

## Chap4 : Docker sous Windows

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## 1 – Installation / Activation de WSL :

- J'installe WSL :

```
PS C:\Users\yezzamouri> wsl.exe --install
Téléchargement en cours : Sous-système Windows pour Linux 2.6.3
Installation en cours : Sous-système Windows pour Linux 2.6.3
Sous-système Windows pour Linux 2.6.3 a été installé.
Installation du composant facultatif Windows : VirtualMachinePlatform

Outil Gestion et maintenance des images de déploiement
Version : 10.0.26100.5074

Version de l'image : 10.0.26200.7462

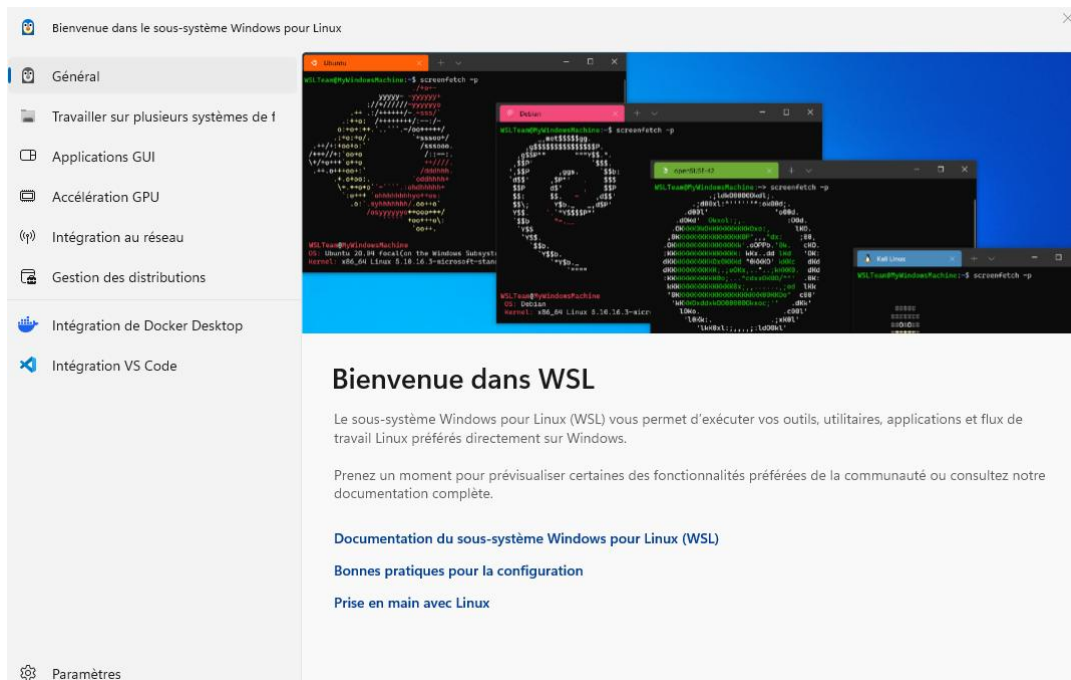
Activation de la ou des fonctionnalités
[=====100.0%=====]
L'opération a réussi.
```

- J'affiche la liste des distributions qui peuvent être installés :

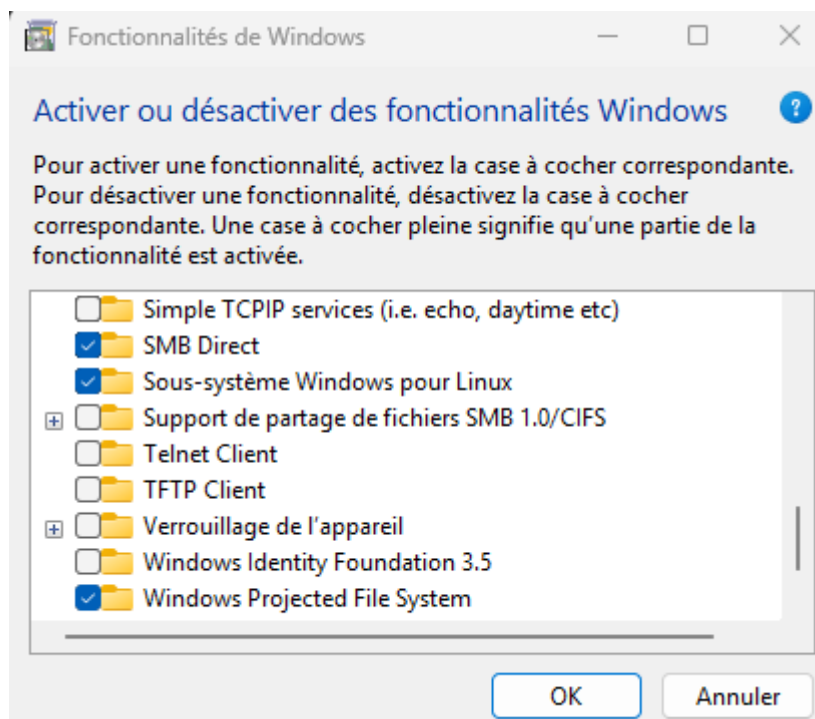
```
PS C:\Users\yezzamouri> wsl.exe --list --online
Voici la liste des distributions valides qui peuvent être installées.
Installez à l'aide de 'wsl.exe --install <Distro>'.

NAME                                FRIENDLY NAME
-----
Ubuntu                               Ubuntu
Ubuntu-24.04                         Ubuntu 24.04 LTS
openSUSE-Tumbleweed                 openSUSE Tumbleweed
openSUSE-Leap-16.0                  openSUSE Leap 16.0
SUSE-Linux-Enterprise-15-SP7       SUSE Linux Enterprise 15 SP7
SUSE-Linux-Enterprise-16.0        SUSE Linux Enterprise 16.0
kali-linux                          Kali Linux Rolling
Debian                              Debian GNU/Linux
AlmaLinux-8                         AlmaLinux OS 8
AlmaLinux-9                         AlmaLinux OS 9
AlmaLinux-Kitten-10                AlmaLinux OS Kitten 10
AlmaLinux-10                       AlmaLinux OS 10
archlinux                           Arch Linux
FedoraLinux-43                     Fedora Linux 43
FedoraLinux-42                     Fedora Linux 42
eLxR                                eLxR 12.12.0.0 GNU/Linux
Ubuntu-20.04                       Ubuntu 20.04 LTS
Ubuntu-22.04                       Ubuntu 22.04 LTS
OracleLinux_7_9                    Oracle Linux 7.9
OracleLinux_8_10                   Oracle Linux 8.10
OracleLinux_9_5                    Oracle Linux 9.5
openSUSE-Leap-15.6                 openSUSE Leap 15.6
SUSE-Linux-Enterprise-15-SP6       SUSE Linux Enterprise 15 SP6
PS C:\Users\yezzamouri>
```

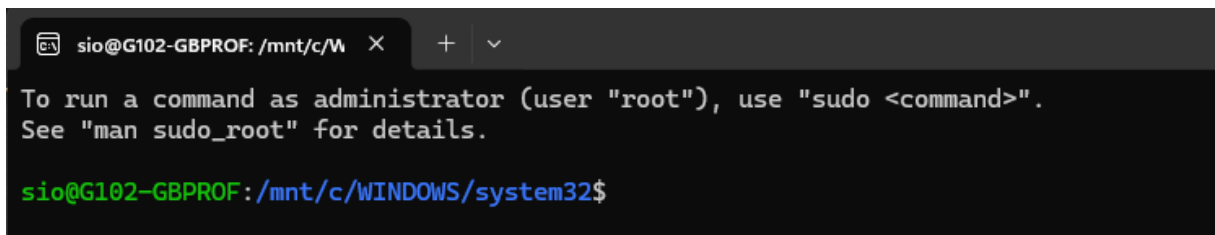
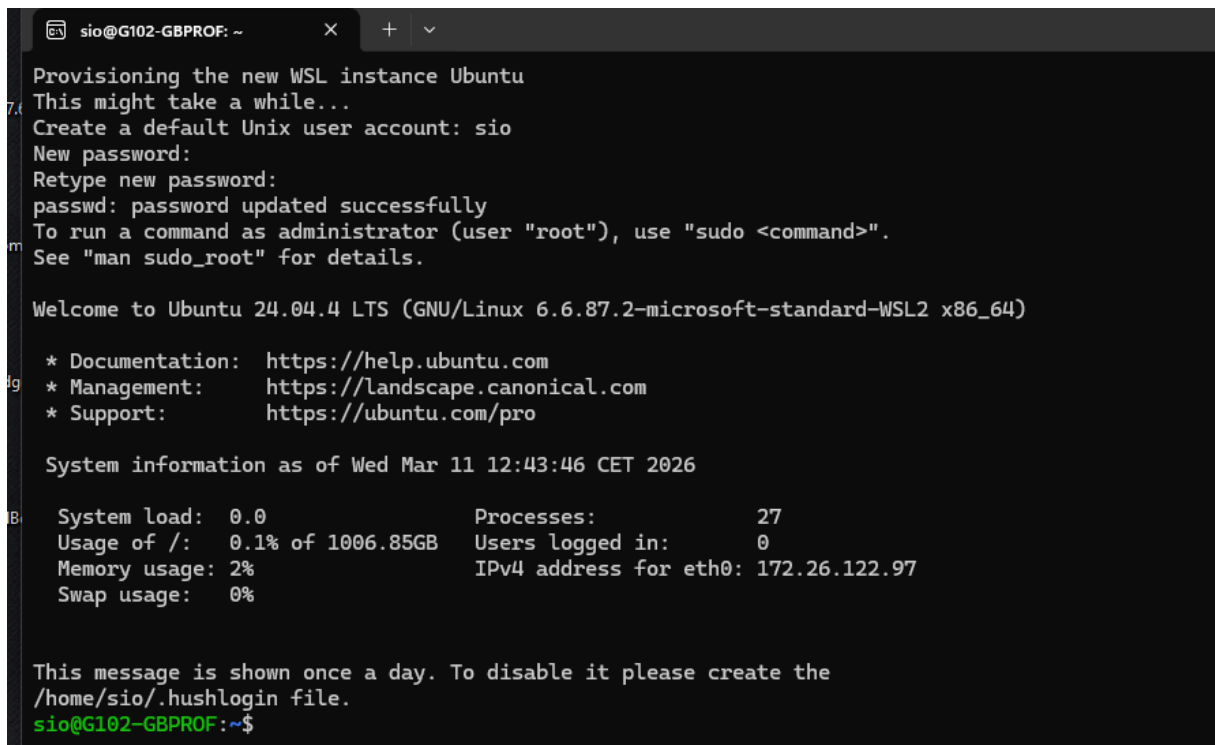
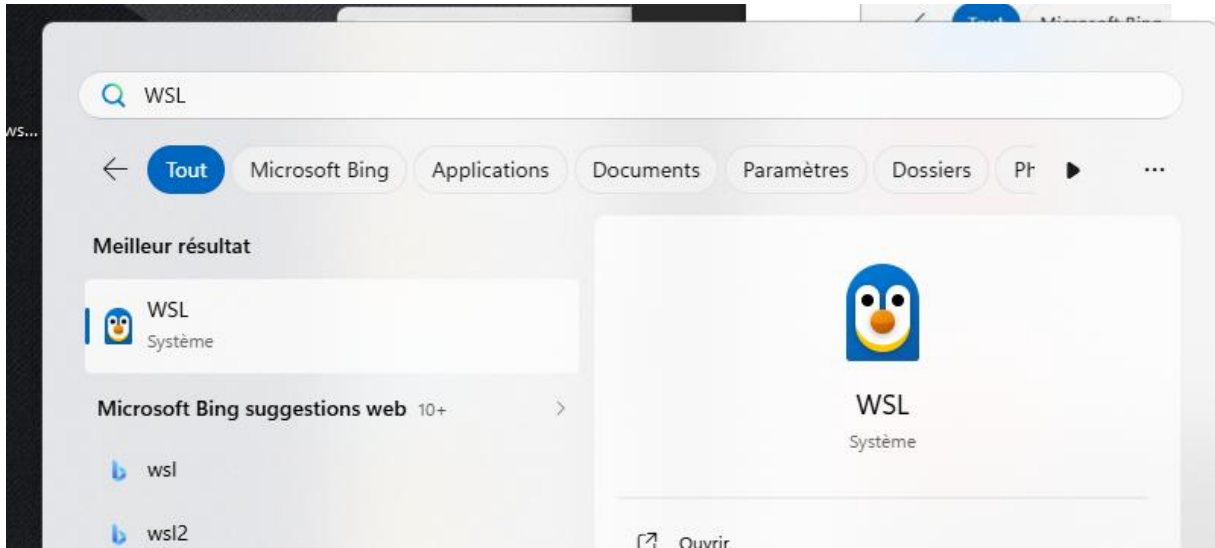
- WSL à bien été installé :



- J'ajoute la fonctionnalité, sous-système Windows pour linux :

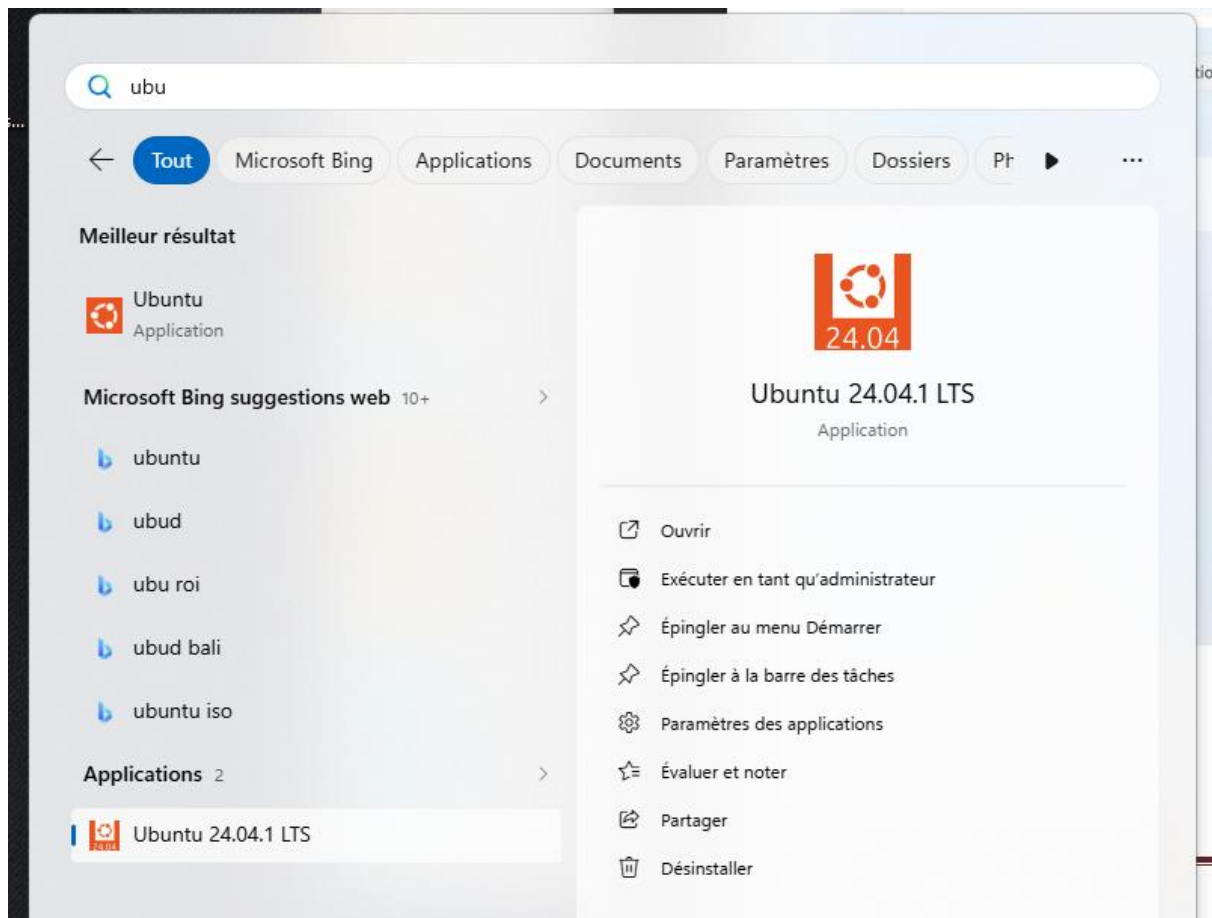
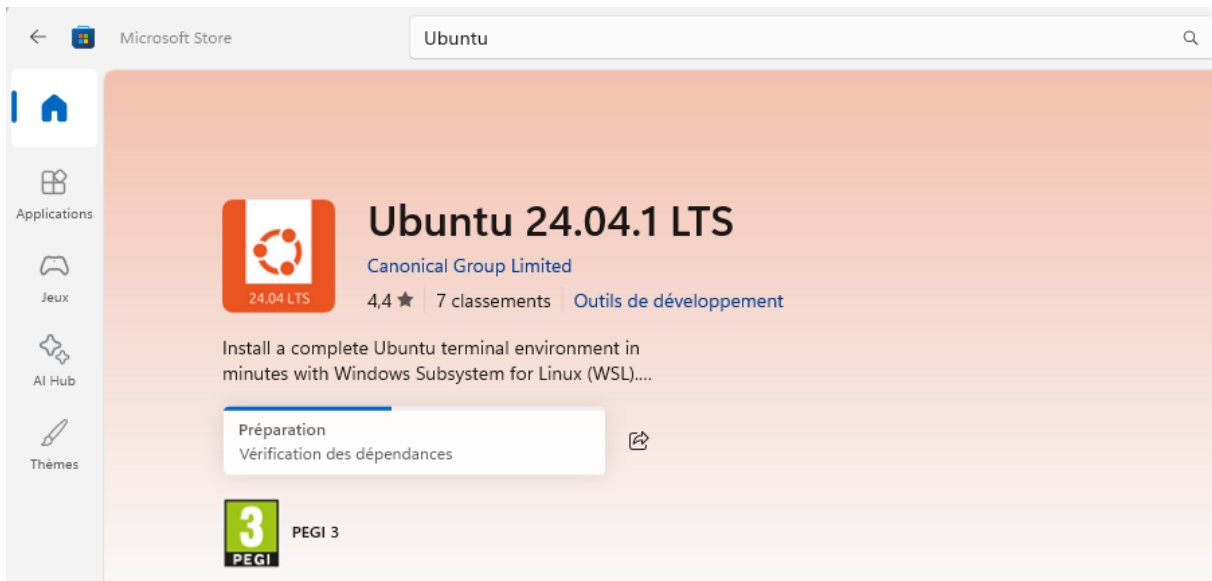


- Je lance WSL :



## 2 – Installation Ubuntu :

- J'installe Ubuntu :



