Chap4 : Docker sous Windows

Sommaire

1 – Installation / Activation de WSL :

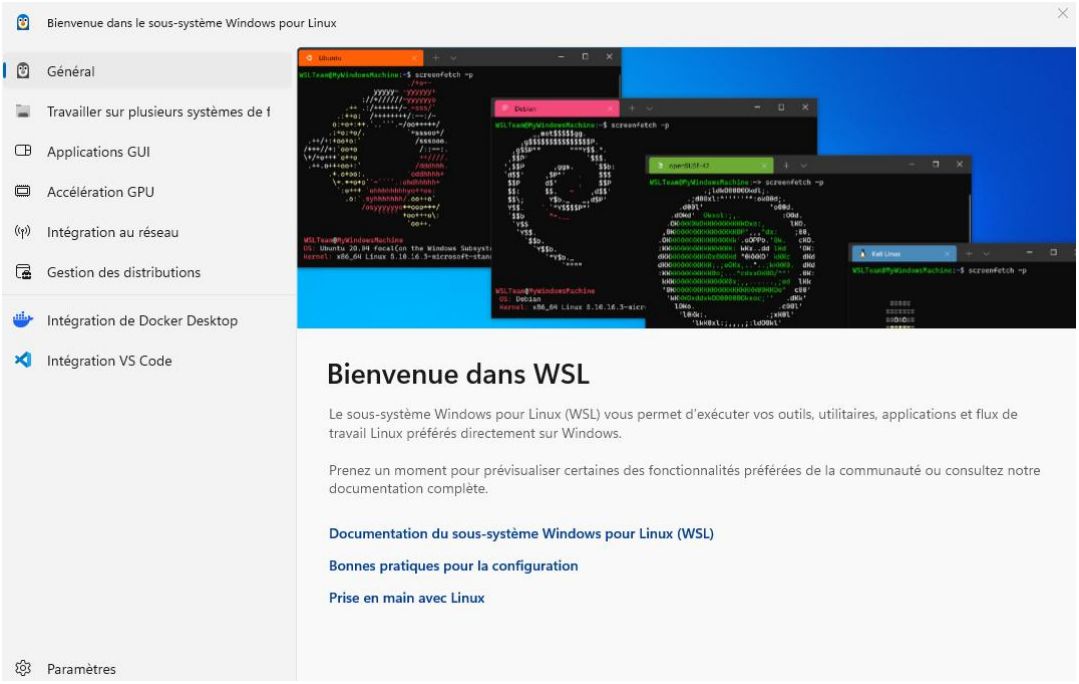
- J’installe WSL :

```
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.
```

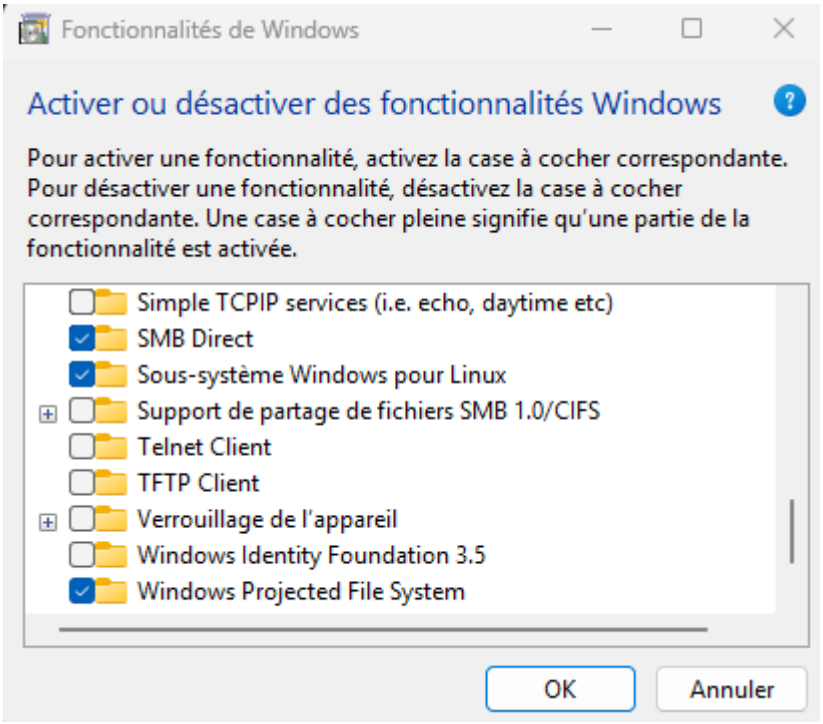
- J’affiche la liste des distributions qui peuvent être installés :

```
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>
```

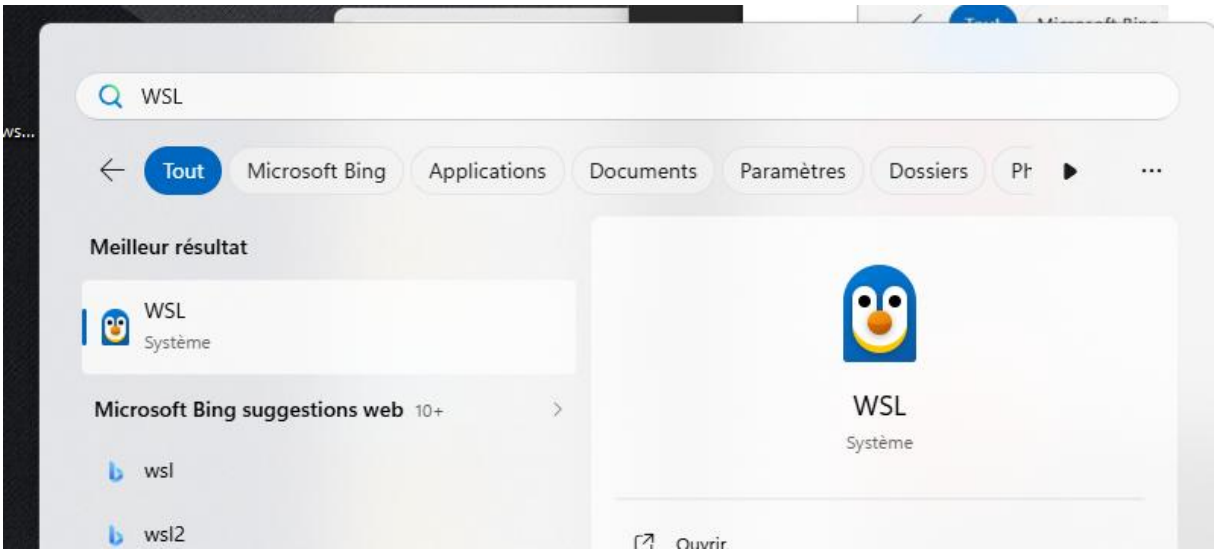
- WSL à bien été installé :

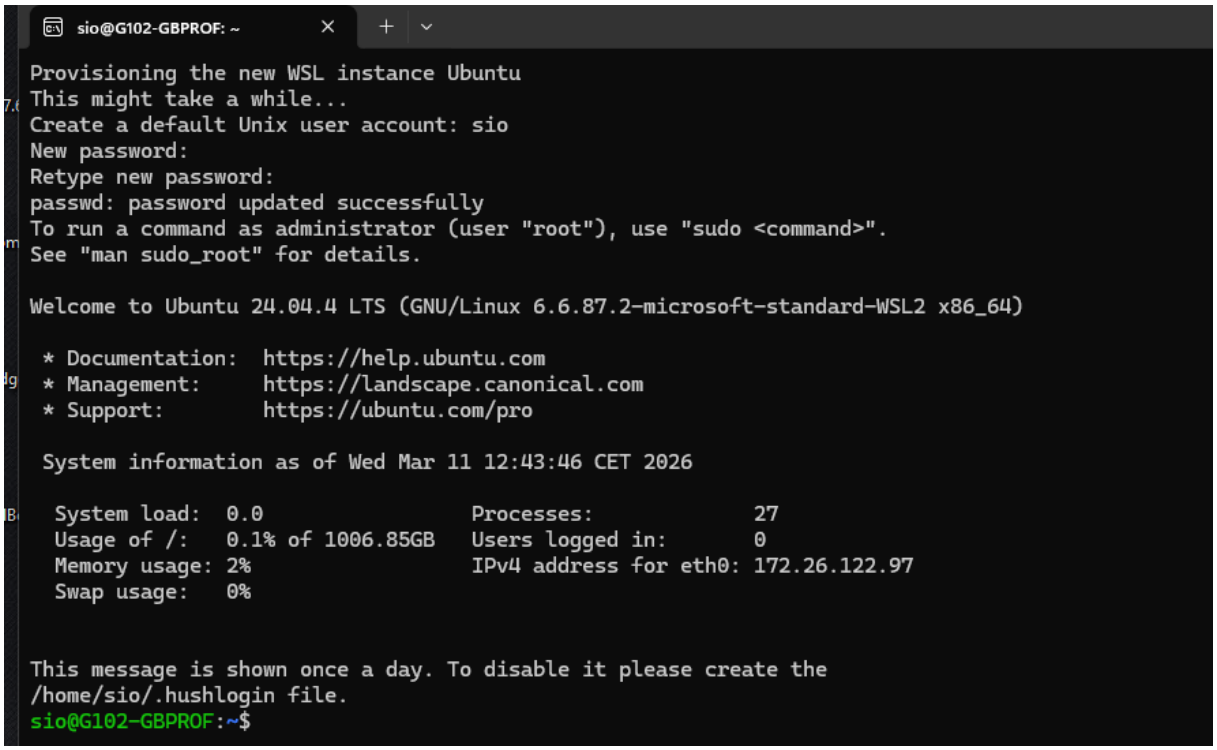


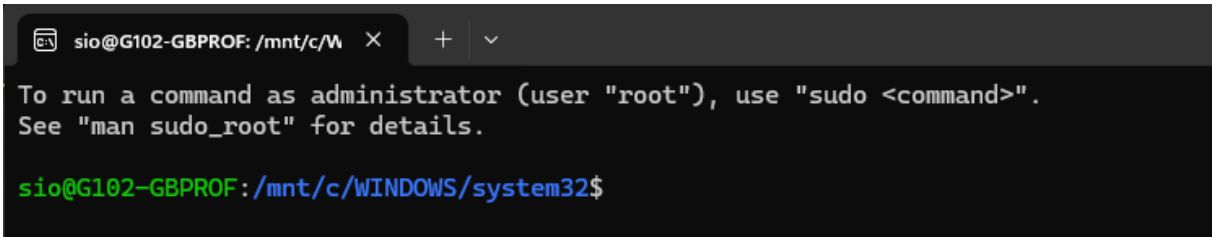
- J'ajoute la fonctionnalité, sous-système Windows pour linux :



- Je lance WSL :

