

Лабораторна робота №15

Тема: Локальна установка Kubernetes.

Мета: Оволодіти базовими навичками по роботі з Kubernetes.

Хід роботи:

Установка буде здійснюватись на ОС Windows.

1. Через консоль встановлюю Chocolatey:

```
Windows PowerShell
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Try the new cross-platform PowerShell https://aka.ms/pscore6

PS C:\WINDOWS\system32> Set-ExecutionPolicy Bypass -Scope Process -Force; [System.Net.ServicePointManager]::SecurityProtocol = [System.Net.ServicePointManager]::SecurityProtocol -bor 3072; iex ((New-Object System.Net.WebClient).DownloadString('https://community.chocolatey.org/install.ps1'))
Forcing web requests to allow TLS v1.2 (Required for requests to Chocolatey.org)
Getting latest version of the Chocolatey package for download.
Not using proxy.
Getting Chocolatey from https://community.chocolatey.org/api/v2/package/chocolatey/0.11.3.
Downloading https://community.chocolatey.org/api/v2/package/chocolatey/0.11.3 to C:\Users\Dima\AppData\Local\Temp\chocolatey\chocoInstall\chocolatey.zip
Not using proxy.
Extracting C:\Users\Dima\AppData\Local\Temp\chocolatey\chocoInstall\chocolatey.zip to C:\Users\Dima\AppData\Local\Temp\chocolatey\chocoInstall
Installing Chocolatey on the local machine
Creating ChocolateyInstall as an environment variable (targeting 'Machine')
  Setting ChocolateyInstall to 'C:\ProgramData\chocolatey'
WARNING: It's very likely you will need to close and reopen your shell
  before you can use choco.
Restricting write permissions to Administrators
We are setting up the Chocolatey package repository.
The packages themselves go to 'C:\ProgramData\chocolatey\lib'
  (i.e. C:\ProgramData\chocolatey\lib\yourPackageName).
A shim file for the command line goes to 'C:\ProgramData\chocolatey\bin'
  and points to an executable in 'C:\ProgramData\chocolatey\lib\yourPackageName'.

Creating Chocolatey folders if they do not already exist.

WARNING: You can safely ignore errors related to missing log files when
  upgrading from a version of Chocolatey less than 0.9.9.
  'Batch file could not be found' is also safe to ignore.
  'The system cannot find the file specified' - also safe.
chocolatey.nupkg file not installed in lib.
  Attempting to locate it from bootstrapper.
PATH environment variable does not have C:\ProgramData\chocolatey\bin in it. Adding...
WARNING: Not setting tab completion: Profile file does not exist at
'C:\Users\Dima\Documents\WindowsPowerShell\Microsoft.PowerShell_profile.ps1'.
Chocolatey (choco.exe) is now ready.
You can call choco from anywhere, command line or powershell by typing choco.
Run choco /? for a list of functions.
You may need to shut down and restart powershell and/or consoles
  first prior to using choco.
Ensuring Chocolatey commands are on the path
Ensuring chocolatey.nupkg is in the lib folder
PS C:\WINDOWS\system32> ■
```

2. Тепер встановлюю Minikube:

```
PS C:\WINDOWS\system32> choco install minikube
Chocolatey v0.11.3
Installing the following packages:
minikube
By installing, you accept licenses for the packages.
Progress: Downloading kubernetes-cli 1.23.0... 100%
Progress: Downloading Minikube 1.24.0... 100%

kubernetes-cli v1.23.0 [Approved]
kubernetes-cli package files install completed. Performing other installation steps.
The package kubernetes-cli wants to run 'chocolateyInstall.ps1'.
Note: If you don't run this script, the installation will fail.
Note: To confirm automatically next time, use '-y' or consider:
choco feature enable -n allowGlobalConfirmation
Do you want to run the script?([Y]es/[A]ll - yes to all/[N]o/[P]rint): y

Extracting 64-bit C:\ProgramData\chocolatey\lib\kubernetes-cli\tools\kubernetes-client-windows-amd64.tar.gz to C:\ProgramData\chocolatey\lib\kubernetes-cli\tools...
C:\ProgramData\chocolatey\lib\kubernetes-cli\tools
Extracting 64-bit C:\ProgramData\chocolatey\lib\kubernetes-cli\tools\kubernetes-client-windows-amd64.tar to C:\ProgramData\chocolatey\lib\kubernetes-cli\tools...
C:\ProgramData\chocolatey\lib\kubernetes-cli\tools
ShimGen has successfully created a shim for kubectl-convert.exe
ShimGen has successfully created a shim for kubectl.exe
The install of kubernetes-cli was successful.
Software installed to 'C:\ProgramData\chocolatey\lib\kubernetes-cli\tools'

Minikube v1.24.0 [Approved]
minikube package files install completed. Performing other installation steps.
ShimGen has successfully created a shim for minikube.exe
The install of minikube was successful.
Software install location not explicitly set, it could be in package or
default install location of installer.

Chocolatey installed 2/2 packages.
See the log for details (C:\ProgramData\chocolatey\logs\chocolatey.log).
```