- Je suis sur le système Ubuntu :

```
sio@G102-GBPROF: /
Installing, this may take a few minutes...
Please create a default UNIX user account. The username does not need to match your Windows username.
For more information visit: https://aka.ms/wslusers
Enter new UNIX username: sio
New password:
Retype new password:
passwd: password updated successfully
Installation successful!
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

sio@G102-GBPROF:~$ ls
sio@G102-GBPROF:~$ pwd
/home/sio
sio@G102-GBPROF:~$ cd /
sio@G102-GBPROF:/$ ls
bin          boot  etc   init  lib.usr-is-merged  lost+found  mnt  proc  run  sbin.usr-is-merged  srv  tmp  var
bin.usr-is-merged  dev  home  lib  lib64              media        opt  root  sbin  snap                sys  usr
```

- Terminal Windows :

```
sio@G102-GBPROF: /
Windows PowerShell
Copyright (C) Microsoft Corporation. Tous droits réservés.


Installez la dernière version de PowerShell pour de nouvelles fonctionnalités et améliorations ! https://aka.ms/PSWindows
PS C:\Users\yezzamouri> wsl -d Ubuntu-24.04
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

sio@G102-GBPROF:/mnt/c/Users/yezzamouri$ exit
logout
PS C:\Users\yezzamouri>
```

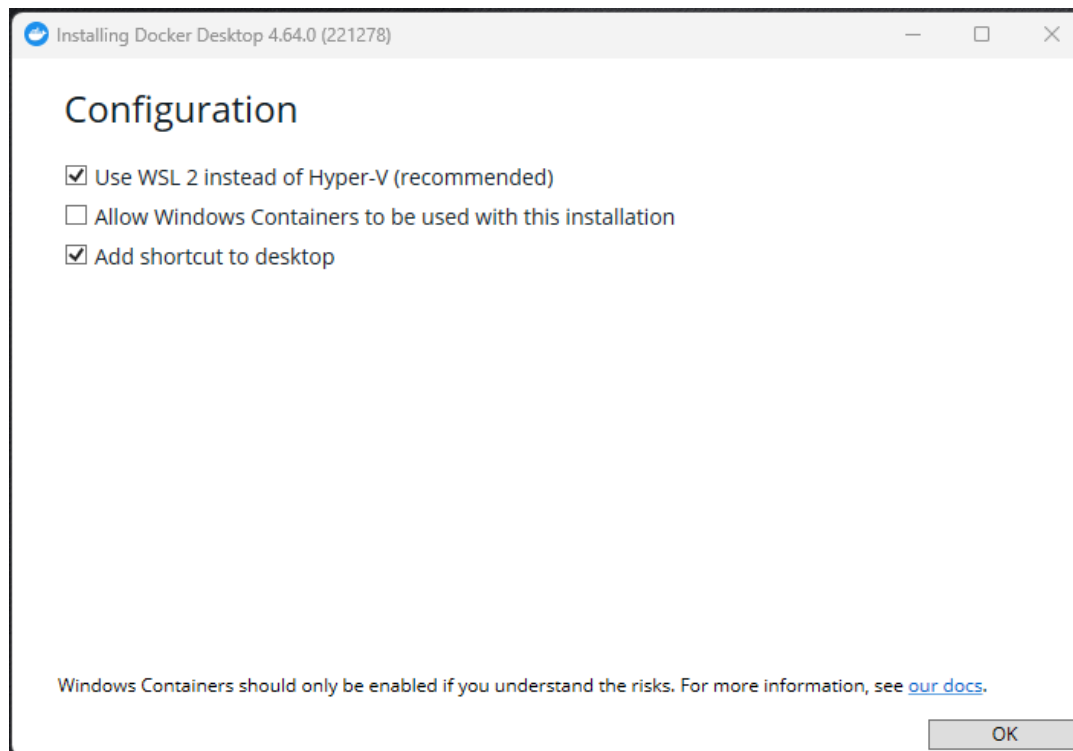
### 3 – Installation Docker :

- Je télécharge Docker Desktop :

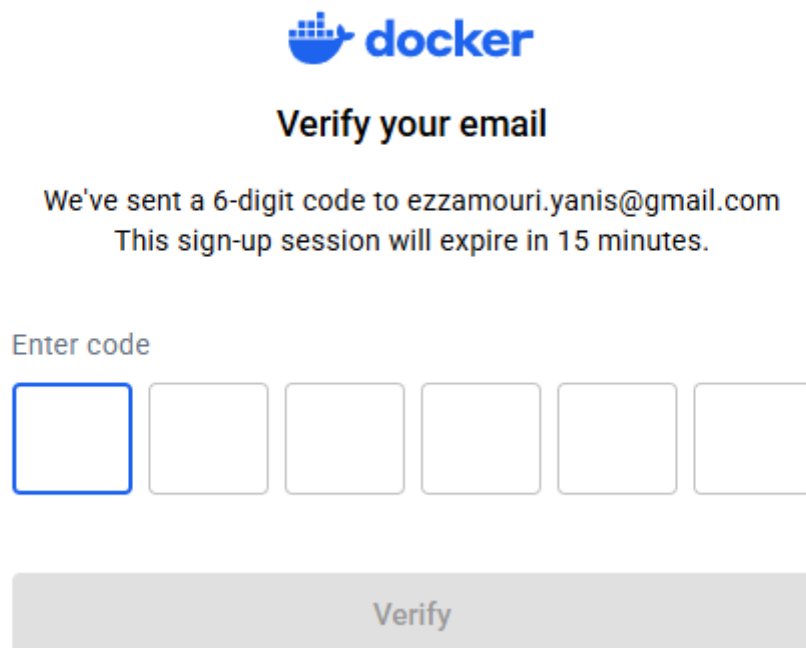
▼ Aujourd'hui

 Docker Desktop Installer	11/03/2026 13:39	Application	609 236 Ko
--	------------------	-------------	------------

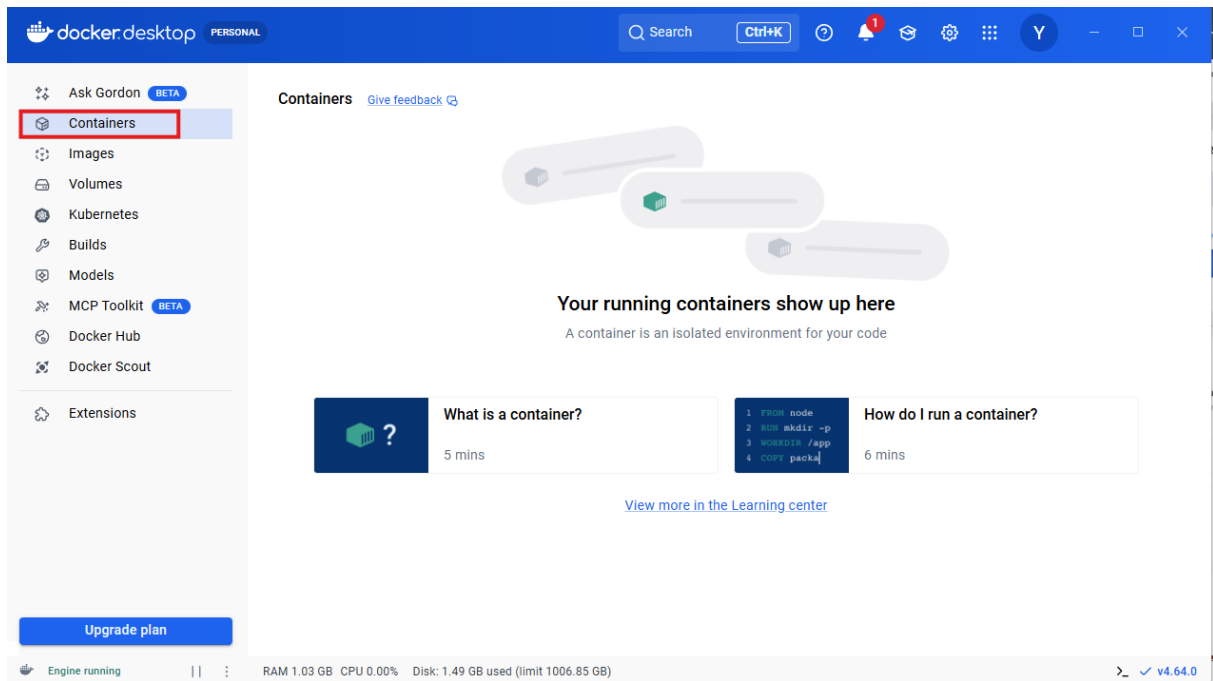
- Je continue l'installation :



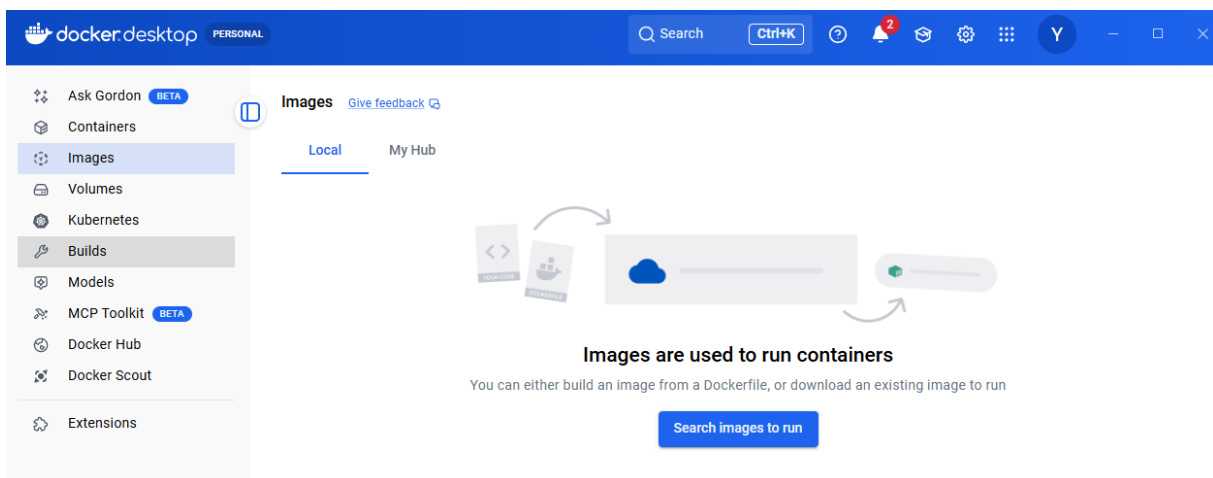
- Je crée un compte :



- Page containers :

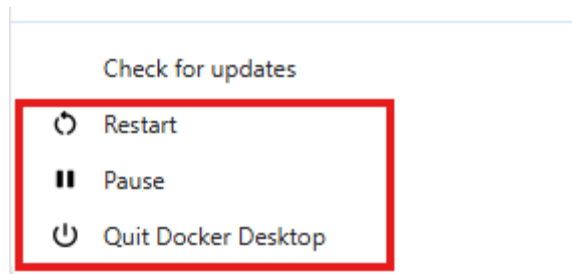


- Page images :



- Docker est bien lancé :





## 4 – Premier test :

- Je regarde la version de docker :

```
sio@G102-GBPROF: ~  
To run a command as administrator (user "root"), use "sudo <command>".  
See "man sudo_root" for details.  
  
sio@G102-GBPROF:~$ docker --version  
  
The command 'docker' could not be found in this WSL 2 distro.  
We recommend to activate the WSL integration in Docker Desktop settings.  
  
For details about using Docker Desktop with WSL 2, visit:  
https://docs.docker.com/go/wsl2/  
  
sio@G102-GBPROF:~$
```

- De même dans le terminal :

```
sio@G102-GBPROF: ~ Windows PowerShell  
Windows PowerShell  
Copyright (C) Microsoft Corporation. Tous droits réservés.  
  
Installez la dernière version de PowerShell pour de nouvelles fonctionnalités et améliorations ! https://aka.ms/PSWindows  
s  
  
PS C:\Users\yezzamouri> docker --version  
Docker version 29.2.1, build a5c7197  
PS C:\Users\yezzamouri>
```

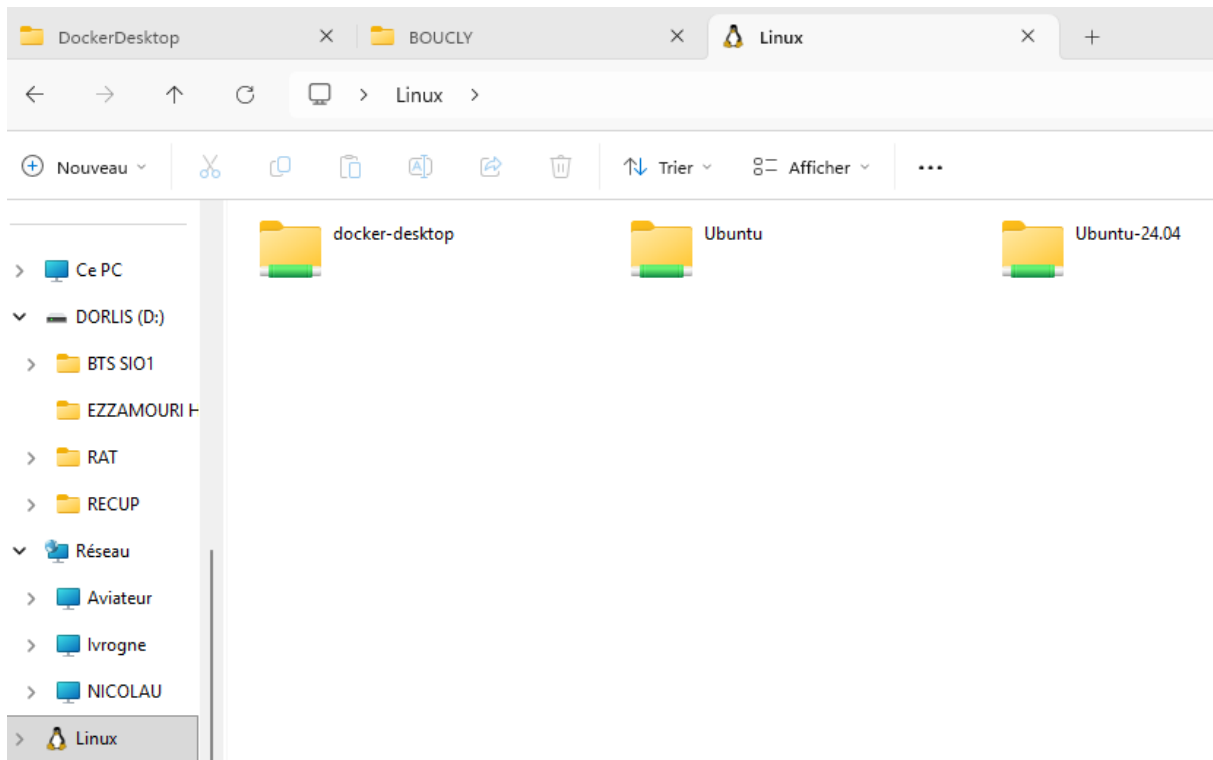
```
C:\Users\yezzamouri>docker version
Client:
Version:      29.2.1
API version:  1.53
Go version:   go1.25.6
Git commit:   a5c7197
Built:        Mon Feb  2 17:20:16 2026
OS/Arch:      windows/amd64
Context:      desktop-linux

Server: Docker Desktop 4.64.0 (221278)
Engine:
Version:      29.2.1
API version:  1.53 (minimum version 1.44)
Go version:   go1.25.6
Git commit:   6bc6209
Built:        Mon Feb  2 17:17:24 2026
OS/Arch:      linux/amd64
Experimental: false
containerd:
Version:      v2.2.1
GitCommit:    dea7da592f5d1d2b7755e3a161be07f43fad8f75
runc:
Version:      1.3.4
GitCommit:    v1.3.4-0-gd6d73eb8
docker-init:
Version:      0.19.0
```

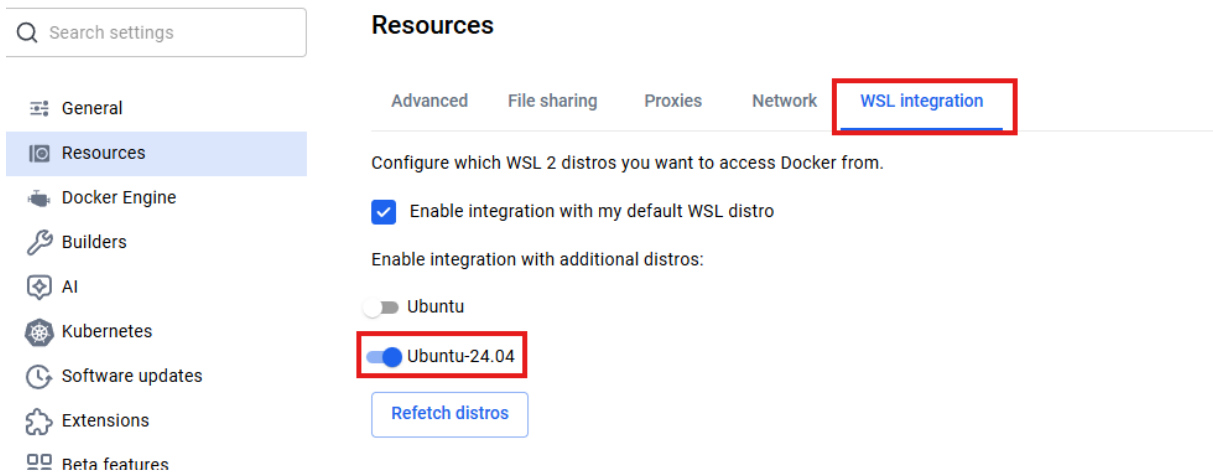
- J'affiche ce qui tourne sur wsl :

```
PS C:\Users\yezzamouri> wsl -l -v
  NAME                STATE      VERSION
* Ubuntu              Running    2
  Ubuntu-24.04        Running    2
  docker-desktop      Running    2
PS C:\Users\yezzamouri> wsl -l
Distributions du Sous-système Windows pour Linux :
Ubuntu (par défaut)
Ubuntu-24.04
docker-desktop
PS C:\Users\yezzamouri> |
```

- Système de fichier linux :



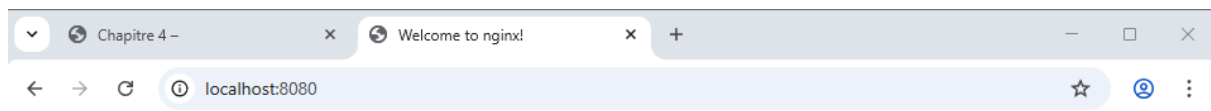
- J'active la distribution Ubuntu 24.04 :



## 5 – Deuxième test :

```
sio@G102-GBPROF:~$ docker run --name nginx -p 8080:80 nginx
Unable to find image 'nginx:latest' locally
latest: Pulling from library/nginx
9eef040df109: Pull complete
a9d395129dce: Pull complete
df9da45c1db2: Pull complete
18a071c04bd1: Pull complete
75a1d70aee50: Pull complete
206356c42440: Pull complete
79697674b897: Pull complete
d99947bc9177: Download complete
23abb0f9ce55: Download complete
Digest: sha256:bc45d248c4e1d1709321de61566eb2b64d4f0e32765239d66573666be7f13349
Status: Downloaded newer image for nginx:latest
/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
2026/03/11 13:38:13 [notice] 1#1: using the "epoll" event method
2026/03/11 13:38:13 [notice] 1#1: nginx/1.29.6
```

- Docker télécharge dans un premier temps l'image nginx. Il crée ensuite une instance de cette image qui est le conteneur



### Welcome to nginx!

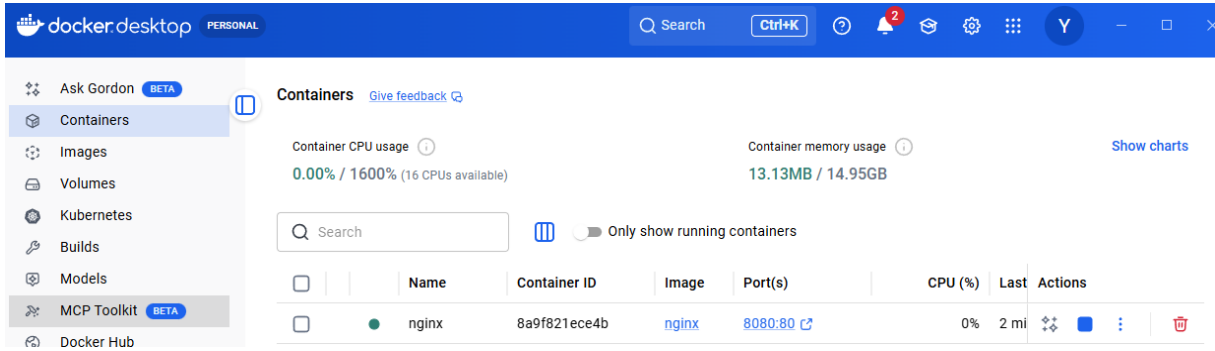
If you see this page, nginx is successfully installed and working. Further configuration is required for the web server, reverse proxy, API gateway, load balancer, content cache, or other features.