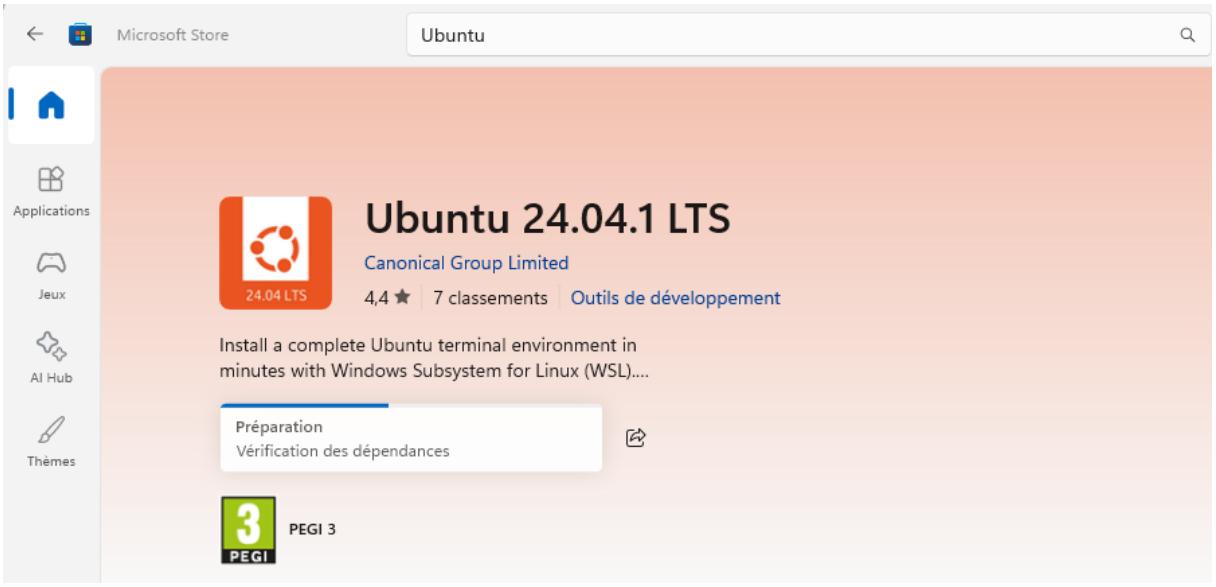

WSL
Tout
Microsoft Bing
Applications
Documents
Paramètres
Dossiers
Meilleur résultat
WSL
Système
Microsoft Bing suggestions web 10+
wsl
wsl2
WSL
Système
Ouvrir

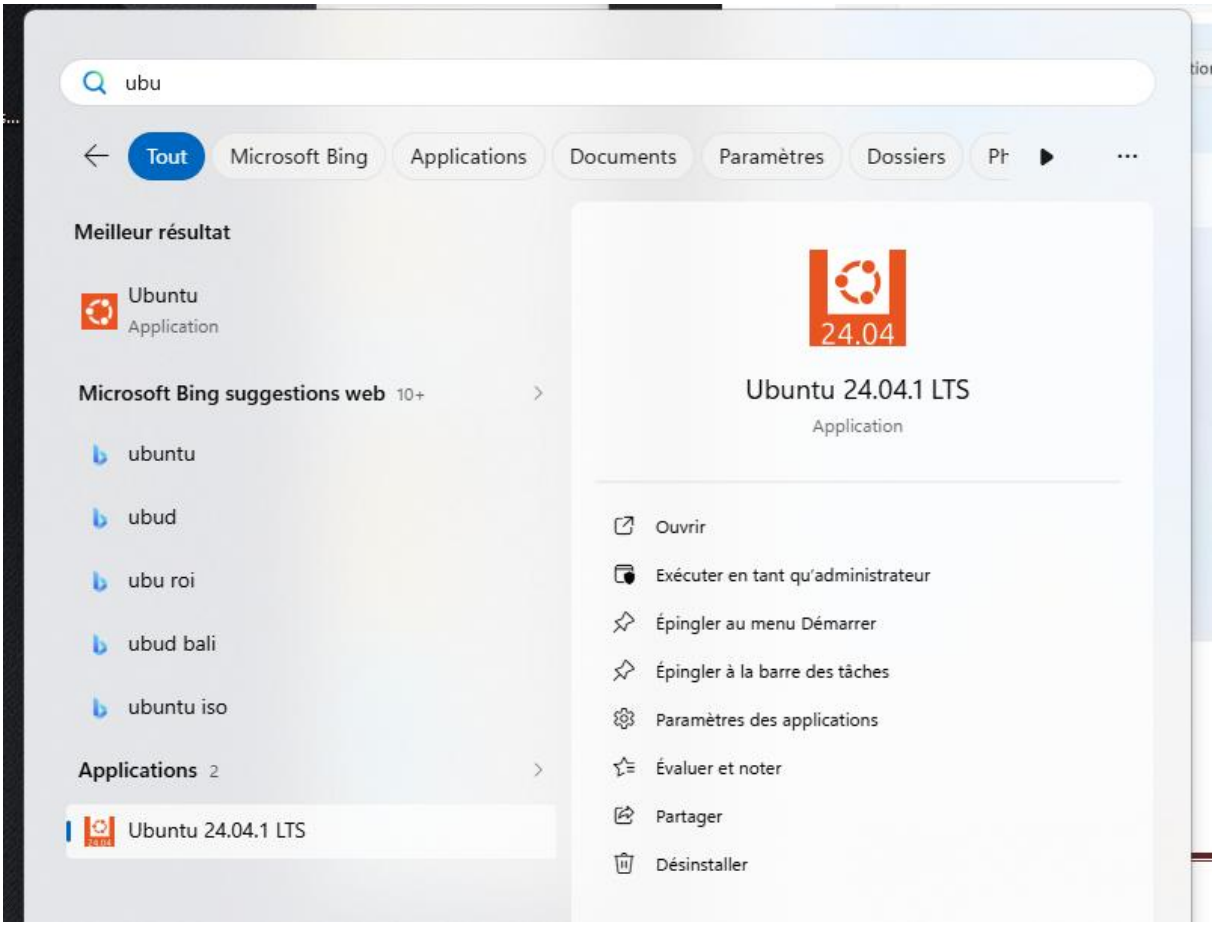

sio@G102-GBPROF: ~
Provisioning the new WSL instance Ubuntu
This might take a while...
Create a default Unix user account: sio
New password:
Retype new password:
passwd: password updated successfully
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.
Welcome to Ubuntu 24.04.4 LTS (GNU/Linux 6.6.87.2-microsoft-standard-WSL2 x86_64)
* Documentation: https://help.ubuntu.com
* Management: https://landscape.canonical.com
* Support: https://ubuntu.com/pro
System information as of Wed Mar 11 12:43:46 CET 2026
System load: 0.0
Usage of /: 0.1% of 1006.85GB
Memory usage: 2%
Swap usage: 0%
Processes: 27
Users logged in: 0
IPv4 address for eth0: 172.26.122.97
This message is shown once a day. To disable it please create the
/home/sio/.hushlogin file.
sio@G102-GBPROF:~$


sio@G102-GBPROF: /mnt/c/W
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.
sio@G102-GBPROF:/mnt/c/WINDOWS/system32$

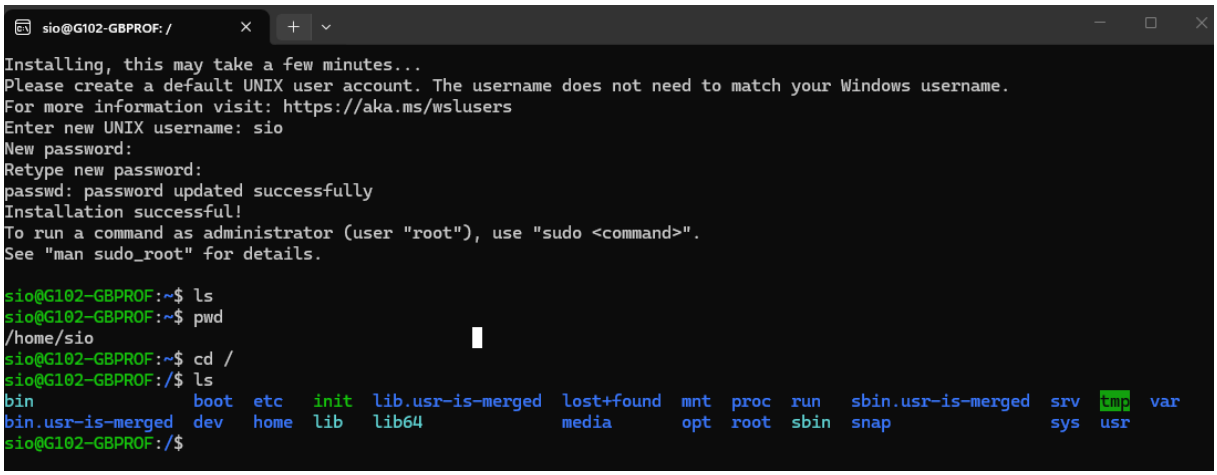
2 – Installation Ubuntu :

- J’installe Ubuntu :





- Je suis sur le système Ubuntu :

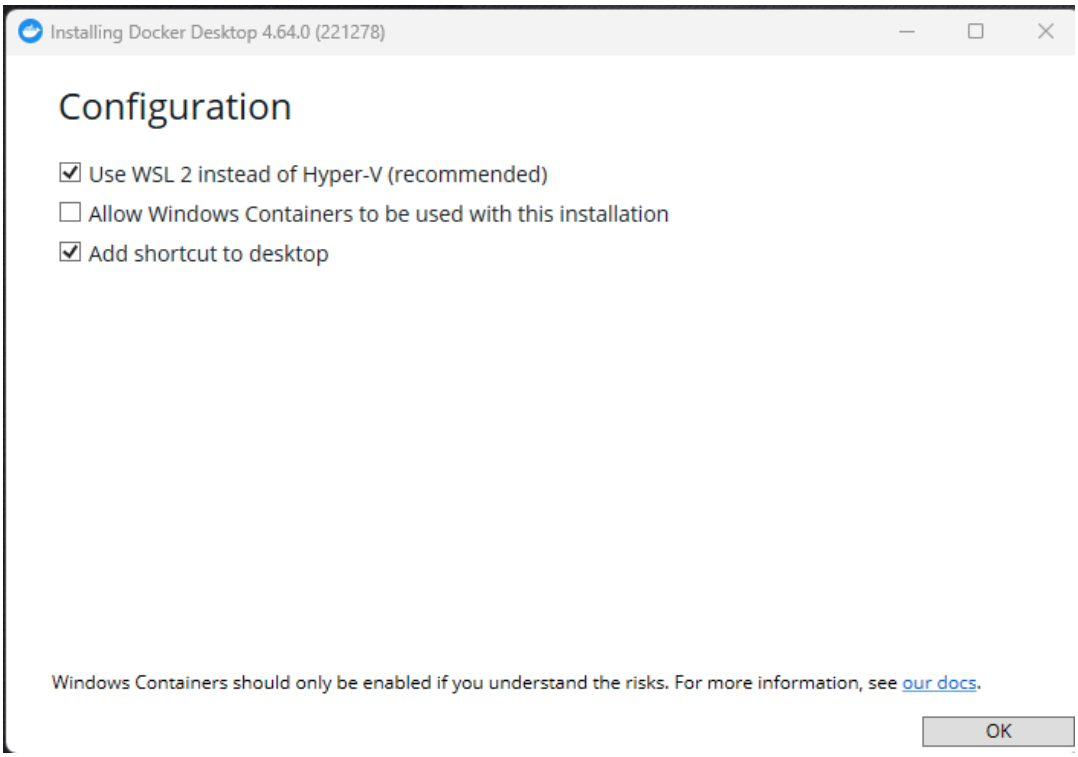


- Terminal Windows :

