes cluster

```
PS C:\WINDOWS\system32> k3d cluster create -a 5 -s 3 myFirstK8sCluster
INFO[0000] Prep: Network
INFO[0000] Created network 'k3d-myFirstK8sCluster'
INFO[0000] Created image volume k3d-myFirstK8sCluster-images
INFO[0000] Starting new tools node...
INFO[0000] Creating initializing server node
INFO[0000] Creating node 'k3d-myFirstK8sCluster-server-0'
INFO[0002] Pulling image 'ghcr.io/k3d-io/k3d-tools:5.4.6'
INFO[0003] Pulling image 'docker.io/rancher/k3s:v1.24.4-k3s1'
INFO[0005] Starting Node 'k3d-myFirstK8sCluster-tools'
INFO[0022] Creating node 'k3d-myFirstK8sCluster-server-1'
INFO[0024] Creating node 'k3d-myFirstK8sCluster-server-2'
INFO[0024] Creating node 'k3d-myFirstK8sCluster-agent-0'
INFO[0024] Creating node 'k3d-myFirstK8sCluster-agent-1'
INFO[0024] Creating node 'k3d-myFirstK8sCluster-agent-2'
INFO[0024] Creating node 'k3d-myFirstK8sCluster-agent-3'
INFO[0024] Creating node 'k3d-myFirstK8sCluster-agent-4'
INFO[0024] Creating LoadBalancer 'k3d-myFirstK8sCluster-serverlb'
INFO[0026] Pulling image 'ghcr.io/k3d-io/k3d-proxy:5.4.6'
INFO[0032] Using the k3d-tools node to gather environment information
INFO[0033] Starting new tools node...
INFO[0033] Starting Node 'k3d-myFirstK8sCluster-tools'
INFO[0036] Starting cluster 'myFirstK8sCluster'
INFO[0036] Starting the initializing server...
INFO[0036] Starting Node 'k3d-myFirstK8sCluster-server-0'
INFO[0039] Starting servers...
INFO[0039] Starting Node 'k3d-myFirstK8sCluster-server-1'
INFO[0064] Starting Node 'k3d-myFirstK8sCluster-server-2'
INFO[0078] Starting agents...
```

		NAME	IMAGE	STATUS	PORT(S)	STARTED	ACTIONS
☐		k3d-myFirstK8sCluster-server-0 97810ae68ecb	rancher/k3s:v1.24.4-k3s1	Running		2 minutes ago ■ ⋮	🗑
☐		k3d-myFirstK8sCluster-server-1 18e351f8f1fb	rancher/k3s:v1.24.4-k3s1	Running		2 minutes ago ■ ⋮	🗑
☐		k3d-myFirstK8sCluster-server-2 3d27ca7f0c3b	rancher/k3s:v1.24.4-k3s1	Running		2 minutes ago ■ ⋮	🗑
☐		k3d-myFirstK8sCluster-agent-0 74f992b48996	rancher/k3s:v1.24.4-k3s1	Running		2 minutes ago ■ ⋮	🗑
☐		k3d-myFirstK8sCluster-agent-1 c432304814a6	rancher/k3s:v1.24.4-k3s1	Running		2 minutes ago ■ ⋮	🗑
☐		k3d-myFirstK8sCluster-agent-2 734fe901ab07	rancher/k3s:v1.24.4-k3s1	Running		2 minutes ago ■ ⋮	🗑
☐		k3d-myFirstK8sCluster-agent-3 c91c6470b999	rancher/k3s:v1.24.4-k3s1	Running		2 minutes ago ■ ⋮	🗑
☐		k3d-myFirstK8sCluster-agent-4 672deff0eecd	rancher/k3s:v1.24.4-k3s1	Running		2 minutes ago ■ ⋮	🗑
☐		k3d-myFirstK8sCluster-serverlb 8f7196ec328c	ghcr.io/k3d-io/k3d-proxy:5.4.6	Running	56546:6443 ☑	1 minute ago ■ ⋮	🗑
☐		k3d-myFirstK8sCluster-tools 3baec8fc0225	ghcr.io/k3d-io/k3d-tools:5.4.6	Running		2 minutes ago ■ ⋮	🗑