For online documentation and support please refer to [nginx.org](https://nginx.org).

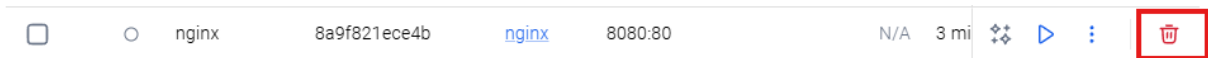
To engage with the community please visit [community.nginx.org](https://community.nginx.org).

For enterprise grade support, professional services, additional security features and capabilities please refer to [f5.com/nginx](https://f5.com/nginx).

*Thank you for using nginx.*

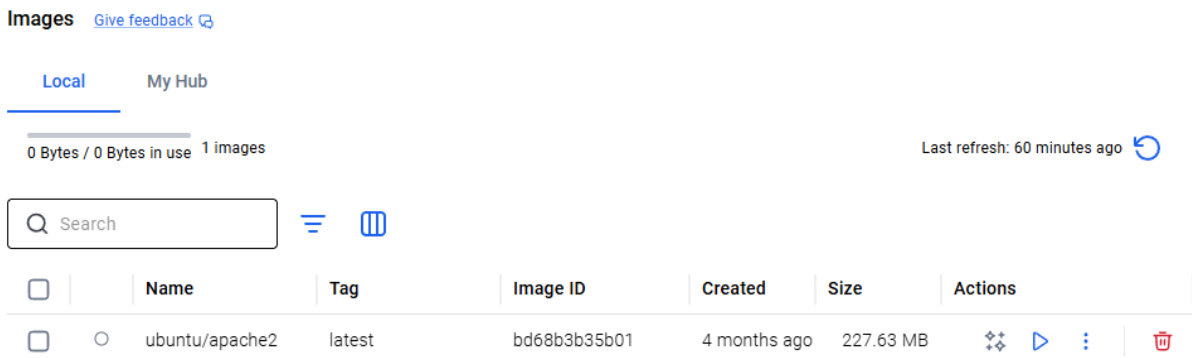
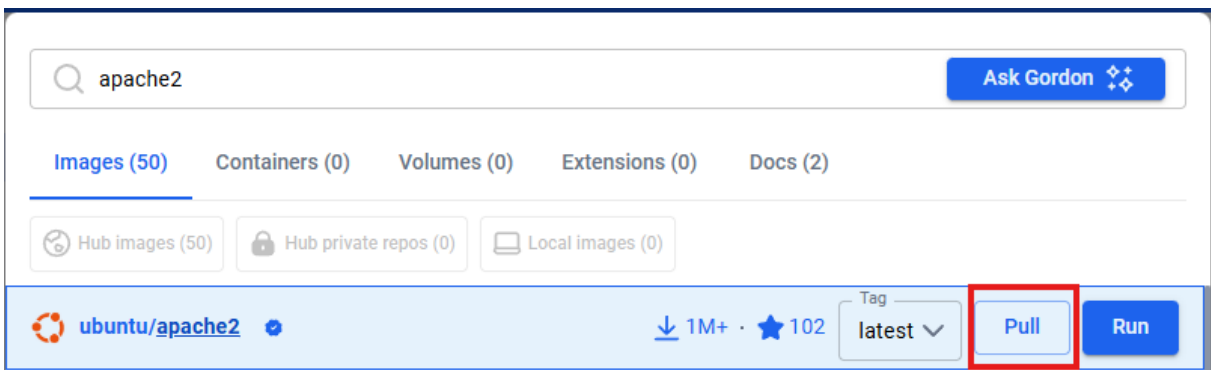


- Action container : stop



## 6 – Troisième test :

- Je pull l'image de apache2 :



- Je lance l'image :

[Images](#) / [ubuntu/apache2:latest](#)

**ubuntu/apache2:latest**  
bd68b3b35b01

CREATED 4 months ago    SIZE 227.63 MB

Recommended fixes ▾

**Run** ▾

Analyzed by docker:scout

Layers (12)    Vulnerabilities    Packages    [Give feedback](#)

### Run a new container

ubuntu/apache2:latest

**Optional settings** ^

Container name

A random name is generated if you do not provide one.

**Ports**

Enter "0" to assign randomly generated host ports.

Host port  :80/tcp

**Volumes**

Host path  ...    Container path  +

**Environment variables**

Variable     Value  +

- Un conteneur à bien été créé :

Containers / apache2-container

### apache2-container

557cc83a7802 ubuntu/apache2:latest 8080:80

STATUS Running (1 second ago)

Logs Inspect Bind mounts Exec Files Stats

```
AH00558: apache2: Could not reliably determine the server's fully qualified domain name, using 172.17.0.2. Set the 'ServerName' directive globally to suppress this message
AH00558: apache2: Could not reliably determine the server's fully qualified domain name, using 172.17.0.2. Set the 'ServerName' directive globally to suppress this message
[Wed Mar 11 13:46:26.751151 2026] [mpm_event:notice] [pid 23:tid 23] AH00489: Apache/2.4.63 (Ubuntu) configured -- resuming normal operations
[Wed Mar 11 13:46:26.752137 2026] [core:notice] [pid 23:tid 23] AH00094: Command line: '/usr/sbin/apache2 -D FOREGROUND'
```

Containers / apache2-container

### apache2-container

557cc83a7802 ubuntu/apache2:latest 8080:80

STATUS Running (58 seconds ago)

Logs Inspect Bind mounts Exec Files Stats

```
# pwd
/
# cd /etc/apache2
# ls
apache2.conf  conf-enabled  magic          mods-enabled  sites-available
conf-available envvars       mods-available ports.conf    sites-enabled
# cd /var/www/html
# ls
index.html
#
```

Containers / apache2-container

### apache2-container

557cc83a7802 ubuntu/apache2:latest 8080:80

STATUS Running (2 minutes ago)

Logs Inspect Bind mounts Exec Files Stats

CPU usage: 0%

Memory usage: 9.66MB / 15.31GB

Disk read/write: 7.4MB / 4.1KB

Network I/O: 1.17KB / 126B

Container CPU usage   
 0.01% / 1600% (16 CPUs available)

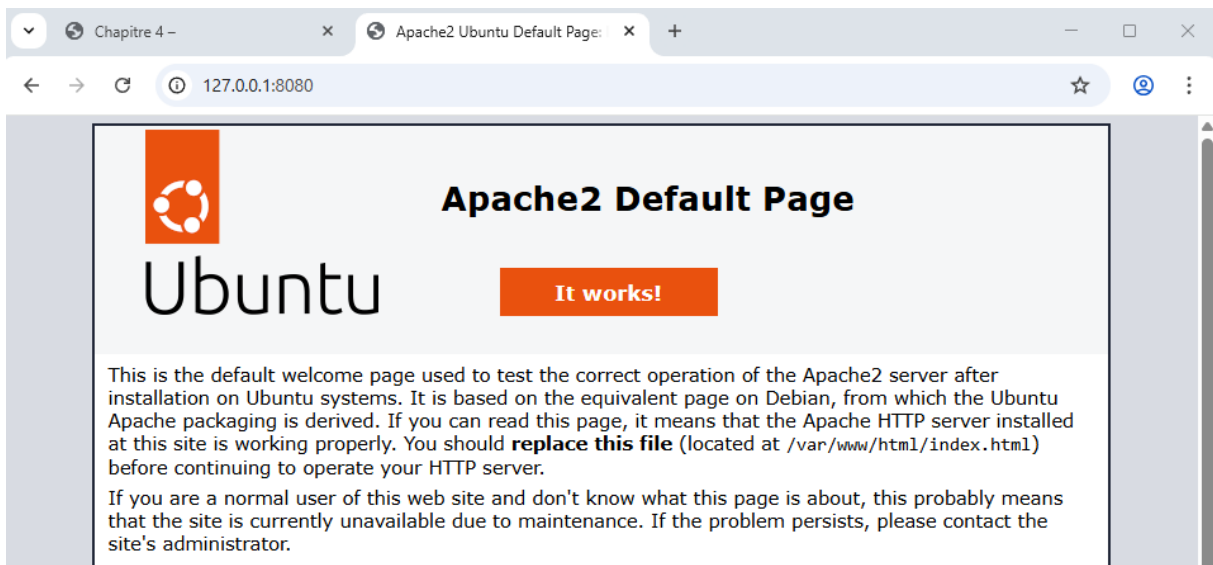
Container memory usage   
 9.66MB / 14.95GB

[Show charts](#)

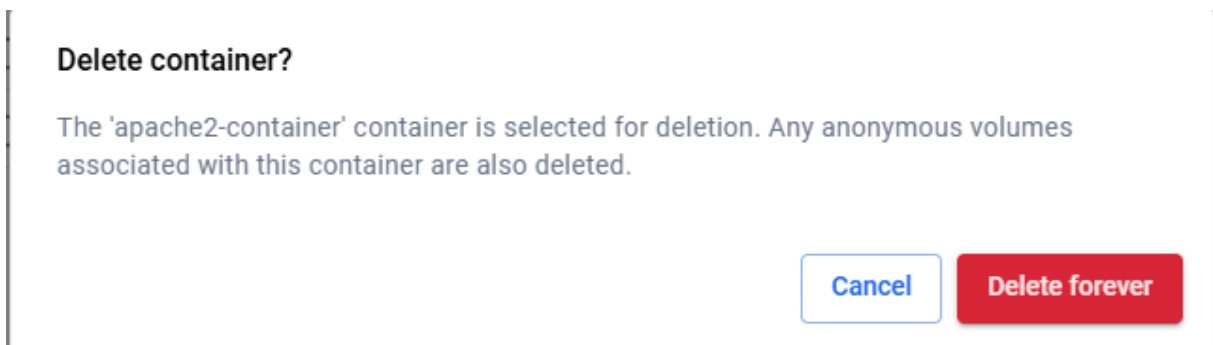
Only show running containers

<input type="checkbox"/>	Name	Container ID	Image	Port(s)	CPU (%)	Last	Actions
<input type="checkbox"/>	apache2-contai	557cc83a7802	ubuntu/ap:	8080:80	0.01%	2 mi	

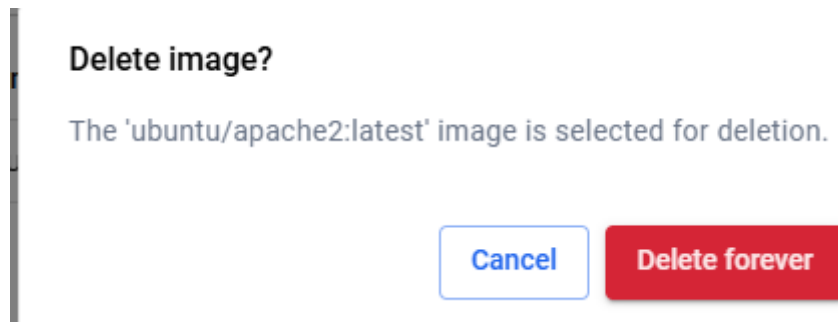
- Apache2 est bien fonctionnel :



- J'arrête et je supprime le conteneur :



- Je supprime l'image :



## 7 – Quatrième test :

- Je télécharge et exécute l'image hello-world :

```
sio@G102-GBPROF:~$ docker run hello-world
Unable to find image 'hello-world:latest' locally
latest: Pulling from library/hello-world
ea52d2000f90: Download complete
17eec7bbc9d7: Pull complete
Digest: sha256:85404b3c53951c3ff5d40de0972b1bb21fafa2e8daa235355baf44f33db9dbdd
Status: Downloaded newer image for hello-world:latest

Hello from Docker!
This message shows that your installation appears to be working correctly.

To generate this message, Docker took the following steps:
 1. The Docker client contacted the Docker daemon.
 2. The Docker daemon pulled the "hello-world" image from the Docker Hub.
    (amd64)
 3. The Docker daemon created a new container from that image which runs the
    executable that produces the output you are currently reading.
 4. The Docker daemon streamed that output to the Docker client, which sent it
    to your terminal.

To try something more ambitious, you can run an Ubuntu container with:
$ docker run -it ubuntu bash

Share images, automate workflows, and more with a free Docker ID:
https://hub.docker.com/

For more examples and ideas, visit:
https://docs.docker.com/get-started/

sio@G102-GBPROF:~$
```

- L'image à bien été téléchargé :

**Images** [Give feedback](#)

Local My Hub

16.38 KB / 0 Bytes in use 1 images Last refresh: 1 hour ago

Search

<input type="checkbox"/>	N...	Tag	Image ID	Created	Size	Actions
<input type="checkbox"/>	hello-world	latest	85404b3c5395	7 months ago	25.9 KB	

- Le conteneur est arrêté après l'affichage du message :

**Containers** [Give feedback](#)

Container CPU usage *No containers are running.* Container memory usage *No containers are running.* [Show charts](#)

Search  Only running

<input type="checkbox"/>	Name	Container ID	Image	Port(s)	Actions
<input type="checkbox"/>	inspiring_herschel	81e5a6d0b619	<a href="#">hello-world</a>		

**inspiring\_herschel** STATUS Exited (0) (3 minutes ago)

**Logs** Inspect Bind mounts Exec Files Stats

Hello from Docker!  
This message shows that your installation appears to be working correctly.

To generate this message, Docker took the following steps:

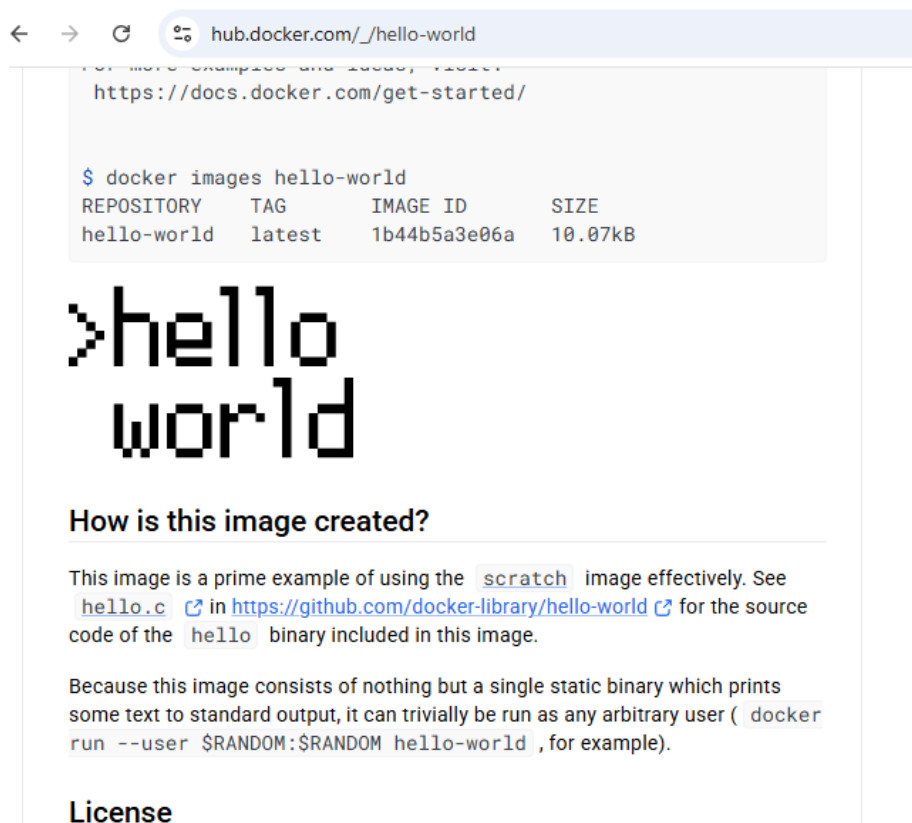
1. The Docker client contacted the Docker daemon.
2. The Docker daemon pulled the "hello-world" image from the Docker Hub. (amd64)
3. The Docker daemon created a new container from that image which runs the executable that produces the output you are currently reading.
4. The Docker daemon streamed that output to the Docker client, which sent it to your terminal.