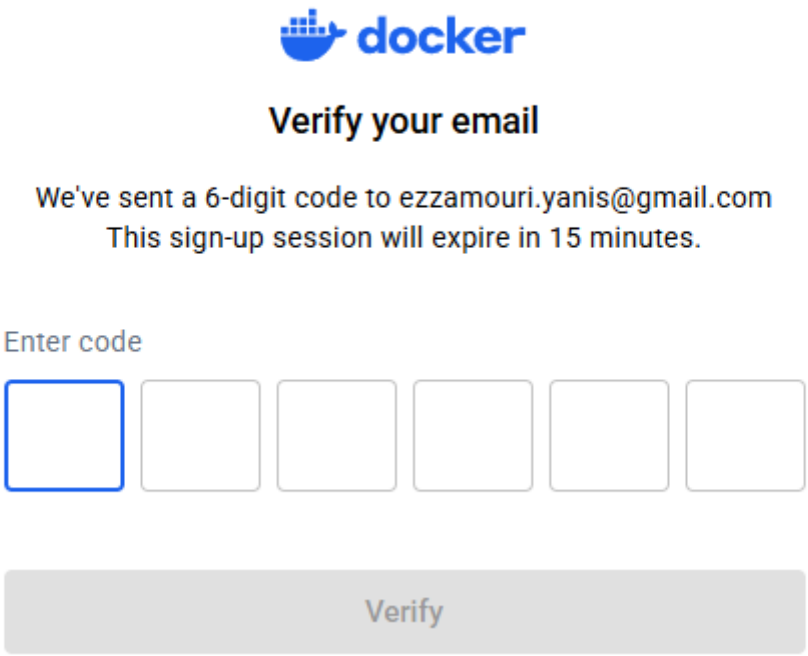
3 – Installation Docker :

- Je télécharge Docker Desktop :

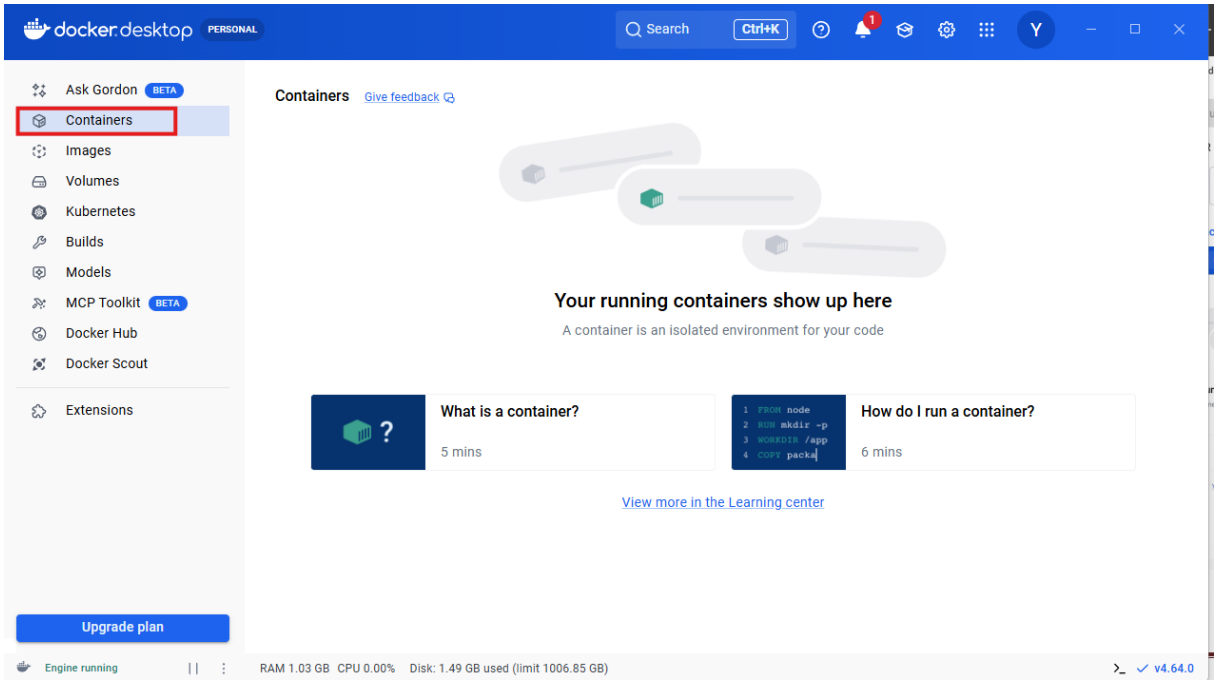
- Je continue l'installation :



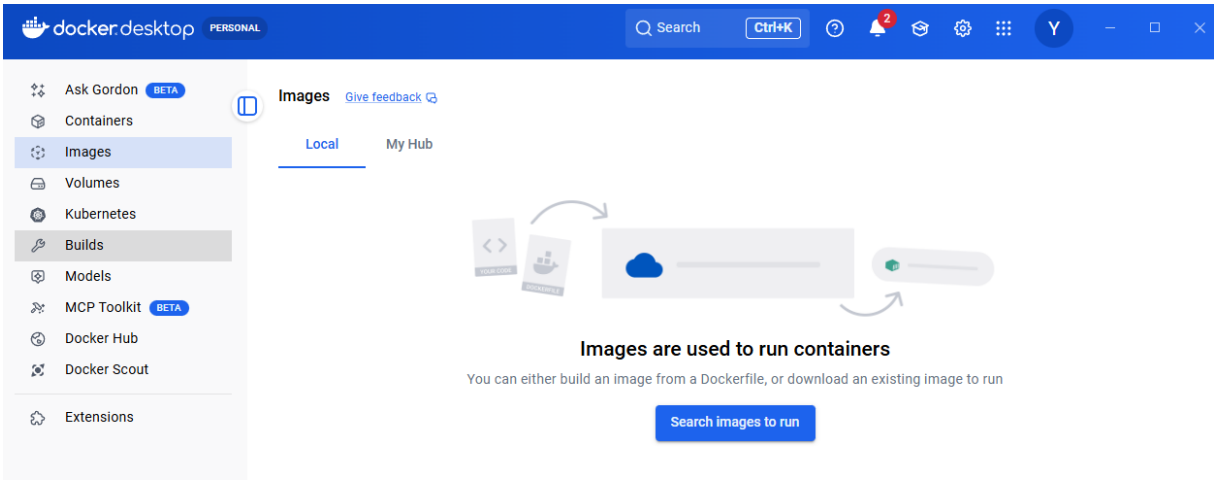
- Je crée un compte :



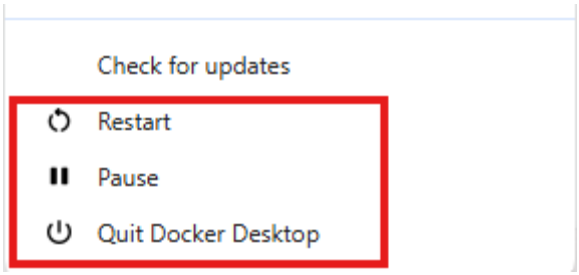
- Page containers :



- Page images :

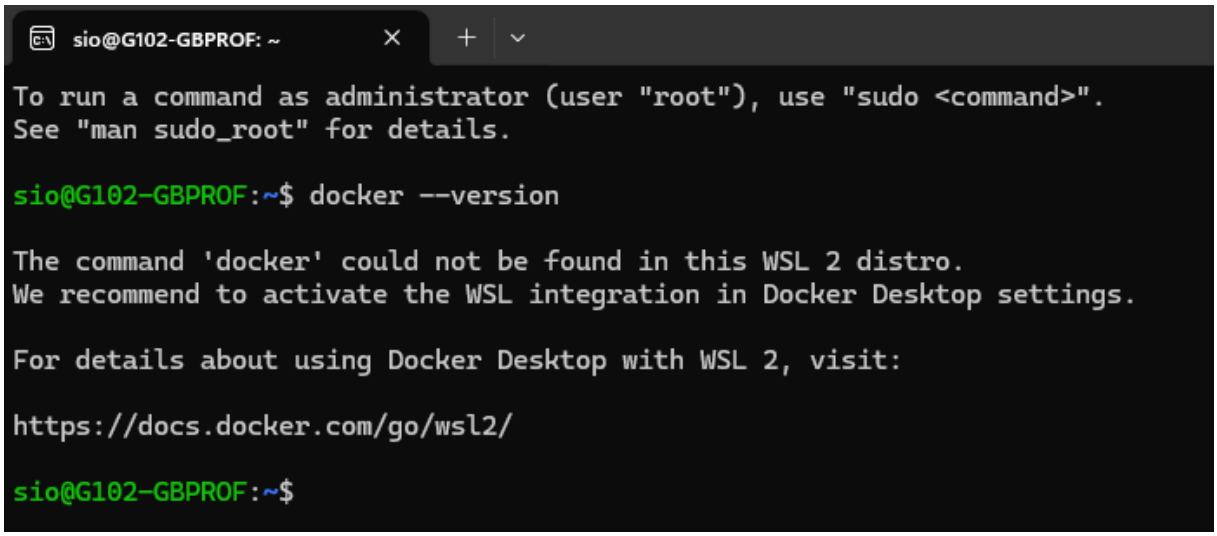


- Docker est bien lancé :