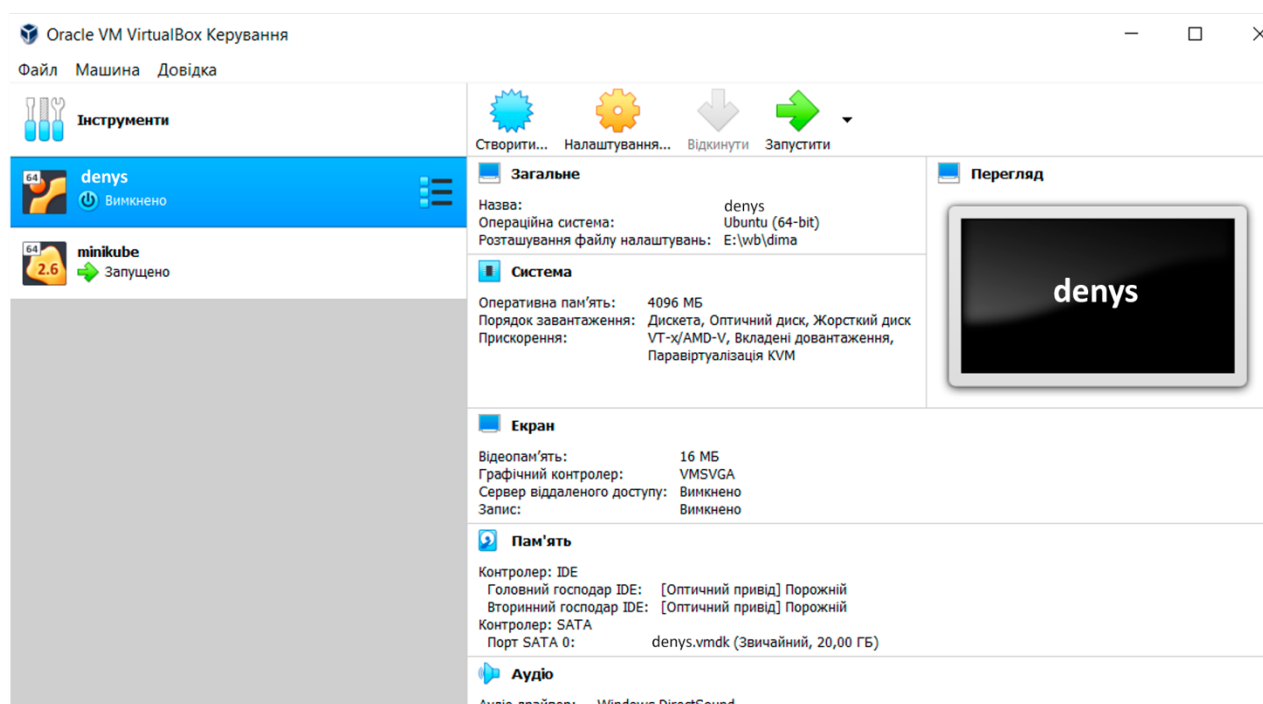
3. Визначаю версію програми Minikube:

```
PS C:\WINDOWS\system32> minikube version
minikube version: v1.24.0
commit: 76b94fb3c4e8ac5062daf70d60cf03ddcc0a741b
```