To try something more ambitious, you can run an Ubuntu container with:  
\$ docker run -it ubuntu bash

Share images, automate workflows, and more with a free Docker ID:  
<https://hub.docker.com/>

For more examples and ideas, visit:  
<https://docs.docker.com/get-started/>

- Les sources de l'image :



## 8 – Cinquième test :

- Commande `docker images` : liste toutes les images sur le cache local de la machine (identifiant = code hexadécimal)

```
sio@G102-GBPROF:~$ docker images
```

IMAGE	ID	DISK USAGE	CONTENT SIZE	EXTRA	Info →	U In Use
hello-world:latest	85404b3c5395	25.9kB	9.52kB	U		

```
sio@G102-GBPROF:~$
```

- Lancement d'un conteneur en mode interactif qui lancera un shell bash qui interprètera les commandes :

```
root@111ef40de49c: /
```

```
sio@G102-GBPROF:~$ docker run -it ubuntu bash
```

```
Unable to find image 'ubuntu:latest' locally
```

```
latest: Pulling from library/ubuntu
```

```
01d7766a2e4a: Pull complete
```

```
fd8cda969ed2: Download complete
```

```
Digest: sha256:d1e2e92c075e5ca139d51a140fff46f84315c0fdce203eab2807c7e495eff4f9
```

```
Status: Downloaded newer image for ubuntu:latest
```

```
root@111ef40de49c:/#
```

## Images [Give feedback](#)

Local My Hub

87.6 MB / 0 Bytes in use 2 images

Last refresh: 1 hour ago

<input type="checkbox"/>	Name	Tag	Image ID	Created	Size	Actions
<input type="checkbox"/>	hello-world	latest	85404b3c5395	7 months ago	25.9 KB	
<input type="checkbox"/>	ubuntu	latest	d1e2e92c075e	29 days ago	119.26 MB	

## Containers [Give feedback](#)

Container CPU usage

0.00% / 1600% (16 CPUs available)

Container memory usage

932KB / 14.95GB

[Show charts](#)

<input type="checkbox"/>	Name	Container ID	Image	Port(s)	Actions
<input type="checkbox"/>	inspiring_hersch	81e5a6d0b619	<a href="#">hello-world</a>		
<input type="checkbox"/>	boring_williams	111ef40de49c	<a href="#">ubuntu</a>		

- La commande docker ps (depuis la console de la machine Ubuntu ou depuis le terminal Windows) permet de lister les conteneurs en cours d'exécution :

```
root@111ef40de49c: /
Windows PowerShell
Copyright (C) Microsoft Corporation. Tous droits réservés.

Installez la dernière version de PowerShell pour de nouvelles fonctionnalités et améliorations ! https://aka.ms/PSWindows

PS C:\Users\yezzamouri> docker ps
CONTAINER ID   IMAGE     COMMAND   CREATED   STATUS    PORTS   NAMES
111ef40de49c  ubuntu   "bash"    About a minute ago  Up About a minute           boring_williams
PS C:\Users\yezzamouri>
```

- Je tape quelques commandes (ctrl+c pour quitter la commande top) :

```
root@111ef40de49c:/# pwd
/
root@111ef40de49c:/# ls
bin  dev  home  lib64  mnt  proc  run  srv  tmp  var
boot  etc  lib  media  opt  root  sbin  sys  usr
root@111ef40de49c:/#
```

```
top - 14:03:29 up 1:19, 0 user, load average: 0.01, 0.01, 0.00
Tasks: 3 total, 1 running, 1 sleeping, 1 stopped, 0 zombie
%Cpu(s): 0.0 us, 0.6 sy, 0.0 ni, 99.4 id, 0.0 wa, 0.0 hi, 0.0 si, 0.0 st
MiB Mem : 15676.2 total, 13917.4 free, 1144.5 used, 828.0 buff/cache
MiB Swap: 4096.0 total, 4096.0 free, 0.0 used, 14531.7 avail Mem
```

PID	USER	PR	NI	VIRT	RES	SHR	S	%CPU	%MEM	TIME+	COMMAND
1	root	20	0	4588	3712	3328	S	0.0	0.0	0:00.03	bash
10	root	20	0	8864	5120	3072	T	0.0	0.0	0:00.00	top
13	root	20	0	8864	5120	3072	R	0.0	0.0	0:00.00	top

- Je crée un fichier, je vérifie sa présence :

```
root@111ef40de49c:/# touch fichier_test_persistence
root@111ef40de49c:/# ls
bin  dev  fichier_test_persistence  lib  media  opt  root  sbin  sys  usr
boot  etc  home  lib64  mnt  proc  run  srv  tmp  var
root@111ef40de49c:/#
```

- Je supprime /home, je vérifie sa suppression puis je stop le conteneur.

```
root@111ef40de49c:/# rm -fr /home
root@111ef40de49c:/# ls
bin  dev  fichier_test_persistence  lib64  mnt  proc  run  srv  tmp  var
boot  etc  lib  media  opt  root  sbin  sys  usr
root@111ef40de49c:/# exit
exit
There are stopped jobs.
root@111ef40de49c:/# exit
exit
```

Containers [Give feedback](#)

Container CPU usage ⓘ  
No containers are running.

Container memory usage ⓘ  
No containers are running.

[Show charts](#)

🔍 Search

Only running

<input type="checkbox"/>	Name	Container ID	Image	Port(s)	Actions
<input type="checkbox"/>	inspiring_hersct	81e5a6d0b619	<a href="#">hello-world</a>		🔍 ▶ ⋮ 🗑️
<input type="checkbox"/>	boring_williams	111ef40de49c	<a href="#">ubuntu</a>		🔍 ▶ ⋮ 🗑️

```

PS C:\Users\yezzamouri> docker ps
CONTAINER ID   IMAGE     COMMAND   CREATED   STATUS    PORTS   NAMES
PS C:\Users\yezzamouri> docker ps -a
CONTAINER ID   IMAGE     COMMAND   CREATED   STATUS    PORTS   NAMES
111ef40de49c   ubuntu   "bash"    5 minutes ago   Exited (1) About a minute ago   boring_williams
81e5a6d0b619   hello-world   "/hello"  13 minutes ago   Exited (0) 13 minutes ago   inspiring_herschel
PS C:\Users\yezzamouri>

```

- Je redémarre le conteneur et j'y accède (option -ai) :

```

sio@G102-GBPROF:~$ docker start 111ef40de49c
111ef40de49c
sio@G102-GBPROF:~$ docker stop 111ef40de49c
111ef40de49c
sio@G102-GBPROF:~$ docker start -ai 111ef40de49c
root@111ef40de49c:/# ls
bin    dev  fichier_test_persistence  lib64  mnt  proc  run  srv  tmp  var
boot  etc  lib                        media  opt  root  sbin sys  usr
root@111ef40de49c:/#

```

- Autre manière d'accéder au conteneur :

```

sio@G102-GBPROF:~$ docker start 111ef40de49c
111ef40de49c
sio@G102-GBPROF:~$ docker exec -it 111ef40de49c bash
root@111ef40de49c:/# exit
exit
sio@G102-GBPROF:~$ docker ps
CONTAINER ID   IMAGE     COMMAND   CREATED   STATUS    PORTS   NAMES
111ef40de49c   ubuntu   "bash"    8 minutes ago   Up 15 seconds   boring_williams
sio@G102-GBPROF:~$ docker stop 111ef40de49c
111ef40de49c
sio@G102-GBPROF:~$ docker ps
CONTAINER ID   IMAGE     COMMAND   CREATED   STATUS    PORTS   NAMES
sio@G102-GBPROF:~$ docker ps -a
CONTAINER ID   IMAGE     COMMAND   CREATED   STATUS    PORTS   NAMES
111ef40de49c   ubuntu   "bash"    8 minutes ago   Exited (137) 10 seconds ago   boring_williams
81e5a6d0b619   hello-world   "/hello"  16 minutes ago   Exited (0) 16 minutes ago   inspiring_herschel
sio@G102-GBPROF:~$

```

- Je supprime en ligne de commande les 2 containers

```
sio@G102-GBPROF:~$ docker rm boring_williams
boring_williams
sio@G102-GBPROF:~$ docker rm 81e
81e
sio@G102-GBPROF:~$ docker ps -a
CONTAINER ID   IMAGE     COMMAND   CREATED   STATUS    PORTS     NAMES
sio@G102-GBPROF:~$
```

- Je relance l'image Ubuntu et je constate la création d'un nouveau conteneur :

```
sio@G102-GBPROF:~$ docker run -it --rm ubuntu bash
root@7f593a758969:/# ls
bin  dev  home  lib64  mnt  proc  run  srv  tmp  var
boot  etc  lib  media  opt  root  sbin  sys  usr
root@7f593a758969:/# exit
exit
sio@G102-GBPROF:~$ docker ps -a
CONTAINER ID   IMAGE     COMMAND   CREATED   STATUS    PORTS     NAMES
sio@G102-GBPROF:~$
```

## 9 – Création d'une image à la main avec docker commit :

- Lancer un conteneur sur la base d'une image Ubuntu :

- Je Procède à quelques modifications et je stop l'exécution du conteneur :

```
sio@G102-GBPROF:~$ docker run -it --name test_modification ubuntu
root@eefdc5ae041c:/# cd home
root@eefdc5ae041c:/home# touch fichier_test
root@eefdc5ae041c:/home# cd ..
root@eefdc5ae041c:/# ls
bin  dev  home  lib64  mnt  proc  run  srv  tmp  var
boot  etc  lib  media  opt  root  sbin  sys  usr
root@eefdc5ae041c:/# cd lib
root@eefdc5ae041c:/lib# ls
apt  init  lsb  os-release  systemd  udev
dpkg  locale  mime  sysctl.d  tmpfiles.d  x86_64-linux-gnu
root@eefdc5ae041c:/lib# rm os-release
root@eefdc5ae041c:/lib# exit
exit
sio@G102-GBPROF:~$
```

- Commande docker diff pour voir les modifications :

```
sio@G102-GBPROF:~$ docker ps
CONTAINER ID   IMAGE     COMMAND   CREATED   STATUS    PORTS   NAMES
sio@G102-GBPROF:~$ docker ps -a
CONTAINER ID   IMAGE     COMMAND   CREATED   STATUS    PORTS   NAMES
eefdc5ae041c  ubuntu   "/bin/bash"   About a minute ago   Exited (0) 41 seconds ago   test_modification
sio@G102-GBPROF:~$ docker diff test_modification
C /home
A /home/fichier_test
C /usr
C /usr/lib
D /usr/lib/os-release
C /root
A /root/.bash_history
sio@G102-GBPROF:~$
```

- Commande docker commit --help pour prendre connaissance de la syntaxe de la commande docker commit :

```
sio@G102-GBPROF:~$ docker commit --help
Usage: docker commit [OPTIONS] CONTAINER [REPOSITORY[:TAG]]

Create a new image from a container's changes

Aliases:
  docker container commit, docker commit

Options:
  -a, --author string      Author (e.g., "John Hannibal Smith <hannibal@a-team.com>")
  -c, --change list        Apply Dockerfile instruction to the created image
  -m, --message string     Commit message
  --no-pause               Disable pausing container during commit
sio@G102-GBPROF:~$
```

- Je crée l'image ubuntu-modif taguée 1.0 à partir du container test\_modification :

```
sio@G102-GBPROF:~$ docker commit test_modification ubuntu-modif:1.0
sha256:66f31aa68e27bb401e4beb766bf40572d0b869eac38c5eb6aad15ecdedad558f
sio@G102-GBPROF:~$
```

- Commande docker images pour lister les images présentes en local :

```
sio@G102-GBPROF:~$ docker images
INFO In Use
IMAGE          ID                DISK USAGE  CONTENT SIZE  EXTRA
hello-world:latest  85404b3c5395     25.9kB      9.52kB
ubuntu:latest     d1e2e92c075e     119MB       31.7MB        U
ubuntu-modif:1.0  66f31aa68e27     117MB       29.7MB
sio@G102-GBPROF:~$
```

- Je supprime le conteneur :

```
sio@G102-GBPROF:~$ docker ps -a
CONTAINER ID   IMAGE     COMMAND   CREATED   STATUS    PORTS   NAMES
eefdc5ae041c  ubuntu   "/bin/bash"   7 minutes ago   Exited (0) 6 minutes ago   test_modification
sio@G102-GBPROF:~$
```

- Je lance un nouveau conteneur à partir de l'image créée avec la commande docker commit et je vérifie que les modifications soient bien présentes :

```
sio@G102-GBPROF:~$ docker run -it --rm --name test ubuntu:1.0
root@fe4ac9c4989b:/# ls /home
fichier_test  ubuntu
root@fe4ac9c4989b:/# exit
exit
sio@G102-GBPROF:~$ docker ps -a
CONTAINER ID   IMAGE     COMMAND                  CREATED        STATUS          PORTS
NAMES
eefdc5ae041c  ubuntu   "/bin/bash"             7 minutes ago Exited (0) 7 minutes ago
test_modification
sio@G102-GBPROF:~$
```

## 10 – Première approche des volumes :

- Les données sont sur le système local : je crée un répertoire web dans /home/sio de la machine ubuntu ainsi qu'une page html :

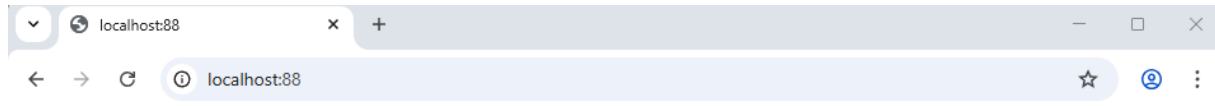
```
sio@G102-GBPROF:~$ pwd
/home/sio
sio@G102-GBPROF:~$ mkdir web
sio@G102-GBPROF:~$ cd web
sio@G102-GBPROF:~/web$ nano index.html
```

```
GNU nano 7.2                                index.html
<html>
<body>
<h1>Page web Nginx conteneur Docker</h1>
</body>
</html>
```

- Je crée un conteneur qui va pointer sur le répertoire web du FS local accessible en lecture :

```
sio@G102-GBPROF:~$ docker run -d --name web -v /home/sio/web:/usr/share/nginx/html:ro -p 88:80 nginx
Unable to find image 'nginx:latest' locally
latest: Pulling from library/nginx
23abb0f9ce55: Download complete
9eef040df109: Pull complete
75a1d70aee50: Pull complete
18a071c04bd1: Pull complete
a9d395129dce: Pull complete
df9da45c1db2: Pull complete
206356c42440: Pull complete
79697674b897: Pull complete
d99947bc9177: Download complete
Digest: sha256:bc45d248c4e1d1709321de61566eb2b64d4f0e32765239d66573666be7f13349
Status: Downloaded newer image for nginx:latest
0843fb0536b696c1e3e18155435de4ee98e0f419bfeafc2ac06c4501b7a18f78
sio@G102-GBPROF:~$ docker ps
CONTAINER ID   IMAGE     COMMAND                  CREATED        STATUS        PORTS
0843fb0536b6   nginx    "/docker-entrypoint..." 3 seconds ago  Up 3 seconds  0.0.0.0:88->80/tcp, [::]:88->80/tcp
sio@G102-GBPROF:~$
```

- Je teste l'accès aux données :



## Page web Nginx conteneur Docker

- J'affiche les logs du conteneur web :

```
sio@G102-GBPROF:~$ docker logs web
/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
2026/03/11 14:28:10 [notice] 1#1: using the "epoll" event method
2026/03/11 14:28:10 [notice] 1#1: nginx/1.29.6
2026/03/11 14:28:10 [notice] 1#1: built by gcc 14.2.0 (Debian 14.2.0-19)
2026/03/11 14:28:10 [notice] 1#1: OS: Linux 6.6.87.2-microsoft-standard-WSL2
2026/03/11 14:28:10 [notice] 1#1: getrlimit(RLIMIT_NOFILE): 1048576:1048576
2026/03/11 14:28:10 [notice] 1#1: start worker processes
2026/03/11 14:28:10 [notice] 1#1: start worker process 29
2026/03/11 14:28:10 [notice] 1#1: start worker process 30
2026/03/11 14:28:10 [notice] 1#1: start worker process 31
2026/03/11 14:28:10 [notice] 1#1: start worker process 32
2026/03/11 14:28:10 [notice] 1#1: start worker process 33
2026/03/11 14:28:10 [notice] 1#1: start worker process 34
2026/03/11 14:28:10 [notice] 1#1: start worker process 35
2026/03/11 14:28:10 [notice] 1#1: start worker process 36
2026/03/11 14:28:10 [notice] 1#1: start worker process 37
2026/03/11 14:28:10 [notice] 1#1: start worker process 38
2026/03/11 14:28:10 [notice] 1#1: start worker process 39
2026/03/11 14:28:10 [notice] 1#1: start worker process 40
2026/03/11 14:28:10 [notice] 1#1: start worker process 41
2026/03/11 14:28:10 [notice] 1#1: start worker process 42
2026/03/11 14:28:10 [notice] 1#1: start worker process 43
2026/03/11 14:28:10 [notice] 1#1: start worker process 44
172.17.0.1 -- [11/Mar/2026:14:29:20 +0000] "GET / HTTP/1.1" 200 72 "-" "Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/145.0.0.0 Safari/537.36"
172.17.0.1 -- [11/Mar/2026:14:29:20 +0000] "GET /favicon.ico HTTP/1.1" 404 555 "http://localhost:88/" "Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/145.0.0.0 Safari/537.36"
2026/03/11 14:29:20 [error] 29#29: *1 open() "/usr/share/nginx/html/favicon.ico" failed (2: No such file or directory), client: 172.17.0.1, server: localhost, request: "GET /favicon.ico HTTP/1.1", host: "localhost:88", referer: "http://localhost:88/"
sio@G102-GBPROF:~$
```

- J'arrête et supprime le conteneur web ainsi que le mappage de volume :

```
sio@G102-GBPROF:~$ docker rm -fv web
web
sio@G102-GBPROF:~$ docker ps -a
CONTAINER ID   IMAGE     COMMAND                  CREATED        STATUS              PORTS
NAMES
eefdc5ae041c  ubuntu   "/bin/bash"             17 minutes ago Exited (0) 17 minutes ago
test_modification
sio@G102-GBPROF:~$
```

```
sio@G102-GBPROF:~$ cd web
sio@G102-GBPROF:~/web$ ls
index.html
sio@G102-GBPROF:~/web$
```