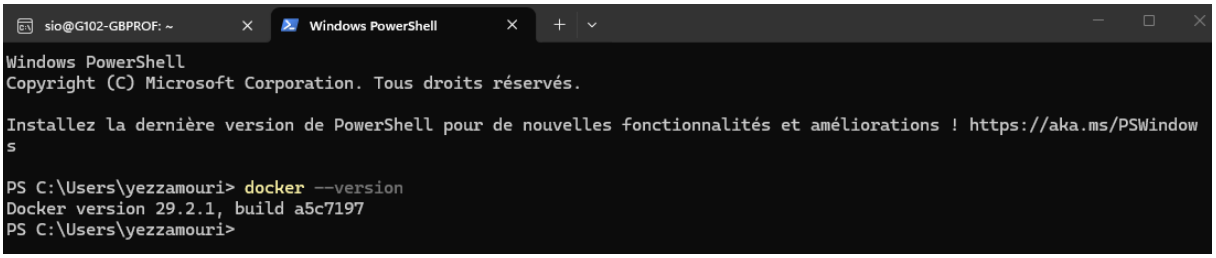


4 – Premier test :

- Je regarde la version de docker :



- De même dans le terminal :

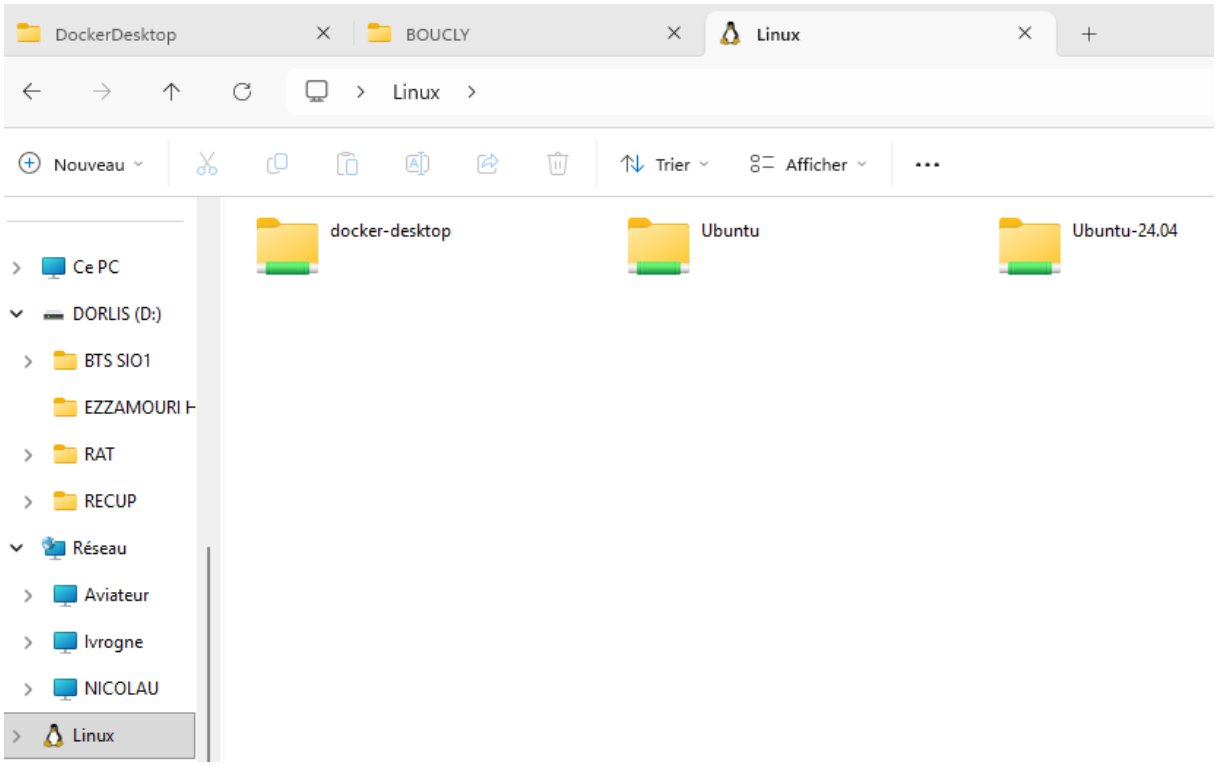


```
C:\Users\yezzamouri>docker version
Client:
 Version:           29.2.1
 API version:       1.53
 Go version:        go1.25.6
 Git commit:        a5c7197
 Built:             Mon Feb  2 17:20:16 2026
 OS/Arch:           windows/amd64
 Context:           desktop-linux

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
```

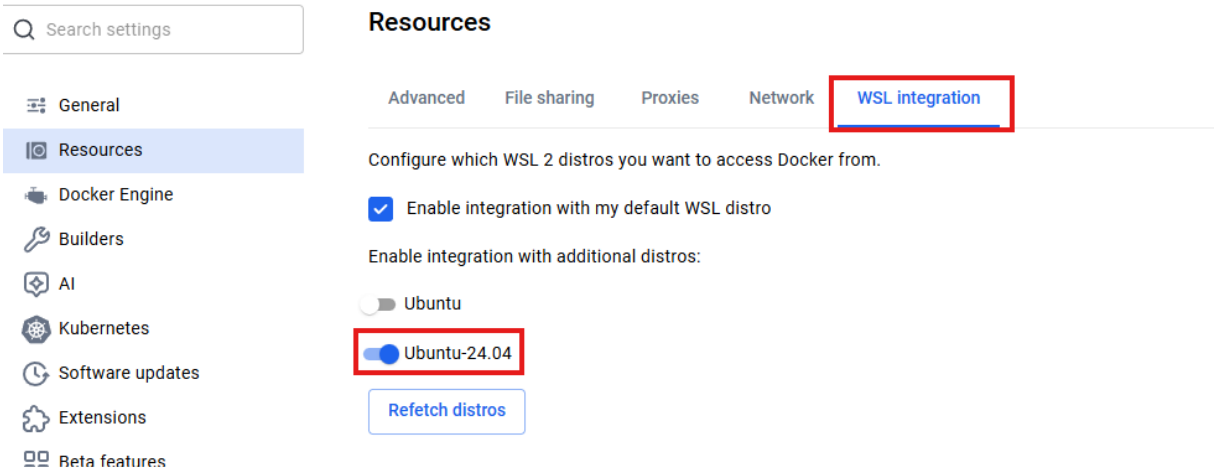
- J’affiche ce qui tourne sur wsl :

```
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 :



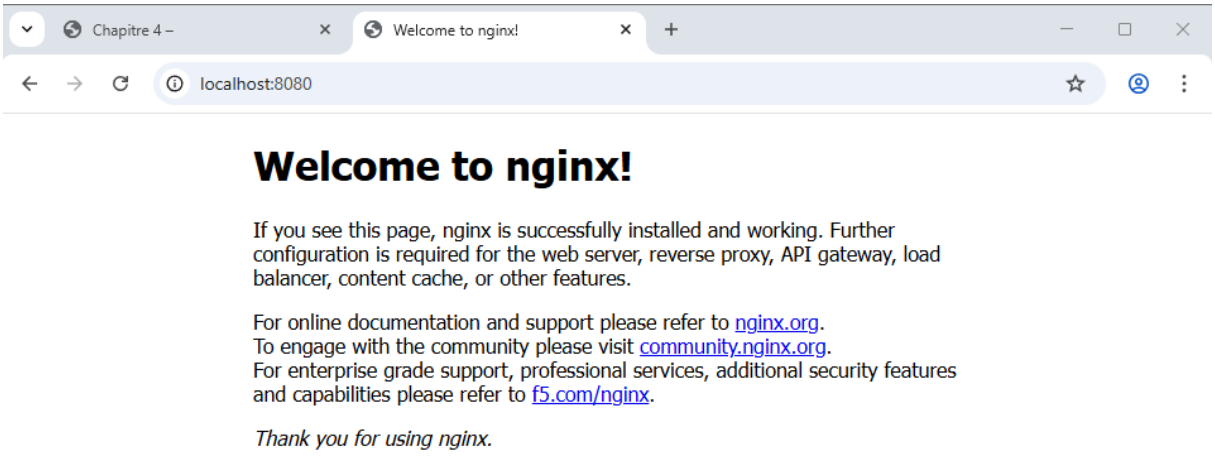
- J'active la distribution Ubuntu 24.04 :

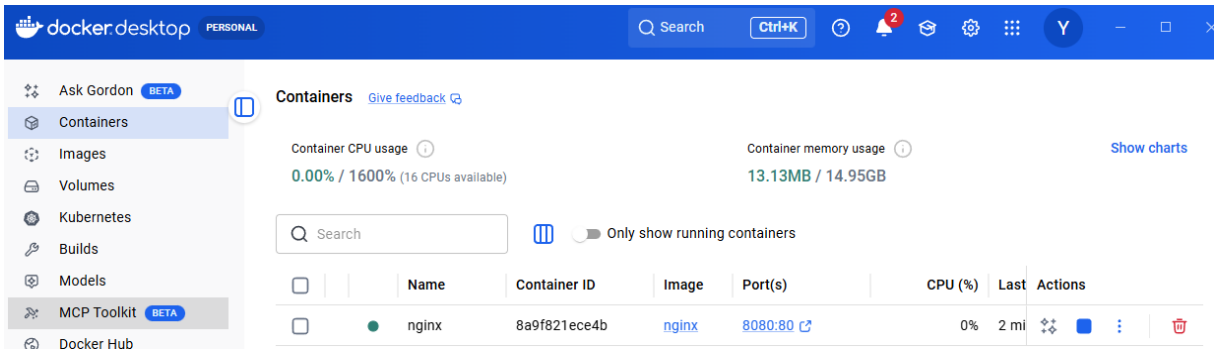


5 – Deuxième test :

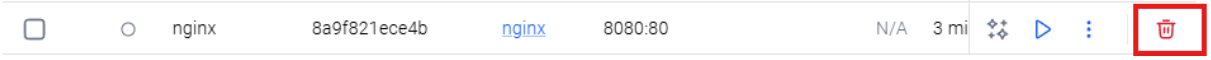
```
sio@G102-GBPROF:~$ docker run --name nginx -p 8080:80 nginx
Unable to find image 'nginx:latest' locally
latest: Pulling from library/nginx
9eef040df109: Pull complete
a9d395129dce: Pull complete
df9da45c1db2: Pull complete
18a071c04bd1: Pull complete
75a1d70aee50: Pull complete
206356c42440: Pull 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