4. Запускаю Minikube:

```
PS C:\WINDOWS\system32> minikube start
* minikube v1.24.0 on Microsoft Windows 10 Pro 10.0.19043 Build 19043
* Automatically selected the virtualbox driver
* Downloading VM boot image ...
  > minikube-v1.24.0.iso.sha256: 65 B / 65 B [-----] 100.00% ? p/s 0s
  > minikube-v1.24.0.iso: 225.58 MiB / 225.58 MiB [ ] 100.00% 6.19 MiB p/s 37s
* Starting control plane node minikube in cluster minikube
* Downloading Kubernetes v1.22.3 preload ...
  > preloaded-images-k8s-v13-v1...: 501.73 MiB / 501.73 MiB 100.00% 5.94 MiB
* Creating virtualbox VM (CPUs=2, Memory=4000MB, Disk=20000MB) ...
! This VM is having trouble accessing https://k8s.gcr.io
* To pull new external images, you may need to configure a proxy: https://minikube.sigs.k8s.io/docs/reference/networking/proxy/
* Preparing Kubernetes v1.22.3 on Docker 20.10.8 ...
  - Generating certificates and keys ...
  - Booting up control plane ...
  - Configuring RBAC rules ...
  - Using image gcr.io/k8s-minikube/storage-provisioner:v5
* Enabled addons: storage-provisioner, default-storageclass
* Verifying Kubernetes components...
* Done! kubectl is now configured to use "minikube" cluster and "default" namespace by default
```

5. Можна побачити, що у VirtualBox появиться віртуальна машина з назвою «minikube»:



6. Через консоль перевіряю стан, це необхідно, для того, щоб знати чи `chikubestl` був правильно налаштований і готовий до роботи:

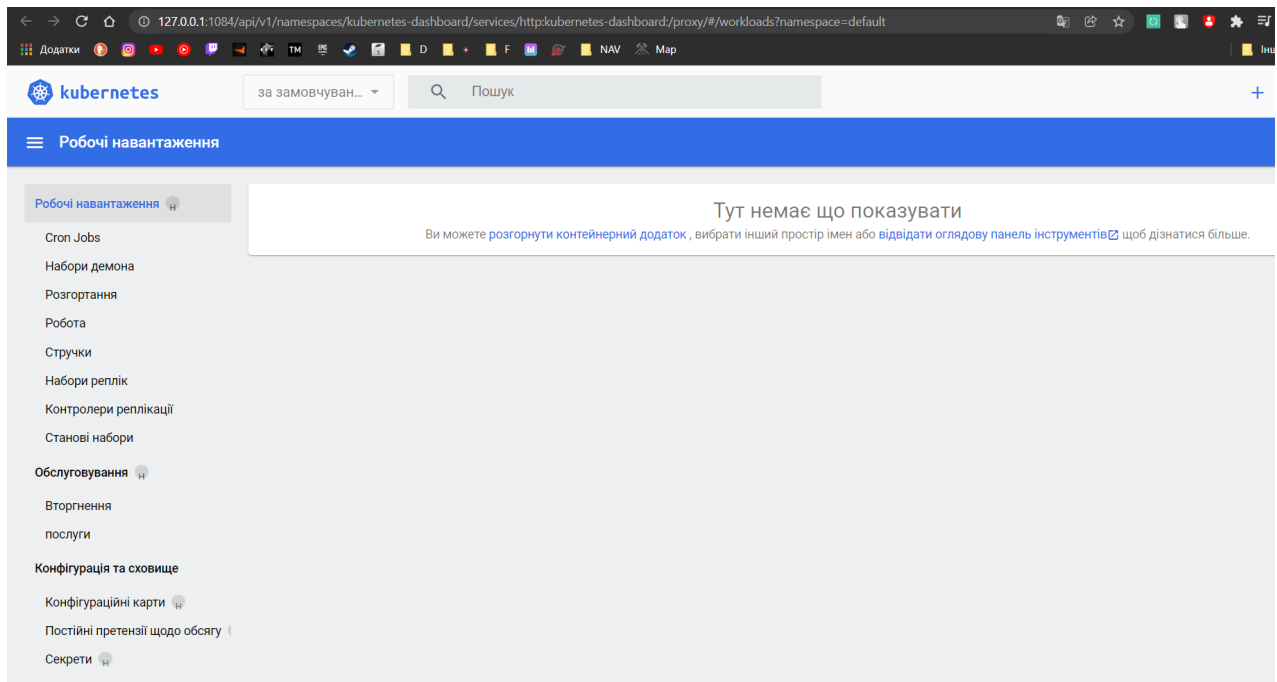
7. Далі, необхідно оптимізувати робочий процес:

8. Реєструюсь у віртуальній машині, як користувач Docker:

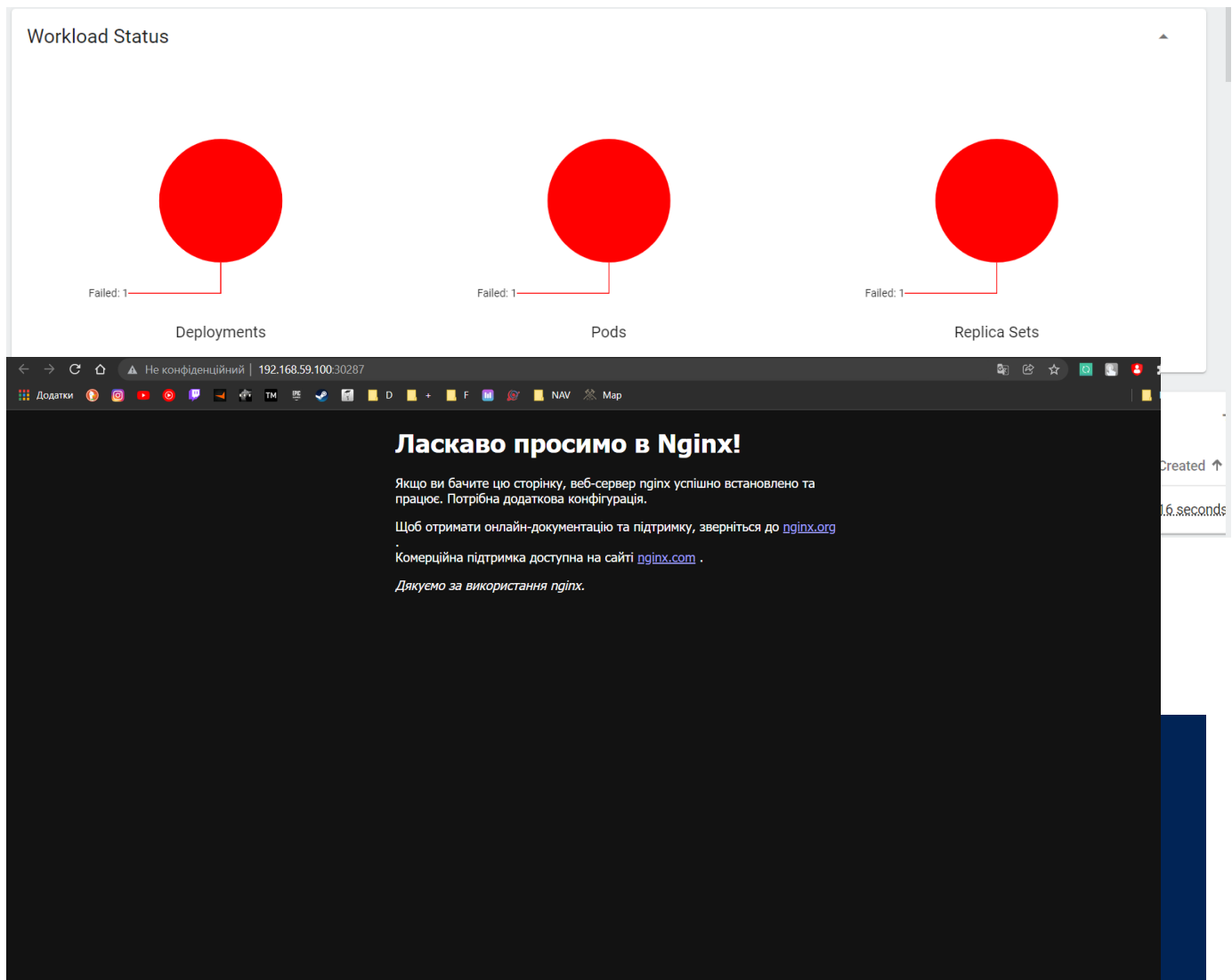
[illegible]

```
PS C:\WINDOWS\system32> minikube status
minikube
type: Control Plane
host: Running
kubelet: Running
apiserver: Running
kubeconfig: Configured
```

9. Відкривається такий сайт:



10. Тут натискаю на плюсик справа вгорі і переходжу на вкладку «create from form», де зазначаю необхідні дані і натискаю кнопку «deploy»:



13. Запускаю наш додаток.

Тепер відкриваю додаток у браузері.

Можна переглянути дані про додаток.

```
PS C:\WINDOWS\system32> kubectl apply -f cli-hello-world-storage.yml
service/cli-hello-world-storage created
deployment.apps/cli-hello-world-storage created
PS C:\WINDOWS\system32> minikube service cli-hello-world-storage
|-----|-----|-----|-----|
| NAMESPACE | NAME | TARGET PORT | URL |
|-----|-----|-----|-----|
| default | cli-hello-world-storage | 8000 | http://192.168.59.100:31255 |
|-----|-----|-----|-----|
* Opening service default/cli-hello-world-storage in default browser...
```