## 11 – Gestion des volumes en écriture :

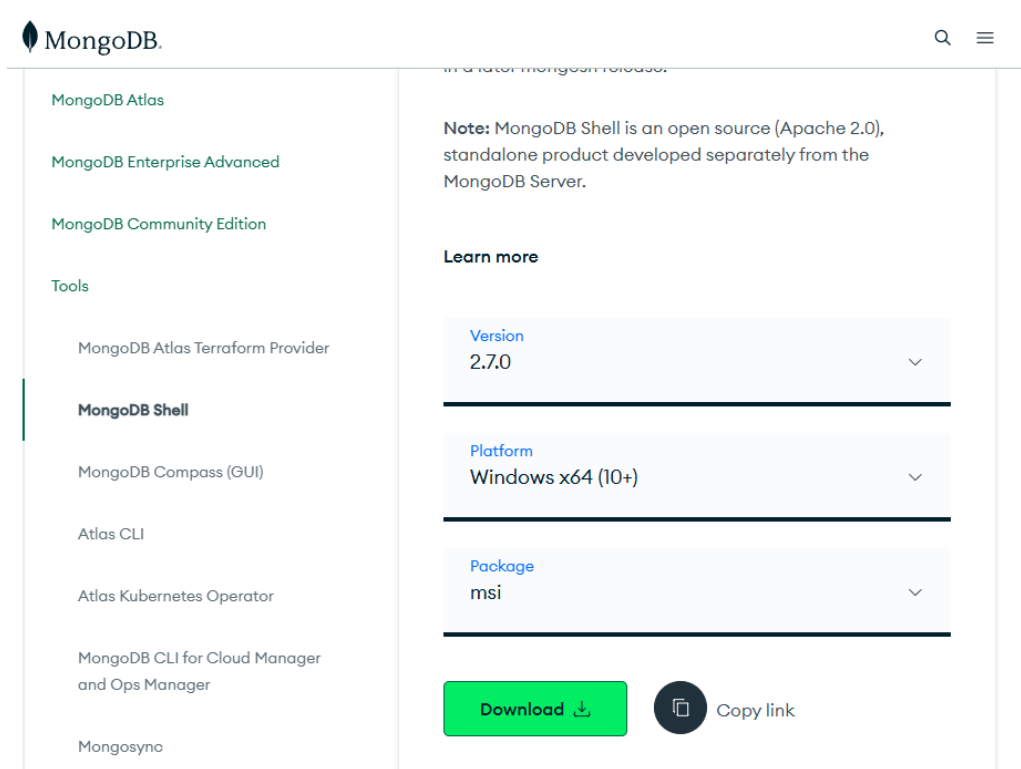
- Je récupère l'image mongodb-community-server avec la commande docker pull :

```
sio@G102-GBPROF:~$ docker pull mongodb/mongodb-community-server:latest
latest: Pulling from mongodb/mongodb-community-server
f302e62ac343: Pull complete
4191ba2b64c8: Pull complete
4f4fb700ef54: Pull complete
403a6d9e567f: Pull complete
0ac5c2cec618: Pull complete
b1cba2e842ca: Pull complete
7c87bd0fe320: Pull complete
91c09bd51e5c: Pull complete
8b-fd5cb2699e: Pull complete
16bf3df0d15b: Pull complete
226e605e46f6: Pull complete
Digest: sha256:19a36b2214161bcc56cc6a55ceec24f60708955655d9b6b67c48869ae69452ea
Status: Downloaded newer image for mongodb/mongodb-community-server:latest
docker.io/mongodb/mongodb-community-server:latest
sio@G102-GBPROF:~$
```

- Je lance un conteneur en mode serveur à partir de l'image mongodb-community-server :

```
sio@G102-GBPROF:~$ docker run -d -p 27017:27017 -e MONGODB_INITDB_ROOT_USERNAME=sio -e MONGODB_INITDB_ROOT_PASSWORD=password1234 --name mongodb mongodb/mongodb-community-server:latest
81c015242493c82e5be7e0591f532bcd99d33ae7f955cd6f14d5b697bfb963f
sio@G102-GBPROF:~$
```

- J'installe MongoDB Shell sur la machine physique pour pouvoir me connecter au serveur MongoDB :



MongoDB

MongoDB Atlas

MongoDB Enterprise Advanced

MongoDB Community Edition

Tools

MongoDB Atlas Terraform Provider

**MongoDB Shell**

MongoDB Compass (GUI)

Atlas CLI

Atlas Kubernetes Operator

MongoDB CLI for Cloud Manager and Ops Manager

Mongosync

Note: MongoDB Shell is an open source (Apache 2.0), standalone product developed separately from the MongoDB Server.

Learn more

Version  
2.7.0

Platform  
Windows x64 (10+)

Package  
msi

Download

Copy link

- Je me connecte au serveur MongoDB :

```
PS C:\Users\yezzamouri> mongosh mongodb://sio:password1234@localhost:27017
Current Mongosh Log ID: 69c3f4b153e8079f3f7c2906
Connecting to: mongodb://<credentials>@localhost:27017/?directConnection=true&serverSelectionTimeoutMS=2000&appName=mongosh+2.7.0
MongoServerError: Authentication failed.
PS C:\Users\yezzamouri> mongosh mongodb://localhost:27017
Current Mongosh Log ID: 69c3f4ec692c0766237c2906
Connecting to: mongodb://localhost:27017/?directConnection=true&serverSelectionTimeoutMS=2000&appName=mongosh+2.7.0
Using MongoDB: 6.0.6
Using Mongosh: 2.7.0

For mongosh info see: https://www.mongodb.com/docs/mongodb-shell/

To help improve our products, anonymous usage data is collected and sent to MongoDB periodically (https://www.mongodb.com/legal/privacy-policy).
You can opt-out by running the disableTelemetry() command.

-----
The server generated these startup warnings when booting
2026-03-23T08:51:35.194+01:00: Access control is not enabled for the database. Read and write access to data and configuration is unrestricted
-----

test> use("ma_bdd");
switched to db ma_bdd
ma_bdd> db.createCollection("etudiants");
{ ok: 1 }
ma_bdd> db.etudiants.insertOne({"nom": "smet", "prenom": "jp"});
{
  acknowledged: true,
  insertedId: ObjectId('69c3f5f3692c0766237c2907')
}
ma_bdd> db.etudiants.find();
[
  {
    _id: ObjectId('69c3f5f3692c0766237c2907'),
    nom: 'smet',
    prenom: 'jp'
  }
]
ma_bdd> exit|
```

- Toutes les données sont stockées dans le conteneur. Les données MongoDB, qui comprennent la base de données, les collections et les documents, ne sont conservées que tant que le conteneur concerné est en cours d'exécution.

```
Windows PowerShell x Ubuntu-24.04 x + v - □ x
sio@Asus:~$ docker inspect mongodb
[
  {
    "Id": "db7c4df643cadfce60a76c34af047159b801813a37bf58a329c68121a42d2722",
    "Created": "2026-03-30T14:47:48.454865997Z",
    "Path": "python3",
    "Args": [
      "/usr/local/bin/docker-entrypoint.py",
      "mongod"
    ],
    "State": {
      "Status": "running",
      "Running": true,
      "Paused": false,
      "Restarting": false,
      "OOMKilled": false,
      "Dead": false,
      "Pid": 427,
      "ExitCode": 0,
      "Error": "",
      "StartedAt": "2026-03-30T14:47:48.666813167Z",
      "FinishedAt": "0001-01-01T00:00:00Z"
    }
  }
]
```

```
Windows PowerShell x Ubuntu-24.04 x + v - □ x
    "Mounts": [
      {
        "Type": "volume",
        "Name": "0e673b4b5a14435c8c04a58790db13ca8d4743953bbc32962c8a96773cf12986",
        "Source": "/var/lib/docker/volumes/0e673b4b5a14435c8c04a58790db13ca8d4743953bbc32962c8a96773cf12986/_data",
        "Destination": "/data/configdb",
        "Driver": "local",
        "Mode": "",
        "RW": true,
        "Propagation": ""
      },
      {
        "Type": "volume",
        "Name": "aebf895001e0224e970d22468d31bbc7c53f25491d3edb84a2d96fc438fa0eb3",
        "Source": "/var/lib/docker/volumes/aebf895001e0224e970d22468d31bbc7c53f25491d3edb84a2d96fc438fa0eb3/_data",
        "Destination": "/data/db",
        "Driver": "local",
        "Mode": "",
        "RW": true,
        "Propagation": ""
      }
    ],
    "Config": {
      "Hostname": "db7c4df643ca",
      "Domainname": "",
      "User": "mongodb",
      "AttachStdin": false,
      "AttachStdout": false,
      "AttachStderr": false,
      "ExposedPorts": {
        "27017/tcp": {}
      },
      "Tty": false,
      "OpenStdin": false,
      "StdinOnce": false,

```

- J'accède au conteneur puis aux données et j'arrête le conteneur :

```
Windows PowerShell x Ubuntu-24.04 x + v - □ x
sio@Asus:~$ docker exec -it mongodb bash
mongodb@db7c4df643ca:/$ cd /data
mongodb@db7c4df643ca:/data$ ls
configdb db
mongodb@db7c4df643ca:/data$ cd db
mongodb@db7c4df643ca:~$ ls
WiredTiger
WiredTiger.lock
WiredTiger.turtle
WiredTiger.wt
WiredTigerHS.wt
_mdb_catalog.wt
_tmp
collection-1e6367a8-2878-4b5d-925e-697b75f0add3.wt
collection-2ac63b07-614f-4722-8fa6-e411399718f7.wt
collection-6b862f7c-abad-4d1b-8c9e-02faaa9228c9.wt
collection-c05f011e-becf-440e-b31b-1109f43bc7fa.wt
collection-d6cd75dc-920c-4103-83c9-d2b9c2a27308.wt
diagnostic.data
index-2905de88-be5d-4dc4-af9d-1c5c155c731b.wt
index-5837bce3-efe2-42b7-8a2d-15fe89a264db.wt
index-609403e0-b22b-4299-80e4-194e529acb27.wt
index-a20acb89-3fa0-410d-bc87-f29706f6c7cd.wt
index-cd9068a5-9590-45de-9470-35013d41daf3.wt
index-d73da58c-6b54-4fe2-9849-757af5ebae1d.wt
index-d7bc8990-5ea7-48f7-b6f9-a5ef421ea09d.wt
journal
mongod.lock
sizeStorer.wt
storage.bson
mongodb@db7c4df643ca:~$ exit
exit
sio@Asus:~$ █
```

- Je supprime le conteneur : les données vont être perdues.

```
Windows PowerShell x Ubuntu-24.04 x + v - □ x
sio@Asus:~$ docker rm -f mongodb
mongodb
sio@Asus:~$ docker ps -a
CONTAINER ID   IMAGE     COMMAND                  CREATED        STATUS        PORTS        NAMES
sio@Asus:~$
```

- Je souhaite bénéficier d'une persistance des données MongoDB dans Docker. Je crée un volume nommé à l'aide de la commande docker volume create :

```
Windows PowerShell x Ubuntu-24.04 x + v - □ x
PS C:\Users\yanis> docker volume create mon_volume_mongodb
mon_volume_mongodb
PS C:\Users\yanis> docker volume ls
DRIVER      VOLUME NAME
local       0e673b4b5a14435c8c04a58790db13ca8d4743953bbc32962c8a96773cf12986
local       aebf895001e0224e970d22468d31bbc7c53f25491d3edb84a2d96fc438fa0eb3
local       mon_volume_mongodb
PS C:\Users\yanis>
```

```
Windows PowerShell x Ubuntu-24.04 x + v - □ x
PS C:\Users\yanis> docker volume inspect mon_volume_mongodb
[
  {
    "CreatedAt": "2026-03-30T15:01:50Z",
    "Driver": "local",
    "Labels": null,
    "Mountpoint": "/var/lib/docker/volumes/mon_volume_mongodb/_data",
    "Name": "mon_volume_mongodb",
    "Options": null,
    "Scope": "local"
  }
]
PS C:\Users\yanis>
```

- Je lance un conteneur avec un mappage de volume (volume nommé:/volume du conteneur) :

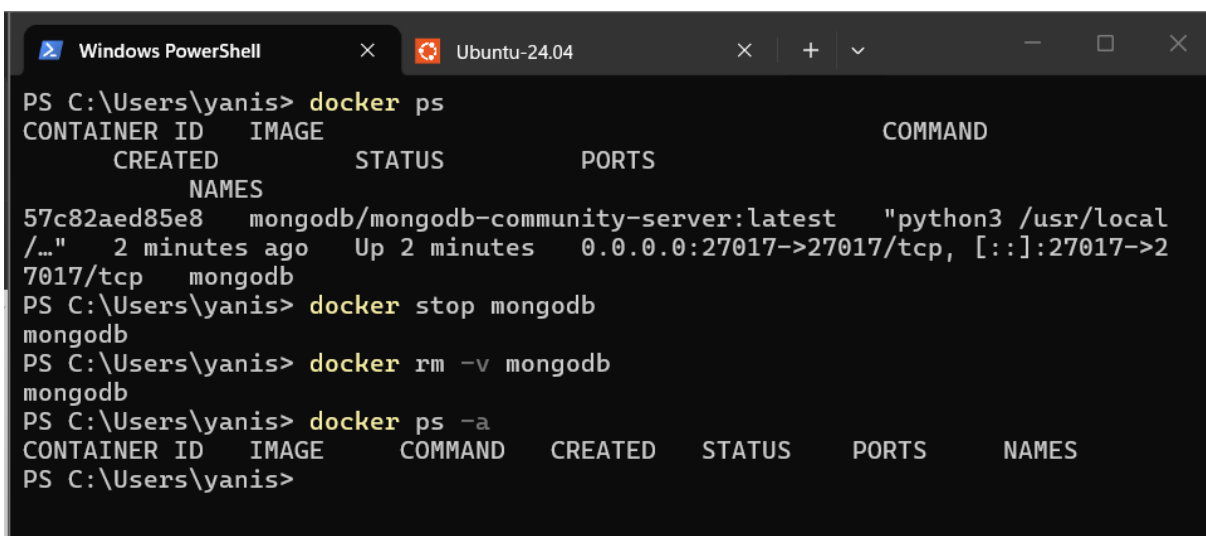
```
Windows PowerShell x Ubuntu-24.04 x + v - □ x
sio@Asus:~$ docker run -d --name mongodb -p 27017:27017 -e MONGODB_INITDB_ROOT_USERNAME=sio -e MONGODB_INITDB_ROOT_PASSWORD=password1234 -v mon_volume_mongodb:/data/db mongodb/mongodb-community-server:latest
57c82aed85e8dd8711eca19c7780f5cf1f198127c21bd932f45fec4e0a488950
sio@Asus:~$
```

- Je me connecte au serveur MongoDB et j'ajoute une entrée dans la base :

```
-----
The server generated these startup warnings when booting
2026-03-30T15:05:01.599+00:00: Using the XFS filesystem is strongly recom
mended with the WiredTiger storage engine. See http://dochub.mongodb.org/cor
e/prodnotes-filesystem
2026-03-30T15:05:01.935+00:00: For customers running the current memory a
llocator, we suggest changing the contents of the following sysfsFile
2026-03-30T15:05:01.935+00:00: For customers running the current memory a
llocator, we suggest changing the contents of the following sysfsFile
2026-03-30T15:05:01.935+00:00: We suggest setting the contents of sysfsFi
le to 0.
2026-03-30T15:05:01.935+00:00: We suggest setting swappiness to 0 or 1, a
s swapping can cause performance problems.
-----

test> use ("ma_bdd");
switched to db ma_bdd
ma_bdd> db.createCollection("etudiants");
{ ok: 1 }
ma_bdd> db.etudiants.insertOne({"nom":"smet", "prenom":"jp"});
{
  acknowledged: true,
  insertedId: ObjectId('69ca918eb0d9bfec8c3682d1')
}
ma_bdd> dn.etudiants.find()
ReferenceError: dn is not defined
ma_bdd> dn.etudiants.find();
ReferenceError: dn is not defined
ma_bdd> db.etudiants.find();
[
  {
    _id: ObjectId('69ca918eb0d9bfec8c3682d1'),
    nom: 'smet',
    prenom: 'jp'
  }
]
ma_bdd> exit
```

- J'arrête le conteneur et je supprime :



```
Windows PowerShell  Ubuntu-24.04
PS C:\Users\yanis> docker ps
CONTAINER ID   IMAGE                                COMMAND
CREATED       STATUS    PORTS
NAMES
57c82aed85e8   mongodb/mongodb-community-server:latest  "python3 /usr/local
/..." 2 minutes ago Up 2 minutes  0.0.0.0:27017->27017/tcp, [::]:27017->27017/tcp
mongodb
PS C:\Users\yanis> docker stop mongodb
mongodb
PS C:\Users\yanis> docker rm -v mongodb
mongodb
PS C:\Users\yanis> docker ps -a
CONTAINER ID   IMAGE                                COMMAND   CREATED   STATUS    PORTS     NAMES
PS C:\Users\yanis>
```

- Après suppression du conteneur, je redémarre un conteneur mongo :

```
Windows PowerShell x Ubuntu-24.04 x + v - □ X
sio@Asus:~$ docker run -d --name mongodb -p 27017:27017 -e MONGODB_INITDB_ROOT_USERNAME=sio -e MONGODB_INITDB_ROOT_PASSWORD=password1234 -v mon_volume_mongodb:/data/db mongodb/mongodb-community-server:latest
28fa700deeb1c4131029200a85e989e5b2e183d3c6bd81739a37f24307ab0ac3
sio@Asus:~$
```

- La persistance a bien été gérée :

```
Windows PowerShell x Ubuntu-24.04 x + v - □ X
PS C:\Users\yanis> mongosh mongodb://sio:password1234@localhost:27017
Current Mongosh Log ID: 69ca92eaa58e380d343682d0
Connecting to:      mongodb://<credentials>@localhost:27017/?directConnection=true&serverSelectionTimeoutMS=2000&appName=mongosh+2.8.2
Using MongoDB:     8.2.6
Using Mongosh:     2.8.2

For mongosh info see: https://www.mongodb.com/docs/mongodb-shell/

-----
The server generated these startup warnings when booting
2026-03-30T15:11:04.311+00:00: Using the XFS filesystem is strongly recommended with the WiredTiger storage engine. See http://dochub.mongodb.org/core/prodnotes-filesystem
2026-03-30T15:11:04.605+00:00: For customers running the current memory allocator, we suggest changing the contents of the following sysfsFile
2026-03-30T15:11:04.605+00:00: For customers running the current memory allocator, we suggest changing the contents of the following sysfsFile
2026-03-30T15:11:04.605+00:00: We suggest setting the contents of sysfsFile to 0.
2026-03-30T15:11:04.605+00:00: We suggest setting swappiness to 0 or 1, as swapping can cause performance problems.
-----

test> use("ma_bdd");
switched to db ma_bdd
ma_bdd> db.etudiants.find()
[
  {
    _id: ObjectId('69ca918eb0d9bfec8c3682d1'),
    nom: 'smet',
    prenom: 'jp'
  }
]
ma_bdd> exir
ReferenceError: exir is not defined
ma_bdd> exit
PS C:\Users\yanis>
```

- Je supprime le conteneur :

```
Windows PowerShell x Ubuntu-24.04 x + v
sio@Asus:~$ docker rm -fv mongodb
mongodb
sio@Asus:~$
```

- Je relance un conteneur et j'ajoute une deuxième ligne pour vérifier la persistance :

```
Windows PowerShell x Ubuntu-24.04 x + v - □ x
sio@Asus:~$ docker run -d --name mongodb -p 27017:27017 -e MONGODB_INITDB_ROOT_USERNAME=sio -e MONGODB_INITDB_ROOT_PASSWORD=password1234 -v mon_volume_mongodb:/data/db mongodb/mongodb-community-server:latest 030a0534579259ef7997eb3b9e232311426f173e4d297620ce64d1ded025e5f5
sio@Asus:~$
```

```
test> use("ma_bdd");
switched to db ma_bdd
ma_bdd> db.etudiants.insertOne({"nom":"hallyday", "prenom":"johnny"});
{
  acknowledged: true,
  insertedId: ObjectId('69ca93c7742e6c8fc23682d1')
}
ma_bdd> dn.etuidants.find();
ReferenceError: dn is not defined
ma_bdd> db.etudiants.find();

ma_bdd> db.etudiants.find();
[
  {
    _id: ObjectId('69ca918eb0d9bfec8c3682d1'),
    nom: 'smet',
    prenom: 'jp'
  },
  {
    _id: ObjectId('69ca93c7742e6c8fc23682d1'),
    nom: 'hallyday',
    prenom: 'johnny'
  }
]
ma_bdd> exit
```