Play a bit with kubectl

```
PS C:\WINDOWS\system32> k3d cluster list
NAME               SERVERS   AGENTS   LOADBALANCER
myFirstK8sCluster  3/3       5/5      true
PS C:\WINDOWS\system32>
```

```
PS C:\WINDOWS\system32> kubectl get nodes
NAME                             STATUS   ROLES                       AGE     VERSION
k3d-myfirstk8scluster-agent-0    Ready    <none>                      8m      v1.24.4+k3s1
k3d-myfirstk8scluster-agent-1    Ready    <none>                      7m56s   v1.24.4+k3s1
k3d-myfirstk8scluster-agent-2    Ready    <none>                      7m56s   v1.24.4+k3s1
k3d-myfirstk8scluster-agent-3    Ready    <none>                      7m57s   v1.24.4+k3s1
k3d-myfirstk8scluster-agent-4    Ready    <none>                      8m      v1.24.4+k3s1
k3d-myfirstk8scluster-server-0   Ready    control-plane,etcd,master   8m39s   v1.24.4+k3s1
k3d-myfirstk8scluster-server-1   Ready    control-plane,etcd,master   8m25s   v1.24.4+k3s1
k3d-myfirstk8scluster-server-2   Ready    control-plane,etcd,master   8m10s   v1.24.4+k3s1
PS C:\WINDOWS\system32>
```

```
PS C:\WINDOWS\system32> kubectl get pods
No resources found in default namespace.
PS C:\WINDOWS\system32>
```

```
PS C:\WINDOWS\system32> kubectl get pods --all-namespaces
NAMESPACE     NAME                                      READY   STATUS      RESTARTS        AGE
kube-system   coredns-b96499967-md9r6                   1/1     Running     0               9m24s
kube-system   helm-install-traefik-c9pxj                0/1     Completed   2               9m25s
kube-system   helm-install-traefik-crd-7d28w            0/1     Completed   0               9m25s
kube-system   local-path-provisioner-7b7dc8d6f5-bf4d5   1/1     Running     0               9m24s
kube-system   metrics-server-668d979685-fm8nm           1/1     Running     0               9m24s
kube-system   svclb-traefik-58c5a082-9ww2g              2/2     Running     0               8m24s
kube-system   svclb-traefik-58c5a082-czm6v              2/2     Running     1 (8m1s ago)    8m24s
kube-system   svclb-traefik-58c5a082-f6hdq              2/2     Running     1 (8m15s ago)   8m24s
kube-system   svclb-traefik-58c5a082-gqnjw              2/2     Running     1 (8m1s ago)    8m24s
kube-system   svclb-traefik-58c5a082-p2rv4              2/2     Running     1 (8m2s ago)    8m24s
kube-system   svclb-traefik-58c5a082-twxh9              2/2     Running     1 (8m1s ago)    8m24s
kube-system   svclb-traefik-58c5a082-x4ljl              2/2     Running     0               8m24s
kube-system   svclb-traefik-58c5a082-zbt2k              2/2     Running     0               8m24s
kube-system   traefik-7cd4fcff68-nz9rz                  1/1     Running     0               8m24s
PS C:\WINDOWS\system32>
```

Destroy your first Kubernetes cluster

```
PS C:\WINDOWS\system32> k3d cluster delete myFirstK8sCluster
INFO[0001] Deleting cluster 'myFirstK8sCluster'
INFO[0011] Deleting cluster network 'k3d-myFirstK8sCluster'
INFO[0012] Deleting 2 attached volumes...
WARN[0012] Failed to delete volume 'k3d-myFirstK8sCluster-images' of c
: Error: No such volume: k3d-myFirstK8sCluster-images -> Try to delete
INFO[0012] Removing cluster details from default kubeconfig...
INFO[0012] Removing standalone kubeconfig file (if there is one)...
INFO[0012] Successfully deleted cluster myFirstK8sCluster!
PS C:\WINDOWS\system32>
```

```
PS C:\WINDOWS\system32> k3d cluster list
NAME    SERVERS   AGENTS   LOADBALANCER
PS C:\WINDOWS\system32>
```