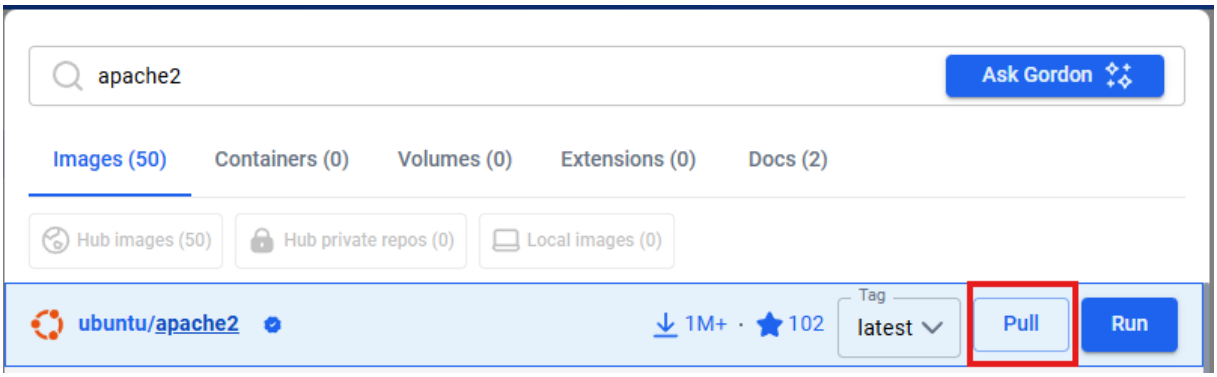


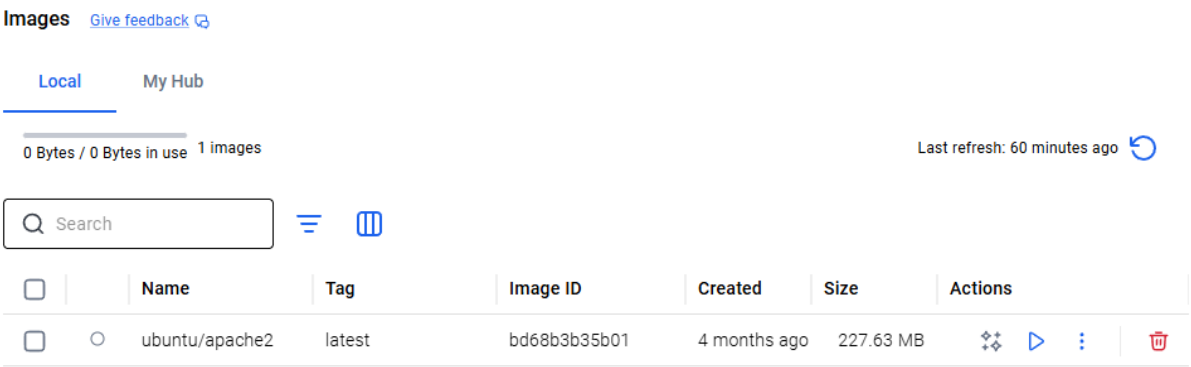
- Action container : stop



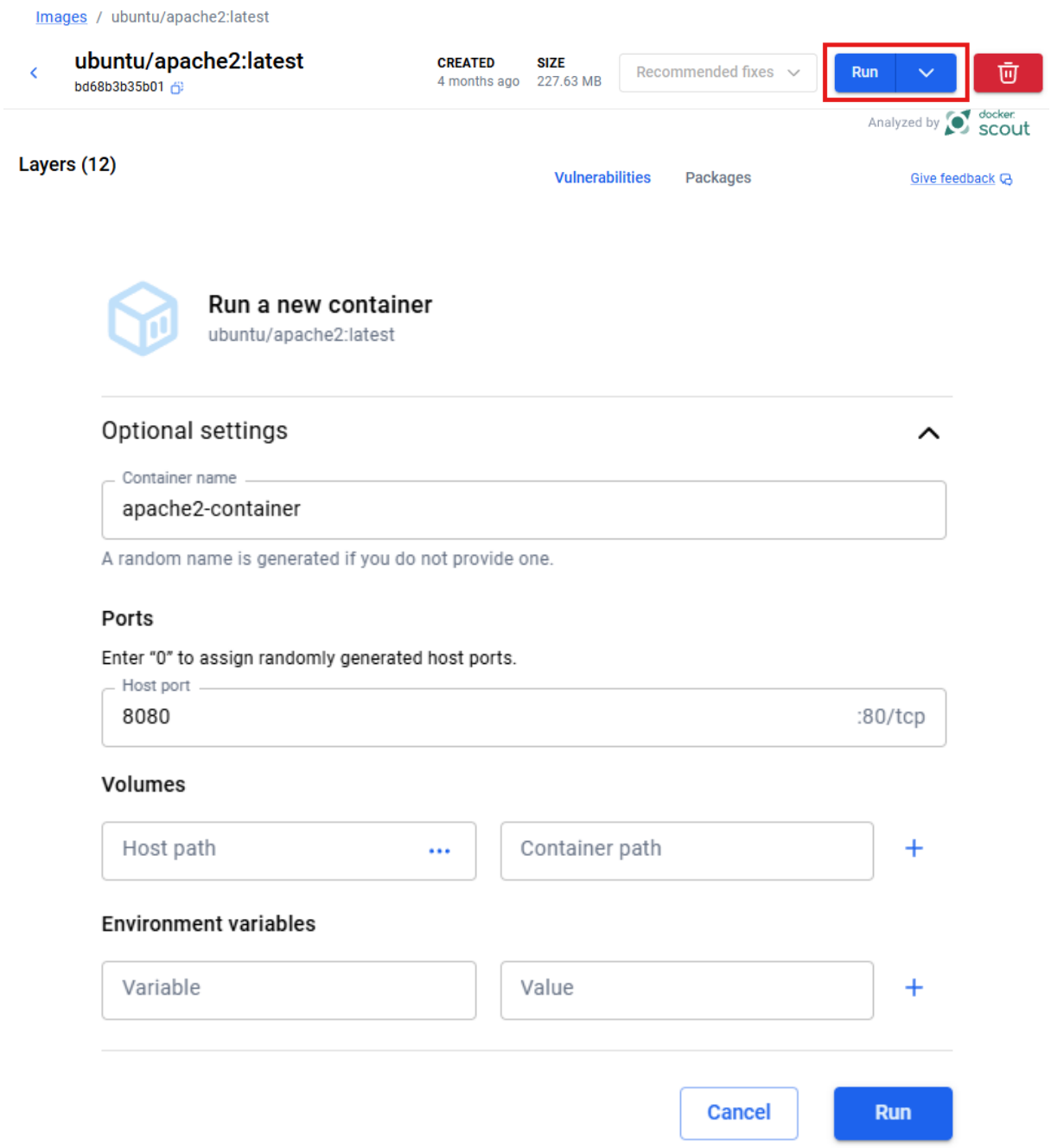
6 – Troisième test :

- Je pull l'image de apache2 :

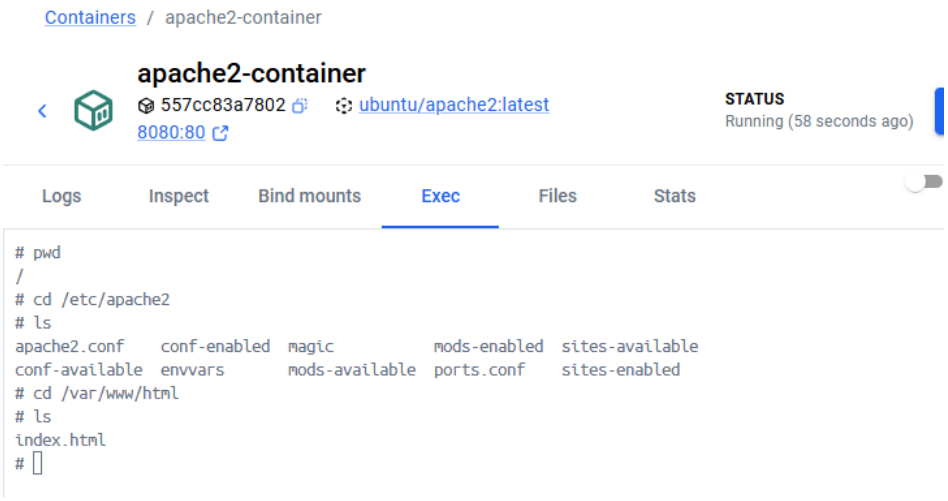


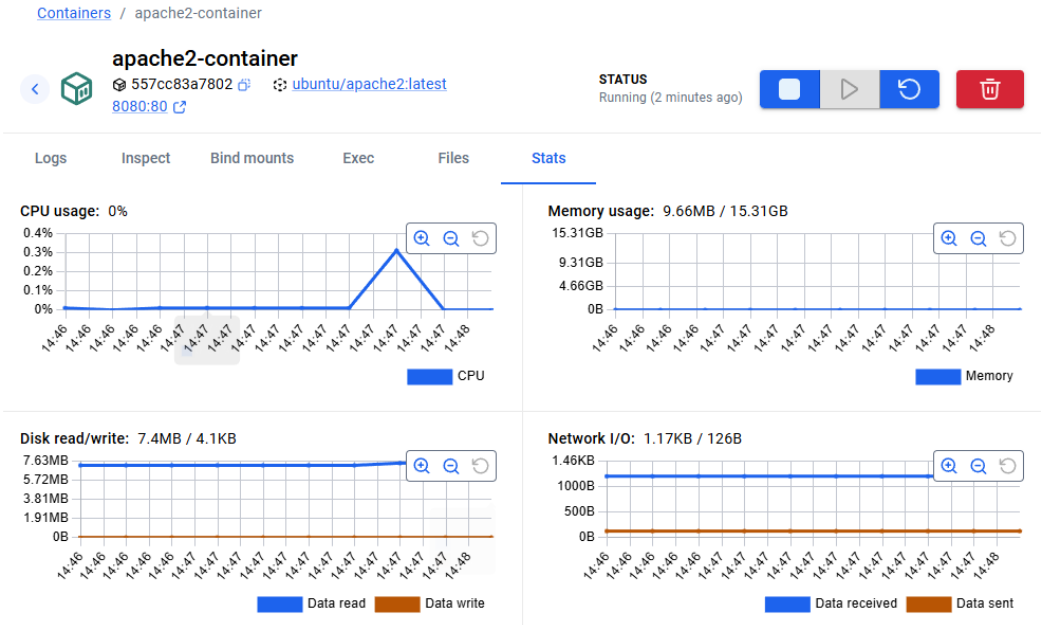


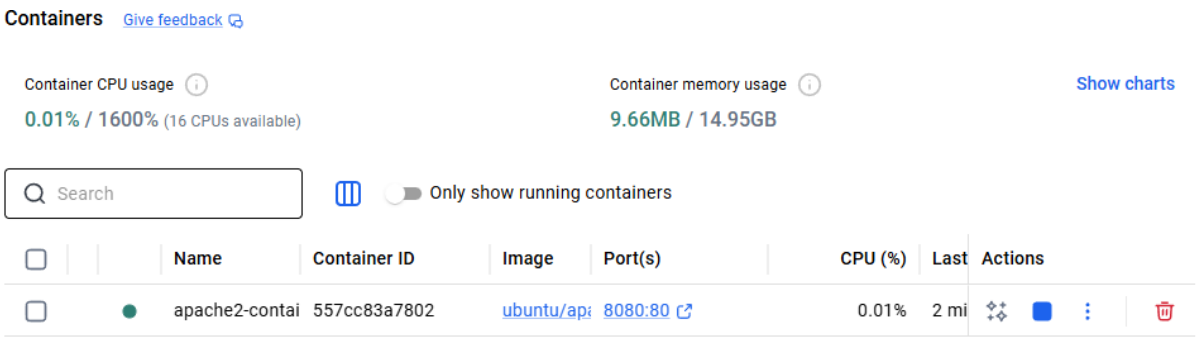
- Je lance l'image :