- Je supprime le conteneur et je relance un conteneur et je constate la persistance des données :

```
Windows PowerShell x Ubuntu-24.04 x + v - □ ×
sio@Asus:~$ docker rm -fv mongodb
mongodb
sio@Asus:~$ docker run -d --name mongodb -p 27017:27017 -e MONGODB_INITDB_ROOT_USERNAME=sio -e MONGODB_INITDB_ROOT_PASSWORD=password1234 -v mon_volume_mongodb:/data/db mongodb/mongodb-community-server:latest
c59039db5830181dd8f91a48a78ab0310e60ad3d913632b72bf31bbac9f40faa
sio@Asus:~$
```

```
PS C:\Users\yanis> mongosh mongodb://sio:password1234@localhost:27017
Current Mongosh Log ID: 69ca94b584fced6ad83682d0
Connecting to:      mongodb://<credentials>@localhost:27017/?directConnection=true&serverSelectionTimeoutMS=2000&appName=mongosh+2.8.2
Using MongoDB:      8.2.6
Using Mongosh:      2.8.2

For mongosh info see: https://www.mongodb.com/docs/mongodb-shell/

-----
The server generated these startup warnings when booting
2026-03-30T15:19:55.100+00:00: Using the XFS filesystem is strongly recommended with the WiredTiger storage engine. See http://dochub.mongodb.org/core/prodnotes-filesystem
2026-03-30T15:19:55.390+00:00: For customers running the current memory allocator, we suggest changing the contents of the following sysfsFile
2026-03-30T15:19:55.390+00:00: For customers running the current memory allocator, we suggest changing the contents of the following sysfsFile
2026-03-30T15:19:55.390+00:00: We suggest setting the contents of sysfsFile to 0.
2026-03-30T15:19:55.390+00:00: We suggest setting swappiness to 0 or 1, as swapping can cause performance problems.
-----

test> use("ma_bdd");
switched to db ma_bdd
ma_bdd> db.etudiants.find();
[
  {
    _id: ObjectId('69ca918eb0d9bfec8c3682d1'),
    nom: 'smet',
    prenom: 'jp'
  },
  {
    _id: ObjectId('69ca93c7742e6c8fc23682d1'),
    nom: 'hallyday',
    prenom: 'johnny'
  }
]
ma_bdd> exit
```

- Je supprime le conteneur :

```
Windows PowerShell  Ubuntu-24.04
PS C:\Users\yanis> docker rm -fv mongodb
mongodb
PS C:\Users\yanis>
```

- Volume mongodb :

Volumes [Give feedback](#)

Search

<input type="checkbox"/>	Name ↑	Created	Size	Actions
<input type="checkbox"/>	0e673b4b5a14435c8c04a58790db13ca8d4743953bbc32962c8a96	37 minutes ago	0 Bytes	
<input type="checkbox"/>	aebf895001e0224e970d22468d31bbc7c53f25491d3edb84a2d96fc	37 minutes ago	200.7 MB	
<input type="checkbox"/>	mon_volume_mongodb	23 minutes ago	200.9 MB	

Volumes / mon\_volume\_mongodb

**mon\_volume\_mongodb** Created 23 min

Not in use

Stored data   Container in-use   Exports

Name ↑	Size
_mdb_catalog.wt	36 kB
>  _tmp	25.5 kB
✓  .mongodb	14.2 kB
>  mongosh	14.2 kB

- Montage lié :

```
Windows PowerShell x Ubuntu-24.04 x + v - □ x
sio@Asus:~$ mkdir data
sio@Asus:~$ docker run -d --name mongodb2 -p 27017:27017 -e MONGODB_INITDB_ROOT_USERNAME=sio -e MONGODB_INITDB_ROOT_PASSWORD=password1234 -v /home/sio/data:/data/db mongodb/mongodb-community-server:latest
a3d16812990f2361cf882bd0eff532edeec9ef3b621c54d103ecde9507ed67f7
sio@Asus:~$
```

```
PS C:\Users\yanis> mongosh mongodb://sio:password1234@localhost:27017
Current Mongosh Log ID: 69ca969367d47a6f0d3682d0
Connecting to:      mongodb://<credentials>@localhost:27017/?directConnection=true&serverSelectionTimeoutMS=2000&appName=mongosh+2.8.2
Using MongoDB:      8.2.6
Using Mongosh:      2.8.2

For mongosh info see: https://www.mongodb.com/docs/mongodb-shell/

-----
The server generated these startup warnings when booting
2026-03-30T15:28:02.046+00:00: Using the XFS filesystem is strongly recommended with the WiredTiger storage engine. See http://dochub.mongodb.org/core/prodnotes-filesystem
2026-03-30T15:28:02.418+00:00: For customers running the current memory allocator, we suggest changing the contents of the following sysfsFile
2026-03-30T15:28:02.418+00:00: For customers running the current memory allocator, we suggest changing the contents of the following sysfsFile
2026-03-30T15:28:02.418+00:00: We suggest setting the contents of sysfsFile to 0.
2026-03-30T15:28:02.418+00:00: We suggest setting swappiness to 0 or 1, as swappiness can cause performance problems.
-----

test> use("ma_bdd");
switched to db ma_bdd
ma_bdd> db.etudiants.insertOne({"nom":"mitchell", "prenom":"eddy"});
{
  acknowledged: true,
  insertedId: ObjectId('69ca96b267d47a6f0d3682d1')
}
ma_bdd> db.etudiants.find();
[
  {
    _id: ObjectId('69ca96b267d47a6f0d3682d1'),
    nom: 'mitchell',
    prenom: 'eddy'
  }
]
ma_bdd> exit
PS C:\Users\yanis>
```

```

PS C:\Users\yanis> docker ps
CONTAINER ID   IMAGE                                STATUS      PORTS                    COMMAND
CREATED              NAMES
a3d16812990f   mongodb/mongodb-community-server:latest  Up About a minute   0.0.0.0:27017->27017/tcp, [::
]:27017->27017/tcp   mongodb2
PS C:\Users\yanis> docker stop mongodb2
mongodb2
PS C:\Users\yanis> docker rm -v mongodb2
mongodb2
PS C:\Users\yanis>

```

```

sio@Asus:~$ cd data
sio@Asus:~/data$ ls
WiredTiger
WiredTiger.lock
WiredTiger.turtle
WiredTiger.wt
WiredTigerHS.wt
_mdb_catalog.wt
_tmp
collection-0626a92c-03c6-4072-8206-3bb619d4d248.wt
collection-1e504f29-945d-4aba-b259-1825ec32fcb9.wt
collection-41cfef47-2ea5-4c3e-889d-f0616c5dd63d.wt
collection-7dd2a25d-afdf-47ee-821e-c15aa7e5549a.wt
collection-9b575e47-d707-4bfb-8554-56fcf694e706.wt
diagnostic.data
index-27714c20-f154-457e-b4fe-aafc032fe19f.wt
index-5578a033-35a5-41b4-81d5-fae78902926f.wt
index-7a37b393-e37c-47a7-9724-c01ce77102d3.wt
index-94dd6e36-7e30-4ac7-8e23-2075997a0753.wt
index-c21815c3-0725-4720-9948-2f149cb24ca3.wt
index-da844f6c-7d4d-4789-81f9-177de42d129c.wt
index-def90ff8-cd1b-4ba5-bf4c-ad3cf95eaccf.wt
journal
mongod.lock
sizeStorer.wt
storage.bson
sio@Asus:~/data$

```

- Après suppression du conteneur, je relance une nouvelle instance de l'image :

```
sio@Asus:~$ docker run -d --name mongodb2 -p 27017:27017 -e MONGODB_INITDB_ROOT_USERNAME=sio -e MONGODB_INITDB_ROOT_PASSWORD=password1234 -v /home/sio/data:/data/db mongodb/mongodb-community-server:latest
1885f12408cf8363a0ac50f539f7949c0531ff1379873bff6e9bc556bfacbea2
sio@Asus:~$
```

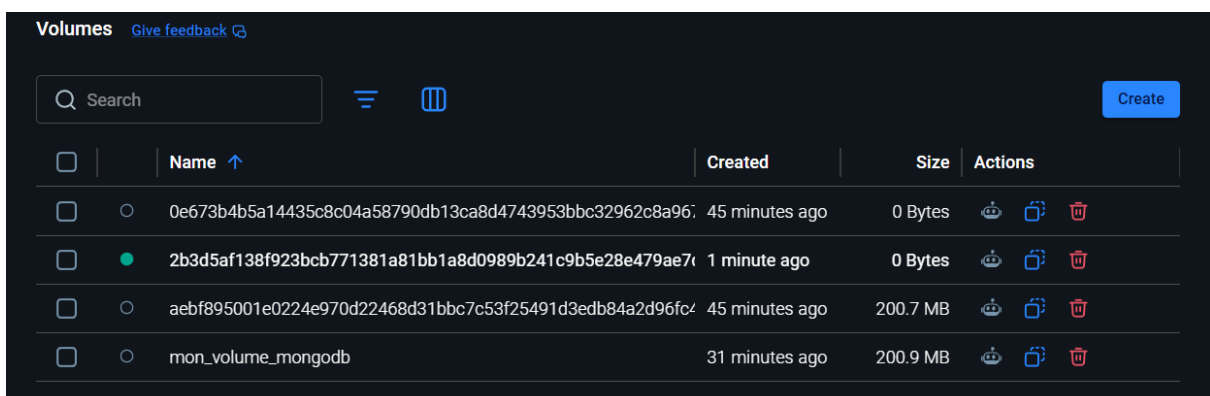
```
PS C:\Users\yanis> mongosh mongodb://sio:password1234@localhost:27017
Current Mongosh Log ID: 69ca9764a73cdfd8fa3682d0
Connecting to:      mongodb://<credentials>@localhost:27017/?directConnection=true&serverSelectionTimeoutMS=2000&appName=mongosh+2.8.2
Using MongoDB:     8.2.6
Using Mongosh:     2.8.2

For mongosh info see: https://www.mongodb.com/docs/mongodb-shell/

-----
The server generated these startup warnings when booting
2026-03-30T15:31:19.338+00:00: Using the XFS filesystem is strongly recommended with the WiredTiger storage engine. See http://dochub.mongodb.org/core/prodnotes-filesystem
2026-03-30T15:31:19.665+00:00: For customers running the current memory allocator, we suggest changing the contents of the following sysfsFile
2026-03-30T15:31:19.665+00:00: For customers running the current memory allocator, we suggest changing the contents of the following sysfsFile
2026-03-30T15:31:19.665+00:00: We suggest setting the contents of sysfsFile to 0.
2026-03-30T15:31:19.665+00:00: We suggest setting swappiness to 0 or 1, as swapping can cause performance problems.
-----

test> use("ma_bdd");
switched to db ma_bdd
ma_bdd> db.etudiants.find();
[
  {
    _id: ObjectId('69ca96b267d47a6f0d3682d1'),
    nom: 'mitchell',
    prenom: 'eddy'
  }
]
ma_bdd> exit
PS C:\Users\yanis>
```

- La persistance a bien été gérée :

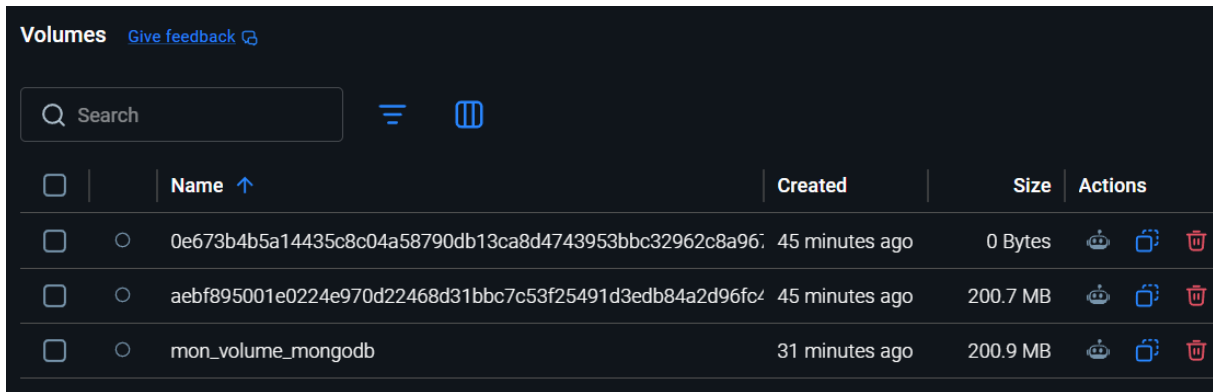


The screenshot shows the Docker Volumes management interface. It features a search bar, a 'Create' button, and a table listing existing volumes. The table has columns for Name, Created, Size, and Actions. There are four volumes listed, with 'mon\_volume\_mongodb' being the most recent and largest at 200.9 MB.

<input type="checkbox"/>	Name ↑	Created	Size	Actions
<input type="checkbox"/>	0e673b4b5a14435c8c04a58790db13ca8d4743953bbc32962c8a967	45 minutes ago	0 Bytes	
<input checked="" type="checkbox"/>	2b3d5af138f923bcb771381a81bb1a8d0989b241c9b5e28e479ae7c	1 minute ago	0 Bytes	
<input type="checkbox"/>	aebf895001e0224e970d22468d31bbc7c53f25491d3edb84a2d96fc4	45 minutes ago	200.7 MB	
<input type="checkbox"/>	mon_volume_mongodb	31 minutes ago	200.9 MB	

- Je supprime le volume :

```
sio@Asus:~$ docker rm -fv mongodb2
mongodb2
sio@Asus:~$
```

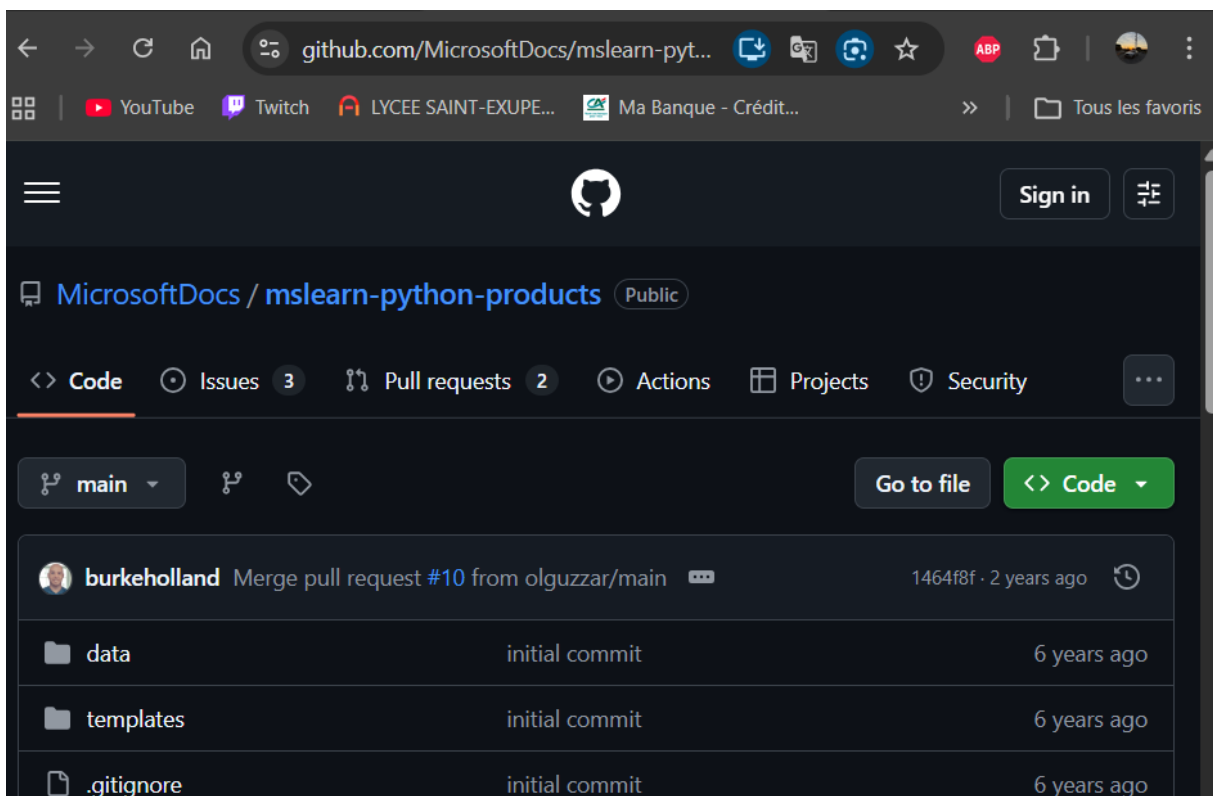


The screenshot shows the Docker Desktop interface for the 'Volumes' tab. It features a search bar, a table with columns for Name, Created, Size, and Actions, and three volume entries.

	Name ↑	Created	Size	Actions
<input type="checkbox"/>	0e673b4b5a14435c8c04a58790db13ca8d4743953bbc32962c8a967	45 minutes ago	0 Bytes	
<input type="checkbox"/>	aebf895001e0224e970d22468d31bbc7c53f25491d3edb84a2d96fc4	45 minutes ago	200.7 MB	
<input type="checkbox"/>	mon_volume_mongodb	31 minutes ago	200.9 MB	

## 12 – Utiliser un conteneur Docker et Visual Studio Code :

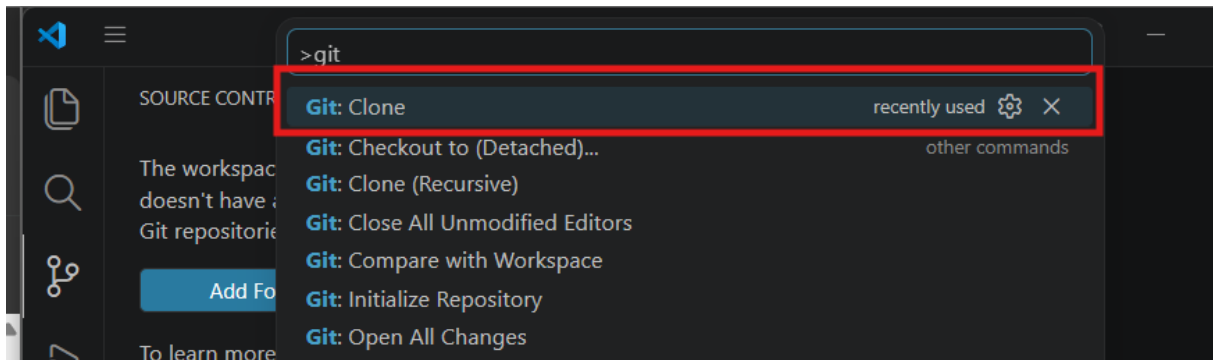
- Je copie l'URL du projet mslearn-python-products qui servira d'exemple :



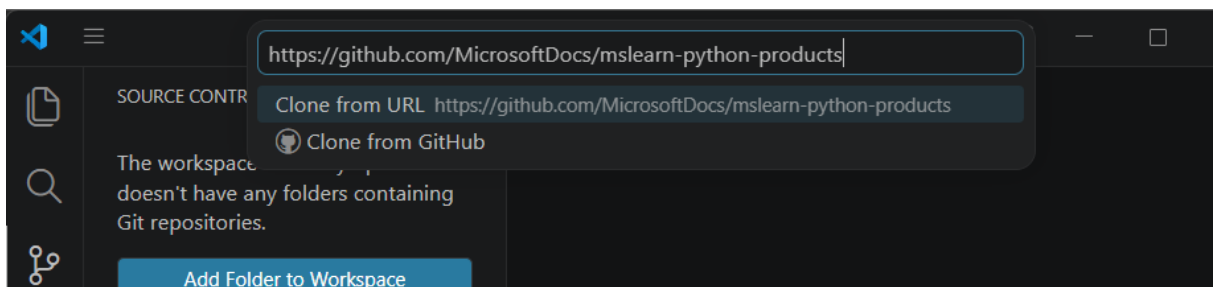
The screenshot shows a web browser displaying the GitHub repository page for 'MicrosoftDocs/mslearn-python-products'. The page includes navigation tabs for Code, Issues (3), Pull requests (2), Actions, Projects, and Security. A commit history table is visible at the bottom.