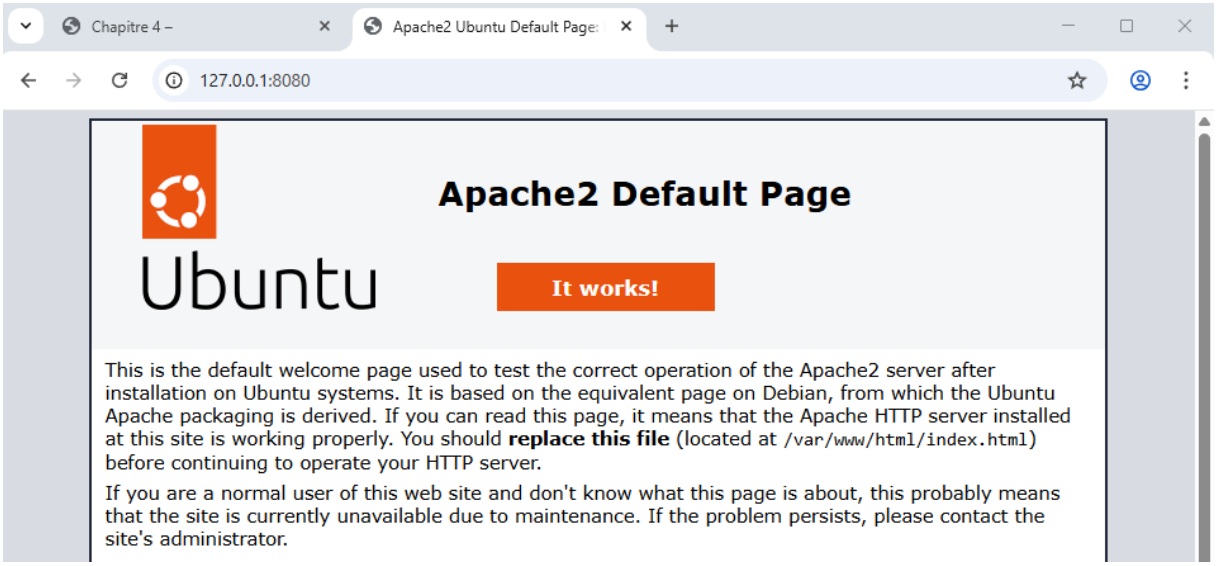
- Un conteneur à bien été créé :



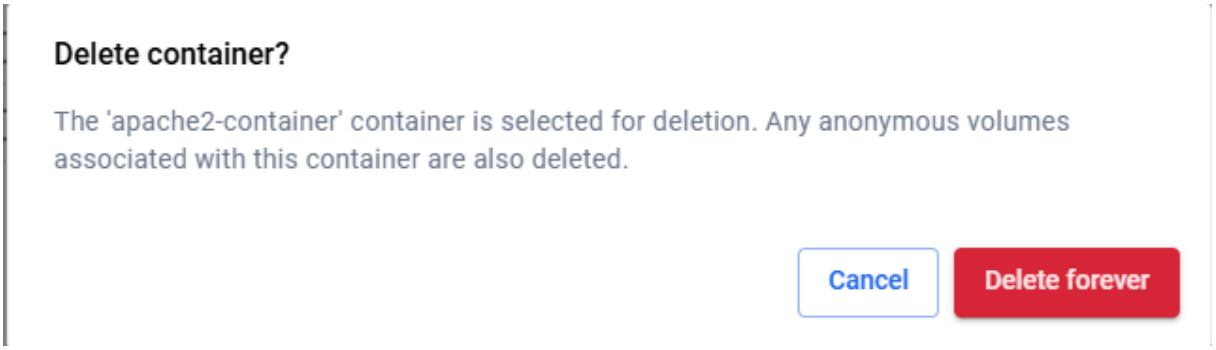




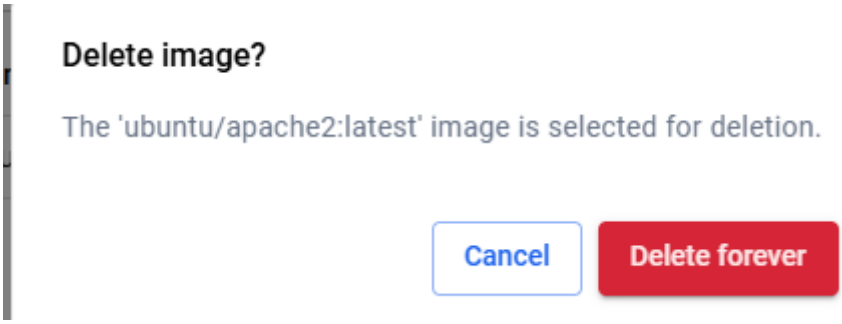
- Apache2 est bien fonctionnel :



- J'arrête et je supprime le conteneur :



- Je supprime l'image :

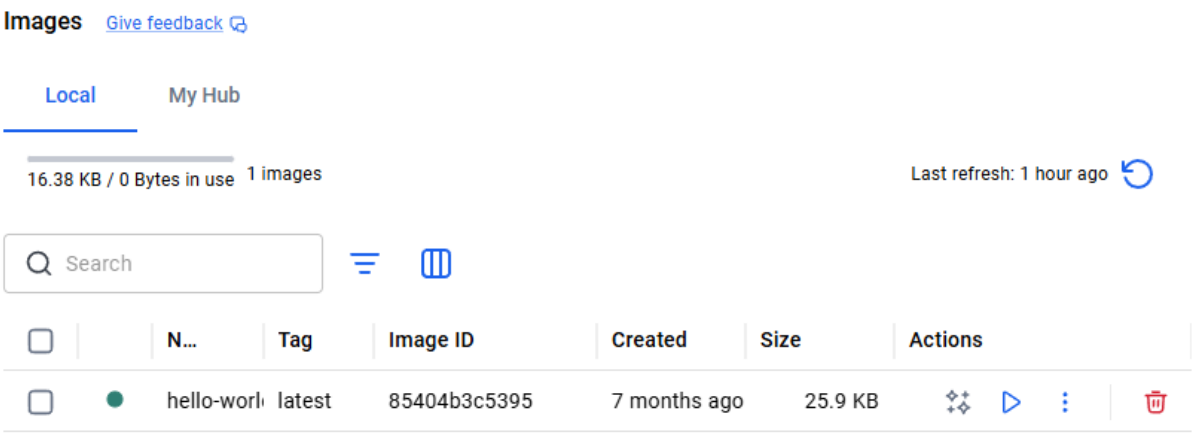


7 – Quatrième test :

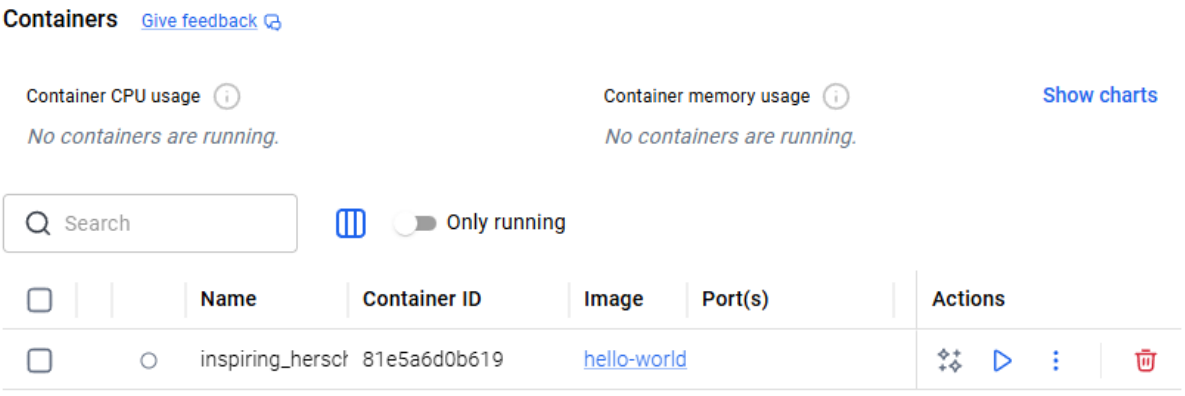
- Je télécharge et exécute l'image hello-world :