Commit Hash	Author	Message	Time
1464f8f	burkeholland	Merge pull request #10 from olguzzar/main	2 years ago
		data	initial commit 6 years ago
		templates	initial commit 6 years ago
		.gitignore	initial commit 6 years ago

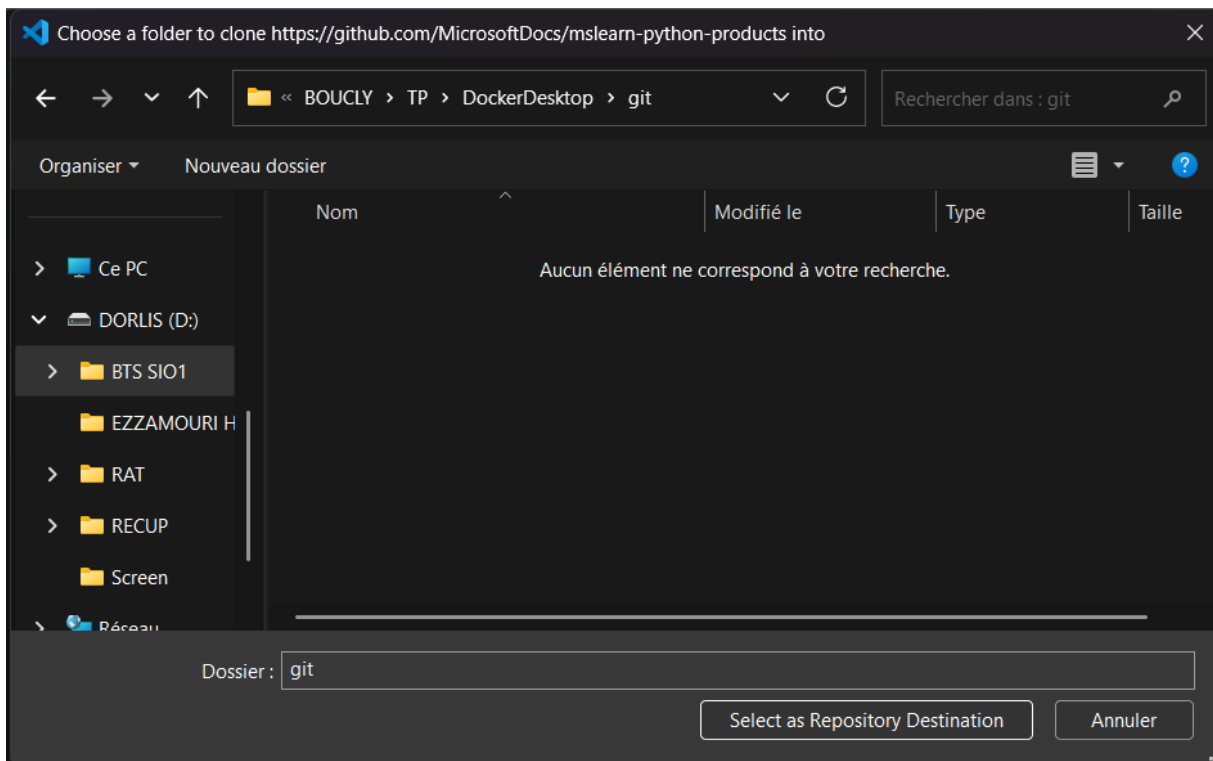
- Dans VS Code, je sélectionne Clone Repository ou j'appuie sur F1 pour rechercher Git : Clone :

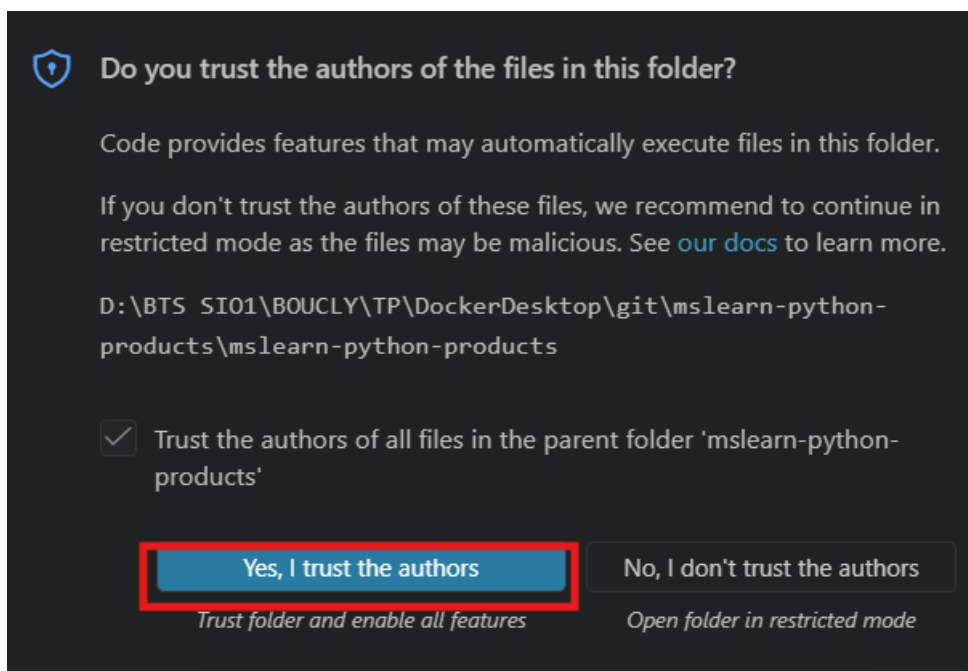
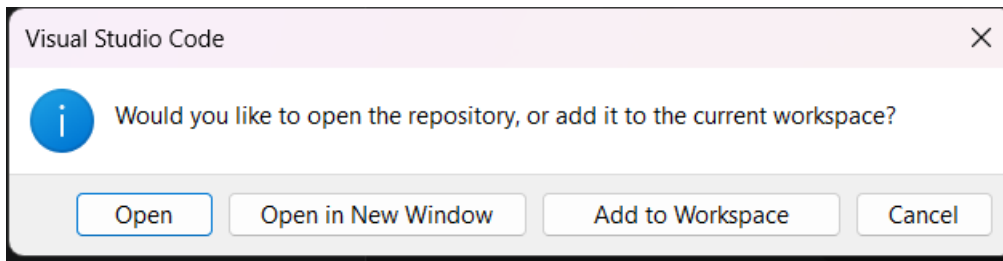


- Collez l'URL :

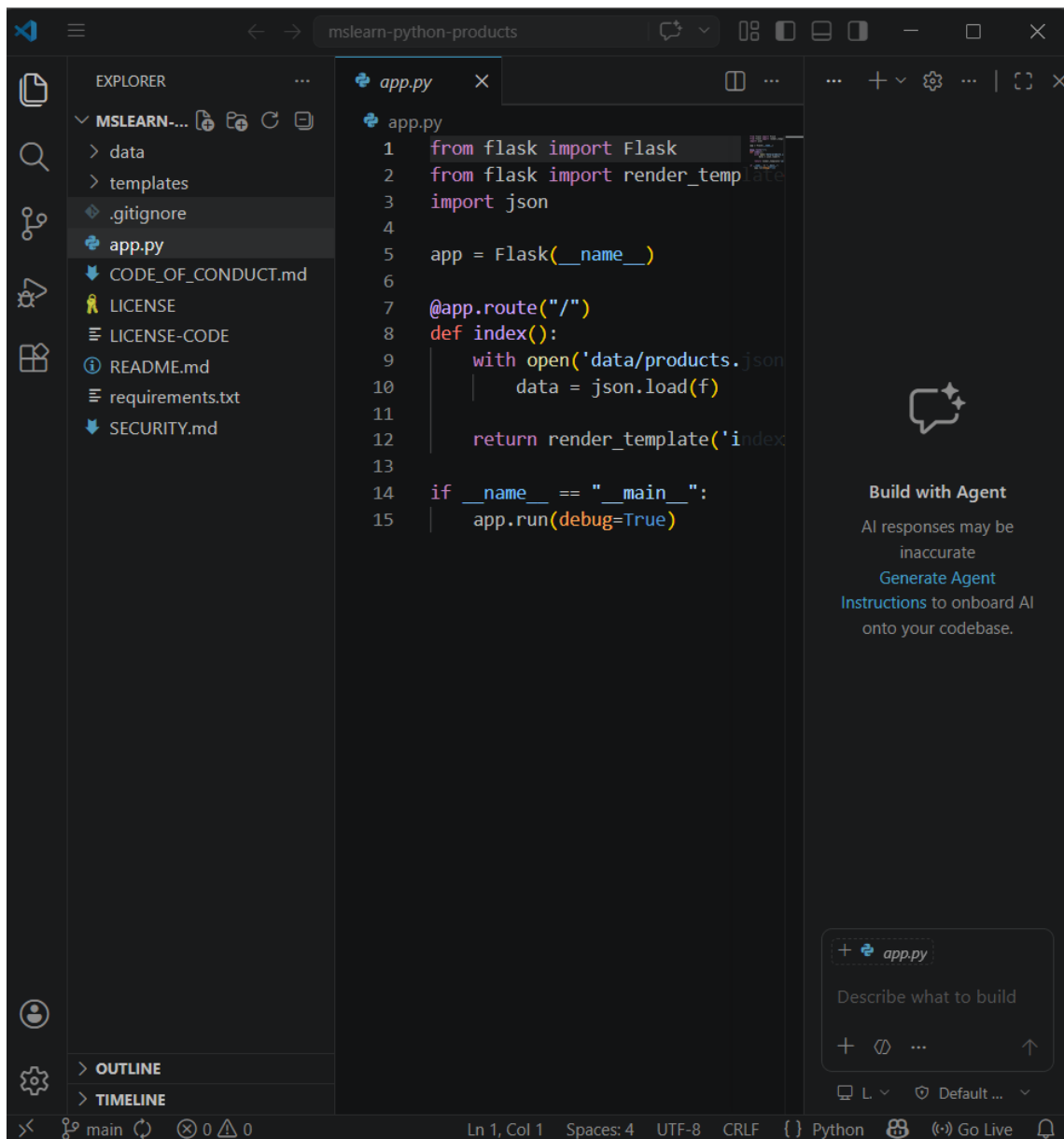


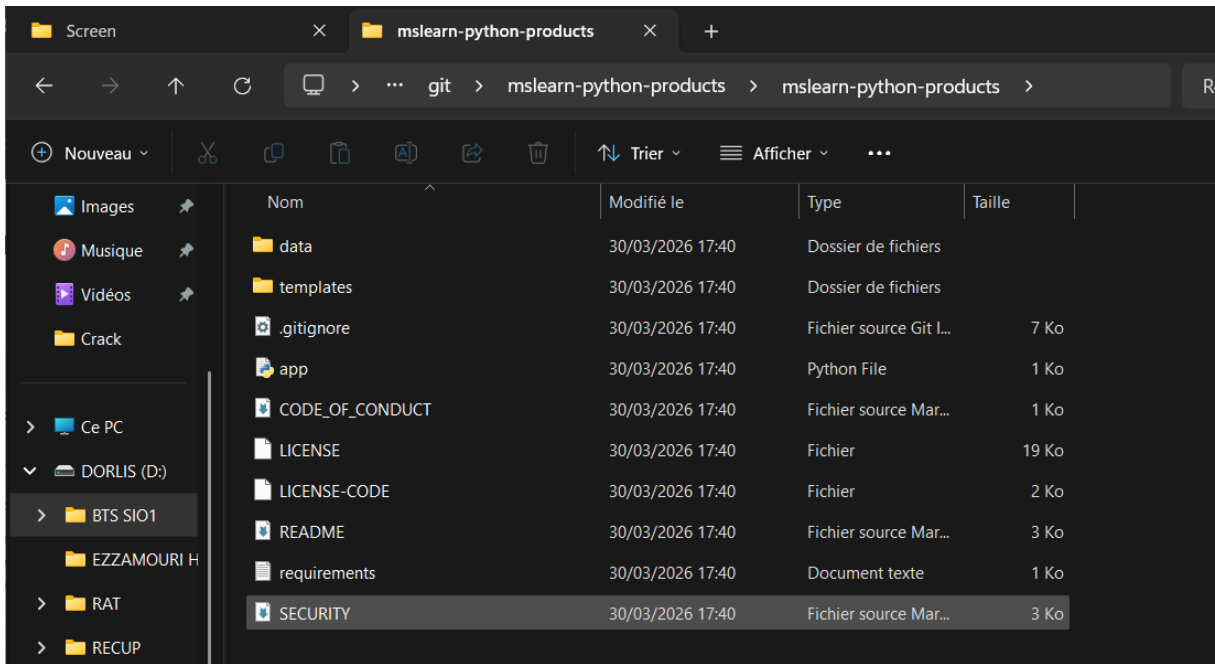
- Je sélectionne un emplacement sur votre disque où le projet va être cloné



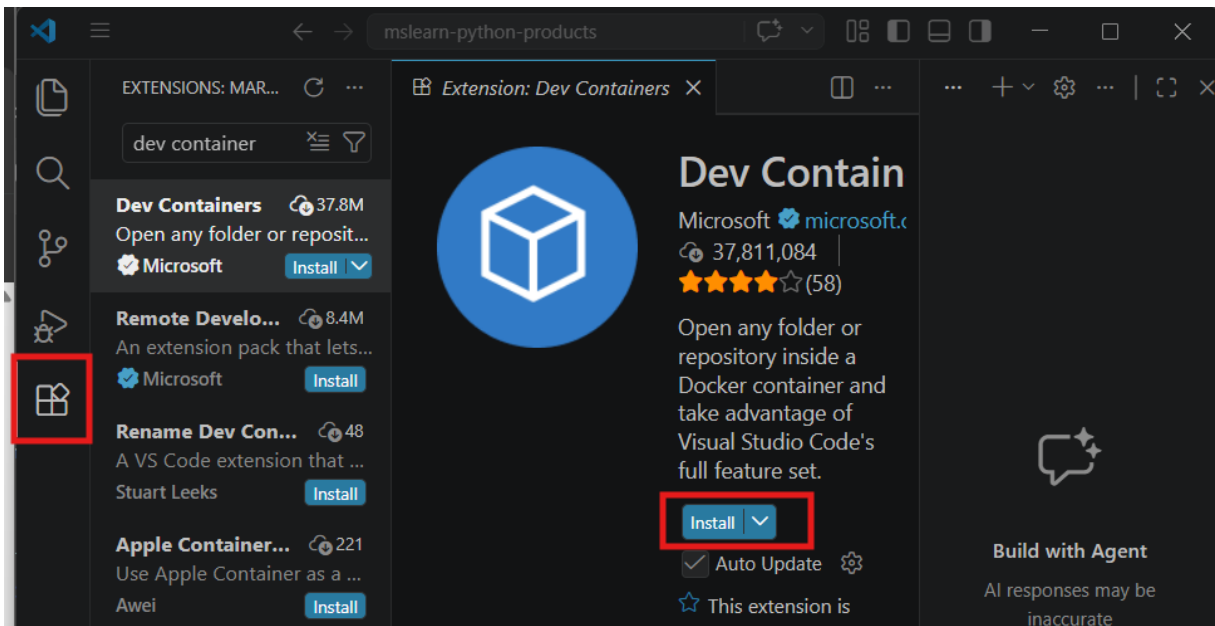


- Le projet est maintenant ouvert dans Visual Studio Code :



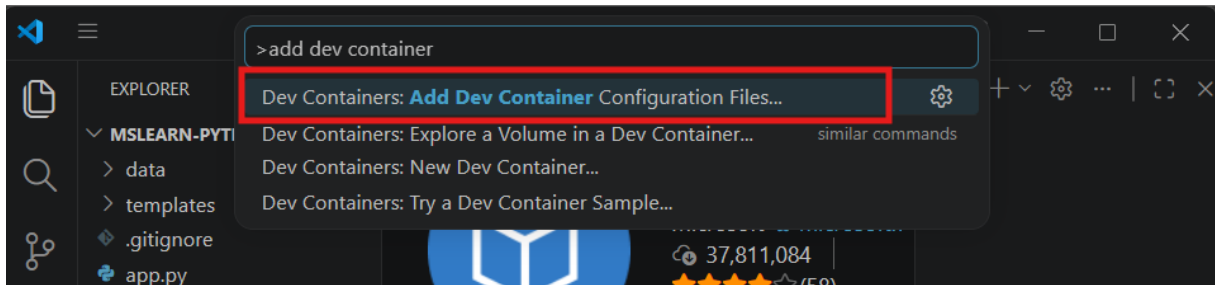


- Je sélectionne l'icône Extensions afin d'installer l'extension Dev Containers (« conteneurs de développement »).

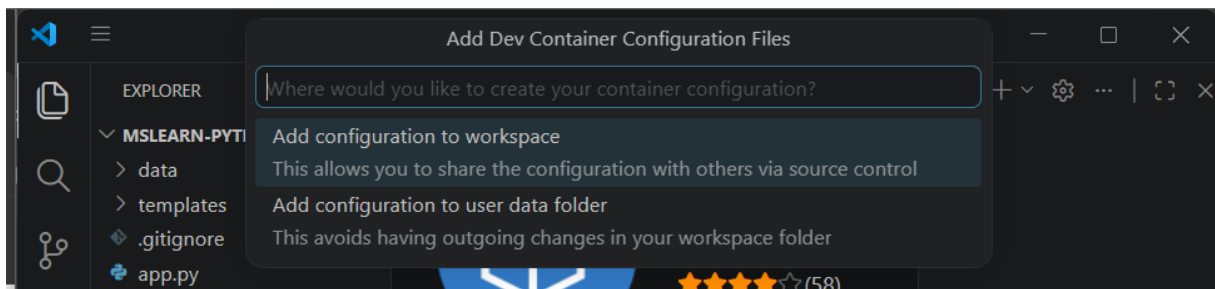


- J'appuie sur F1 pour ouvrir la palette de commandes :

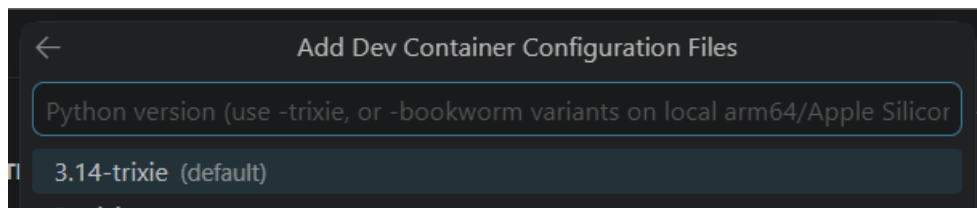
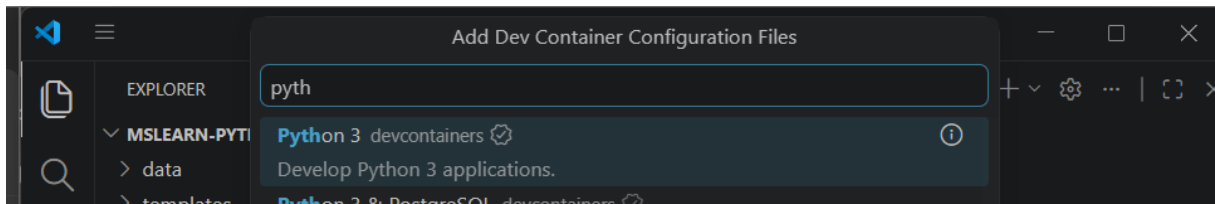
- Je tape add dev container et je sélectionne Dev Containers: Add Dev Container Configuration Files :



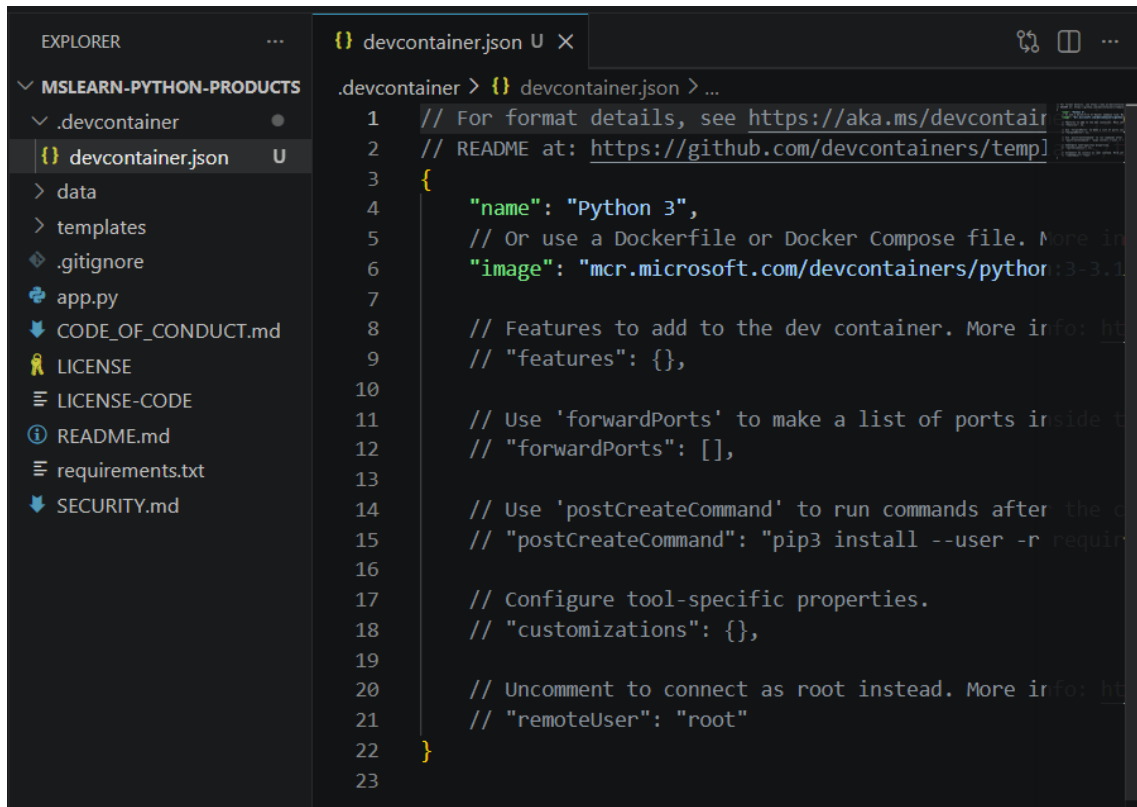
- Je sélectionne Add configuration to workspace:



- Je sélectionne Python3 :

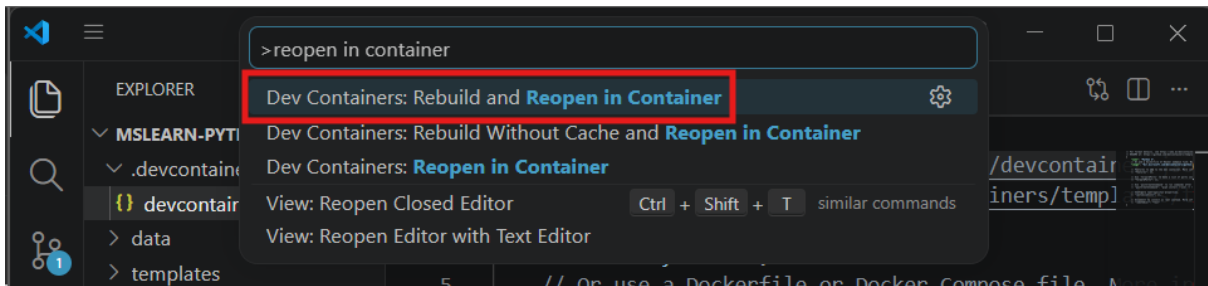


- Un nouveau dossier nommé « .devcontainer » a été ajouté au projet. Je développe ce dossier : il contient un fichier devcontainer.json :

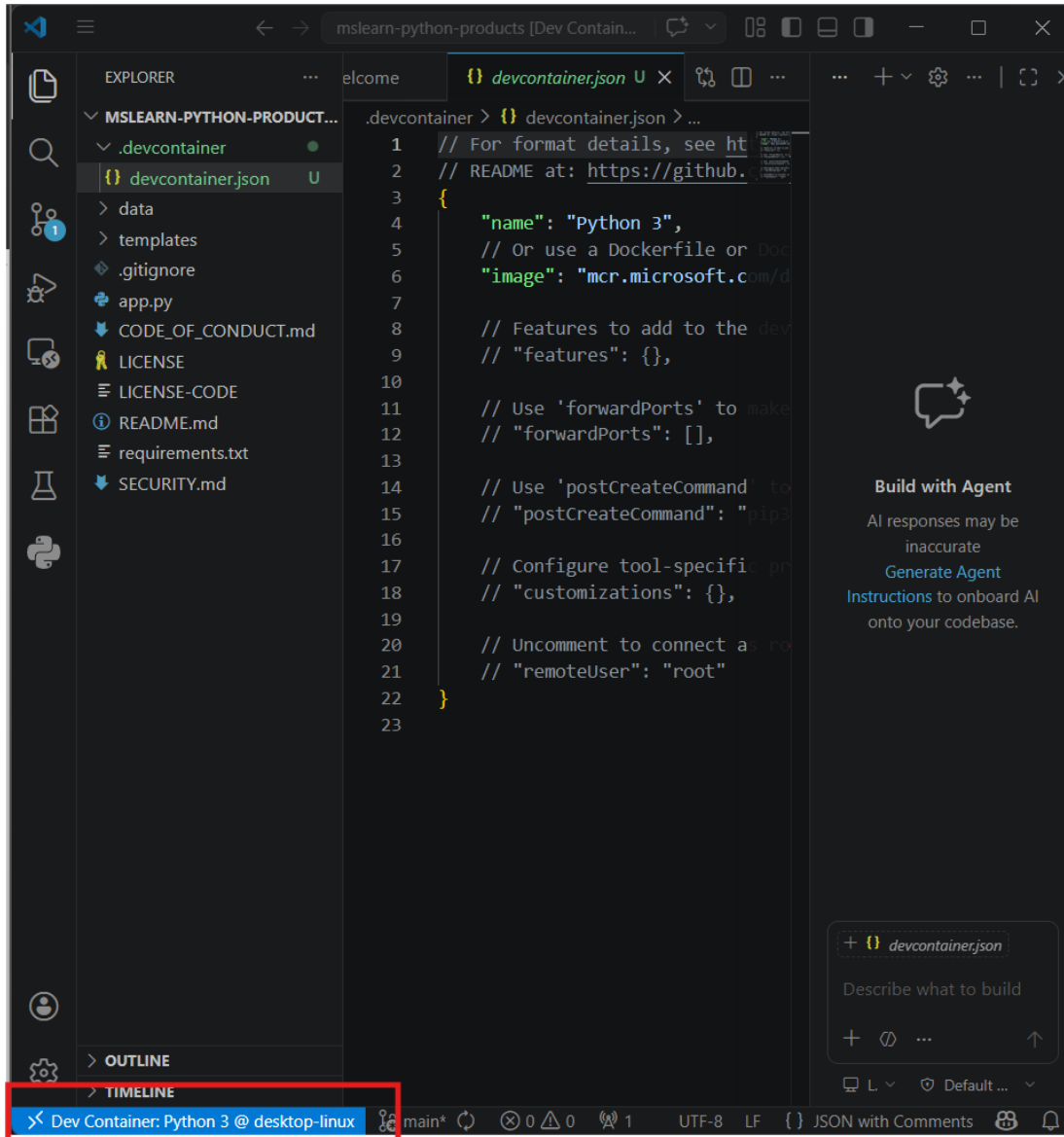


```
1 // For format details, see https://aka.ms/devcontainer
2 // README at: https://github.com/devcontainers/temp
3 {
4     "name": "Python 3",
5     // Or use a Dockerfile or Docker Compose file. More info: https://aka.ms/devcontainer
6     "image": "mcr.microsoft.com/devcontainers/python:3-3.1",
7
8     // Features to add to the dev container. More info: https://aka.ms/devcontainer
9     // "features": {},
10
11     // Use 'forwardPorts' to make a list of ports inside the container available on your host.
12     // "forwardPorts": [],
13
14     // Use 'postCreateCommand' to run commands after the container is created.
15     // "postCreateCommand": "pip3 install --user -r requirements.txt",
16
17     // Configure tool-specific properties.
18     // "customizations": {},
19
20     // Uncomment to connect as root instead. More info: https://aka.ms/devcontainer
21     // "remoteUser": "root"
22 }
23
```

- J'appuie sur F1 pour ouvrir la palette de commandes, je tape reopen in container et je sélectionne Dev Containers: Reopen in Container dans la liste des options disponibles :



- J'examine l'indicateur distant en bas à gauche de VS Code : il affiche à présent « Dev Container: Python 3 » :



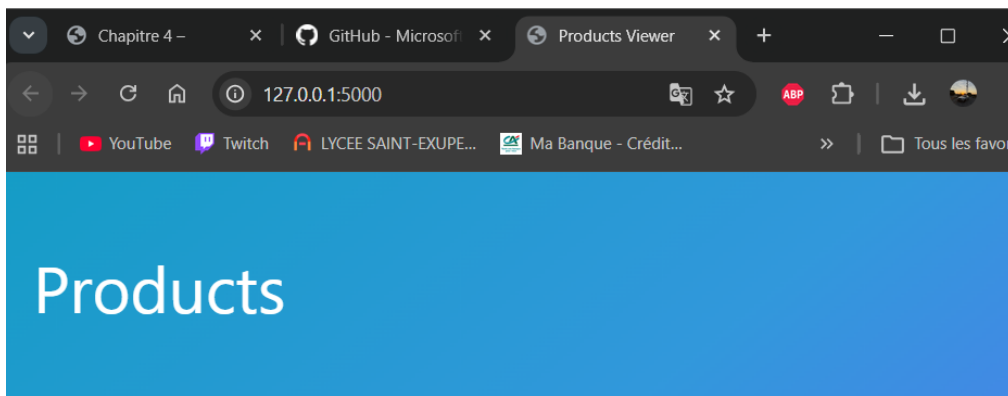
- J'exécute la commande suivante dans le terminal pour installer les dépendances Flask nécessaires à l'exécution du projet :

```
• vscode → /workspaces/mslearn-python-products (main) $ python --version
Python 3.14.3
• vscode → /workspaces/mslearn-python-products (main) $ pip3 install --user -r requirements.txt
Collecting Flask==2.3.3 (from -r requirements.txt (line 2))
  Downloading flask-2.3.3-py3-none-any.whl.metadata (3.6 kB)
Collecting Werkzeug>=2.3.7 (from Flask==2.3.3->-r requirements.txt (
```

- J'entre la commande suivante dans le terminal pour exécuter le projet :

```
vscode →/workspaces/mslearn-python-products (main) $ python app.py
WARNING: This is a development server. Do not use it in a production
deployment. Use a production WSGI server instead.
* Running on http://127.0.0.1:5000
Press CTRL+C to quit
* Restarting with stat
* Debugger is active!
* Debugger PIN: 915-045-293
127.0.0.1 - - [30/Mar/2026 15:51:23] "GET / HTTP/1.1" 200 -
127.0.0.1 - - [30/Mar/2026 15:51:24] "GET /favicon.ico HTTP/1.1" 404
```

- Je montre que l'application web Python avec Flask s'est bien exécutée sur ma machine en saisissant `http://127.0.0.1:5000` depuis le navigateur :



Name	Brand	Price	Units in Stock
Single red garden gnome	Home & Pro tools	56	98
Two red garden gnomes	Home & Pro tools	92	4
One sat gnome	Home & Pro tools	34	34
One sat on shoe gnome	Home & Pro tools	54	54
One barrow gnome	Home & Pro tools	29	23
One glasses gnome	Home & Pro tools	54	94

```
Welcome devcontainer.json U products.json X
data > products.json > ...
1  [
2    {
3      "name": "Single red garden gnome",
4      "price": 56,
5      "brand": {
6        "name": "Home & Pro tools"
7      },
8      "stockUnits": 98
9    },
10   {
11     "name": "Two red garden gnomes",
12     "price": 92,
13     "brand": {
14       "name": "Home & Pro tools"
15     },
16     "stockUnits": 4
17   },
18   {
19     "name": "One sat gnome",
20     "price": 34,
21     "brand": {
22       "name": "Home & Pro tools"
23     },
24     "stockUnits": 24

```

```
Welcome devcontainer.json U index.html X
templates > index.html > ...
1  <!DOCTYPE html>
2  <html lang="en">
3  <head>
4    <meta charset="UTF-8">
5    <meta name="viewport" content="width=device-width, initial-scale=1">
6    <link rel="stylesheet" href="https://cdn.jsdelivr.net/npm/bootstrap@5.1.3/dist/css/bootstrap.min.css">
7    <title>Products Viewer</title>
8  </head>
9  <body>
10   <div id="app">
11     <header>
12       <div class="container">
13         <div class="hero is-info is-bold">
14           <div class="hero-body">
15             <h1 class="is-size-1">Products</h1>
16           </div>
17         </div>
18       </div>
19     </header>
20     <section class="section">
21       <div class="container">
22         <div>
23           <table class="table is-fullwidth is-striped">
24             <thead>

```

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<input type="checkbox"/>	frosty_gates	be54618b5aef	devcontain		3.13%	1.39	

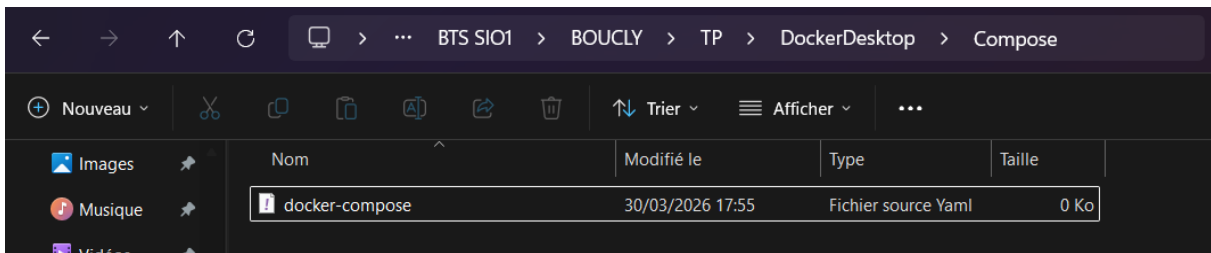
## 13 – Monter une stack applicative avec Docker Compose :

- J'installe l'extension YAML dans VS Code :

**YAML**  
 Red Hat | 26,301,164 | (74)  
 ★★★★★ (74)  
 YAML Language Support by Red Hat, with built-in Kubernetes syntax support

**Install**  Auto Update

- Afin de monter un blog Wordpress avec sa base de données, je crée dans un dossier le fichier docker-compose.yml suivant à l'aide de VS Code :



```
docker-compose.yml
1  services:
2    db:
3      image: mysql:latest
4      volumes:
5        - db_data:/var/lib/mysql
6      restart: always
7      environment:
8        MYSQL_ROOT_PASSWORD: password
9        MYSQL_DATABASE: wordpress
10       MYSQL_USER: wordpress
11       MYSQL_PASSWORD: wordpress
12
13     wordpress:
14       depends_on:
15         - db
16       image: wordpress:latest
17       ports:
18         - "8000:80"
19       restart: always
20       environment:
21         WORDPRESS_DB_HOST: db:3306
22         WORDPRESS_DB_USER: wordpress
23         WORDPRESS_DB_PASSWORD: wordpress
24         WORDPRESS_DB_NAME: wordpress
25     volumes:
26       db_data: {}
```



**Images** [Give feedback](#)

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**Volumes** [Give feedback](#)

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<input type="checkbox"/>	615722a8b7cc1ac15a990ea28e4be90425fab80602d969736c7035	2 minutes ago	76.8 MB	
<input type="checkbox"/>	aebf895001e0224e970d22468d31bbc7c53f25491d3edb84a2d96fc4	1 hour ago	200.7 MB	
<input type="checkbox"/>	<b>compose_db_data</b>	2 minutes ago	214.5 MB	
<input type="checkbox"/>	mon_volume_mongodb	1 hour ago	200.9 MB	
<input type="checkbox"/>	vscode	21 minutes ago	325.6 MB	

**compose**  
D:\BTS SI01\BOUCLY\TP\DockerDesktop\Compose

---

**db** ●  
mysql:latest

---

**wordpress** ●  
wordpress:latest  
8000:80