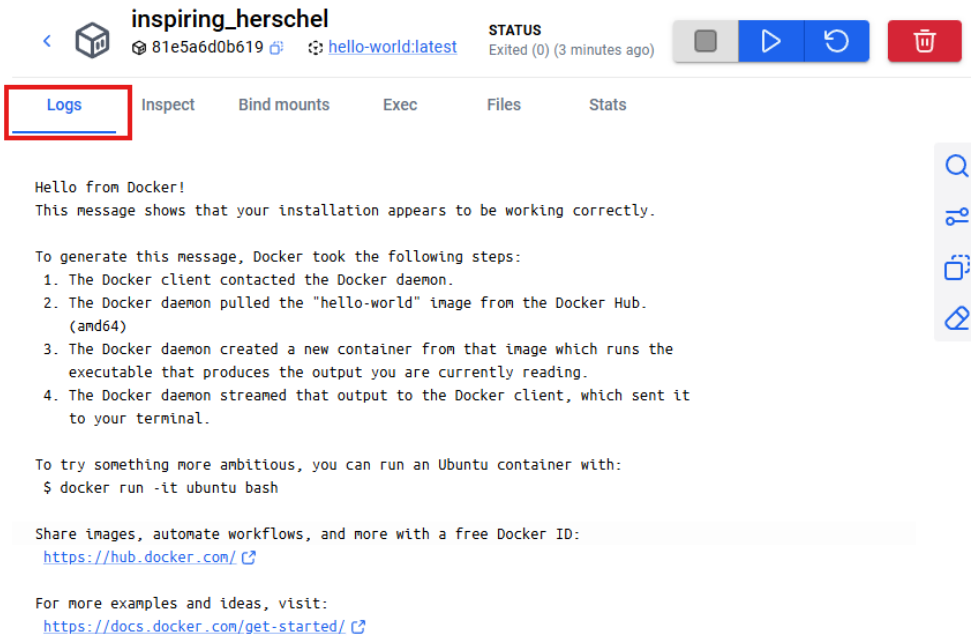
```
sio@G102-GBPROF:~$ docker run hello-world
Unable to find image 'hello-world:latest' locally
latest: Pulling from library/hello-world
ea52d2000f90: Download complete
17eec7bbc9d7: Pull complete
Digest: sha256:85404b3c53951c3ff5d40de0972b1bb21fafa2e8daa235355baf44f33db9dbdd
Status: Downloaded newer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

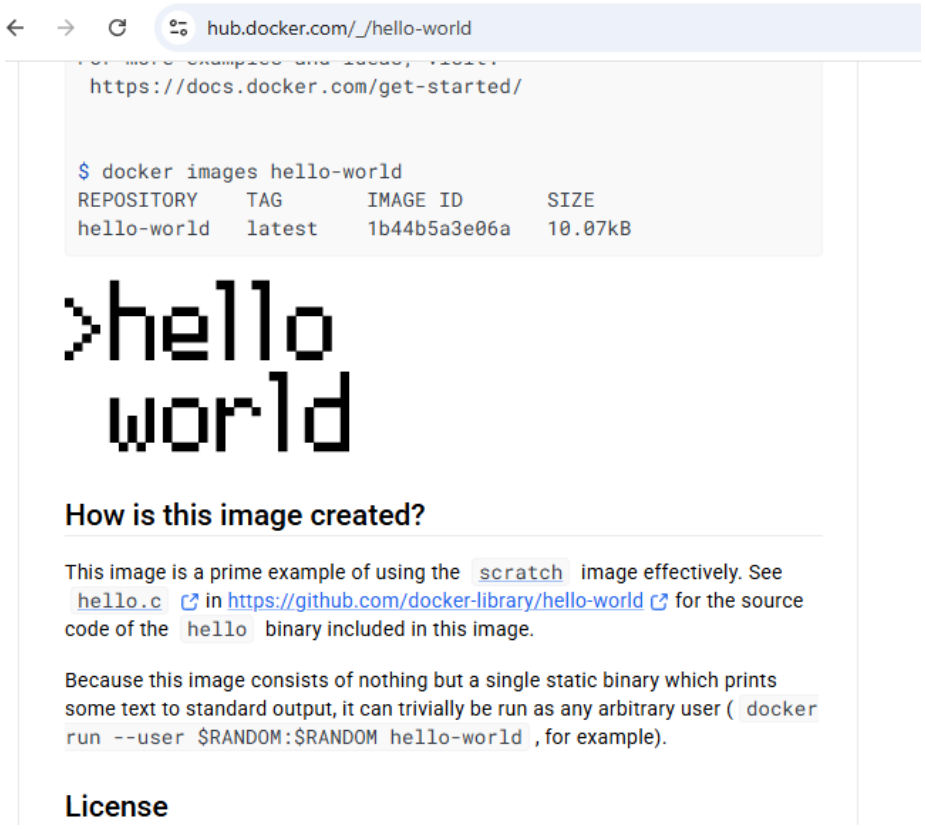


- Le conteneur est arrêté après l'affichage du message :





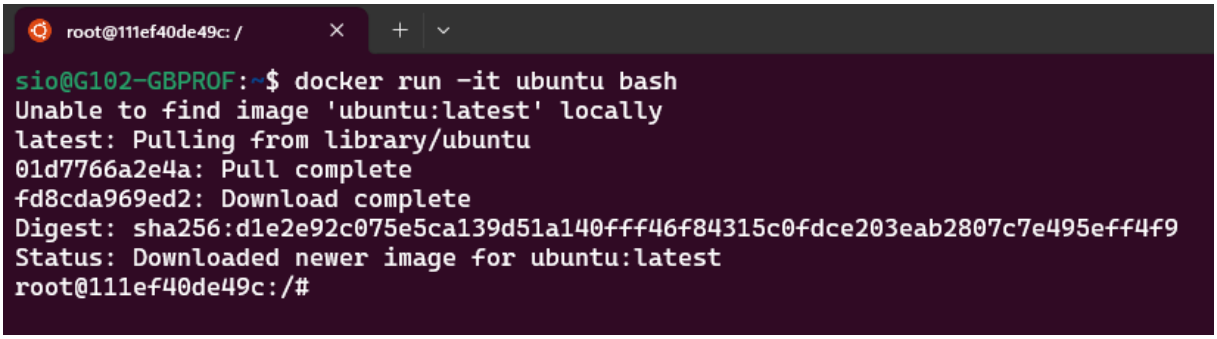
- Les sources de l'image :

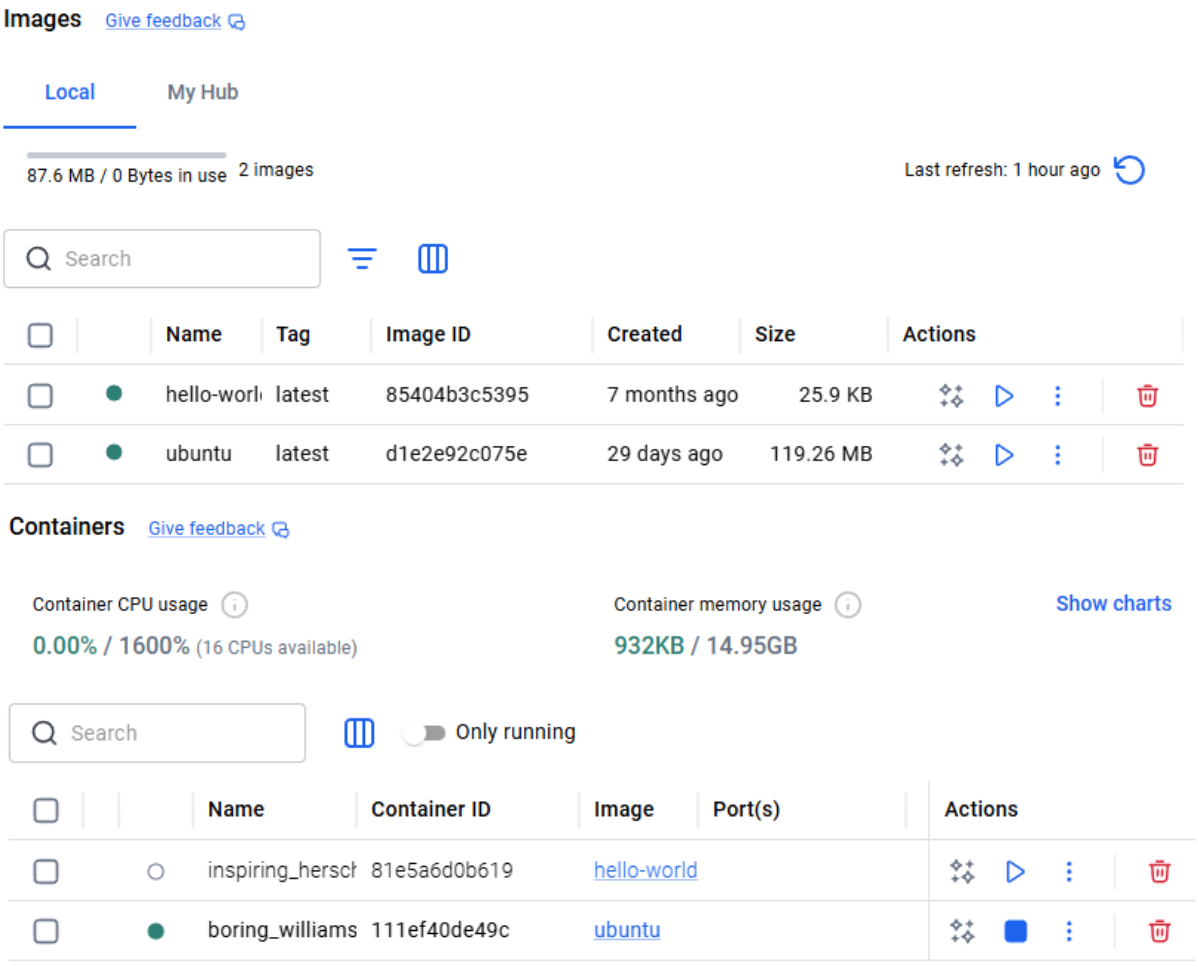


8 – Cinquième test :

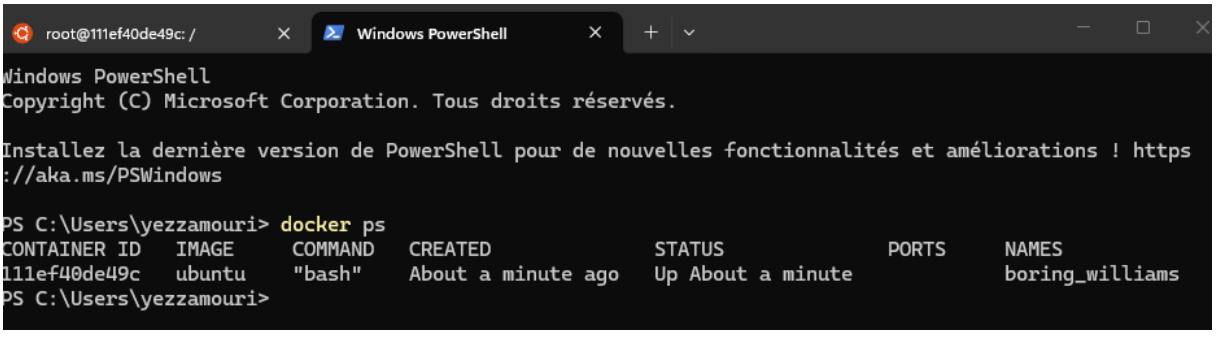
- Commande docker images : liste toutes les images sur le cache local de la machine (identifiant = code hexadécimal)

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





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



- 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:/#
```

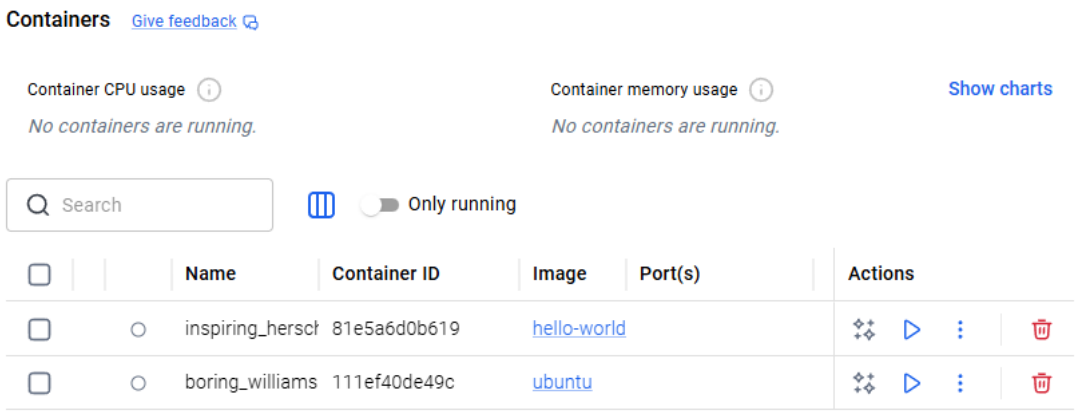
```
top - 14:03:29 up  1:19,  0 user,  load average: 0.01, 0.01, 0.00
Tasks:   3 total,   1 running,   1 sleeping,   1 stopped,   0 zombie
%Cpu(s):  0.0 us,  0.6 sy,  0.0 ni, 99.4 id,  0.0 wa,  0.0 hi,  0.0 si,  0.0 st
MiB Mem :  15676.2 total,  13917.4 free,   1144.5 used,    828.0 buff/cache
MiB Swap:   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_persistance
root@111ef40de49c:/# ls
bin   dev  fichier_test_persistance  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_persistance  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
```



```
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     NAM
ES
111ef40de49c   ubuntu        "bash"     5 minutes ago    Exited (1) About a minute ago             bor
ing_williams
81e5a6d0b619   hello-world   "/hello"   13 minutes ago   Exited (0) 13 minutes ago                 ins
piring_herschel
PS C:\Users\yezzamouri>
```

- Je redémarre le conteneur et j'y accéde (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_persistance  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                       PORT
S     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 ubuntumodif taguée 1.0 à partir du container test_modification :

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

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

```
sio@G102-GBPROF:~$ docker images
                                                                  i Info →  U In Use
IMAGE                ID             DISK USAGE   CONTENT SIZE   EXTRA
hello-world:latest   85404b3c5395       25.9kB         9.52kB
ubuntu:latest        d1e2e92c075e        119MB         31.7MB    U
ubuntumodif: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 ubuntumodif: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
                          NAMES
0843fb0536b6   nginx     "/docker-entrypoint.…"   3 seconds ago   Up 3 seconds   0.0.0.0:88-
>80/tcp, [::]:88->80/tcp   web
sio@G102-GBPROF:~$
```

- Je test 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 configura
tion
/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.con
f
10-listen-on-ipv6-by-default.sh: info: Enabled listen on IPv6 in /etc/nginx/conf.d/default.c
onf
/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 (Window
s 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://loca
lhost: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.ic
o HTTP/1.1", host: "localhost:88", referrer: "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 :

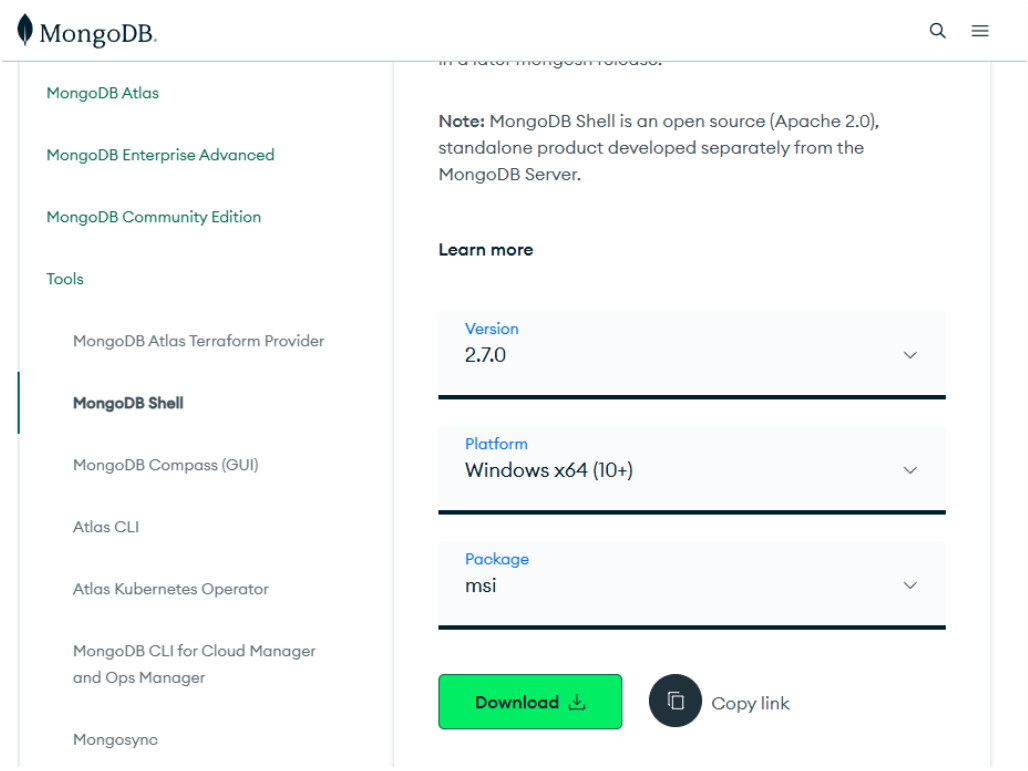
- Je récupère l’image mongodb-community-server avec la commande docker pull :

```
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
8bfd5cb2699e: 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 MONGO
DB_INITDB_ROOT_PASSWORD=password1234 --name mongodb mongodb/mongodb-community-server:latest
81c015242493c82e5be7e0591f532bcdf99d33ae7f955cd6f14d5b697bfb963f
sio@G102-GBPROF:~$
```

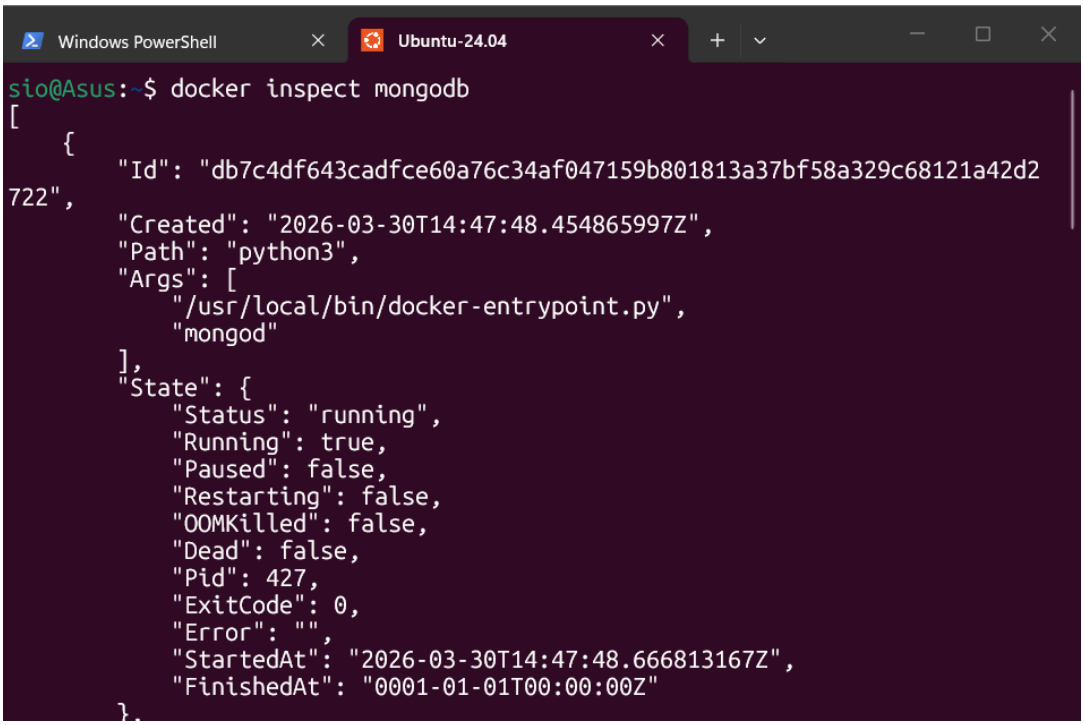
- J’installe MongoDB Shell sur la machine physique pour pouvoir me connecter au serveur MongoDB :

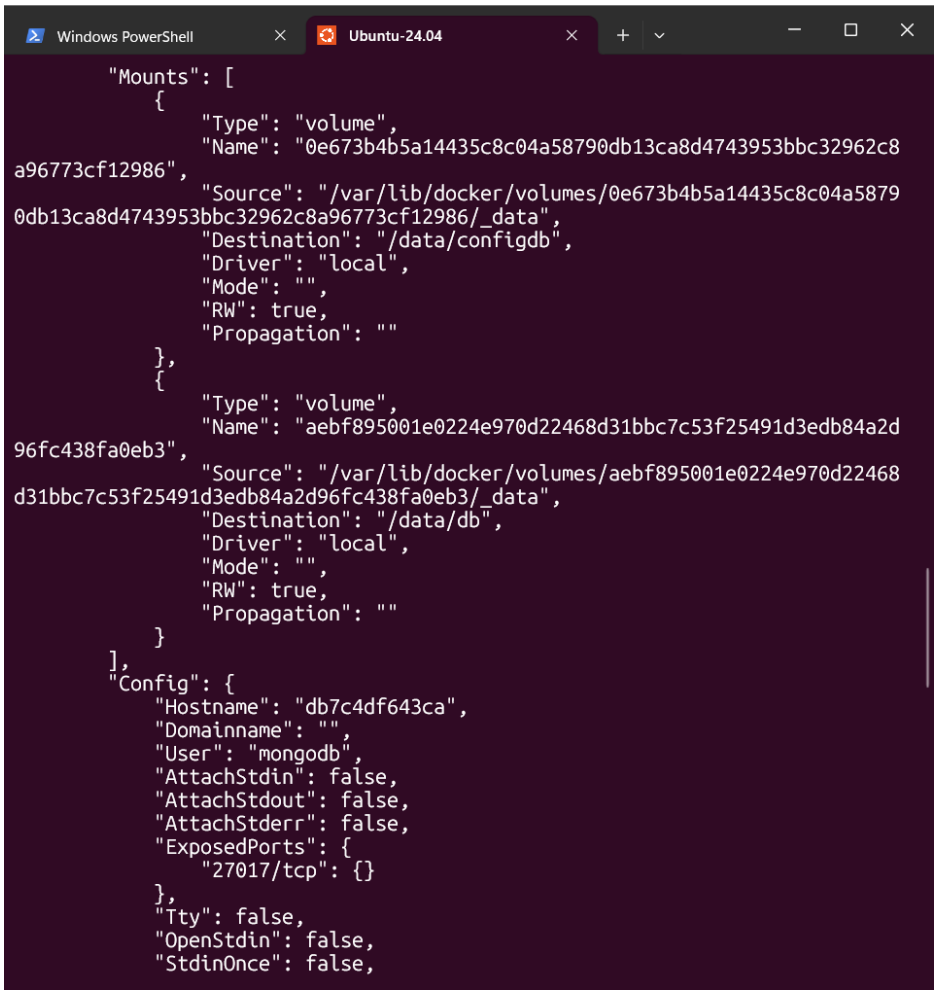


- Je me connecte au serveur MongoDB :

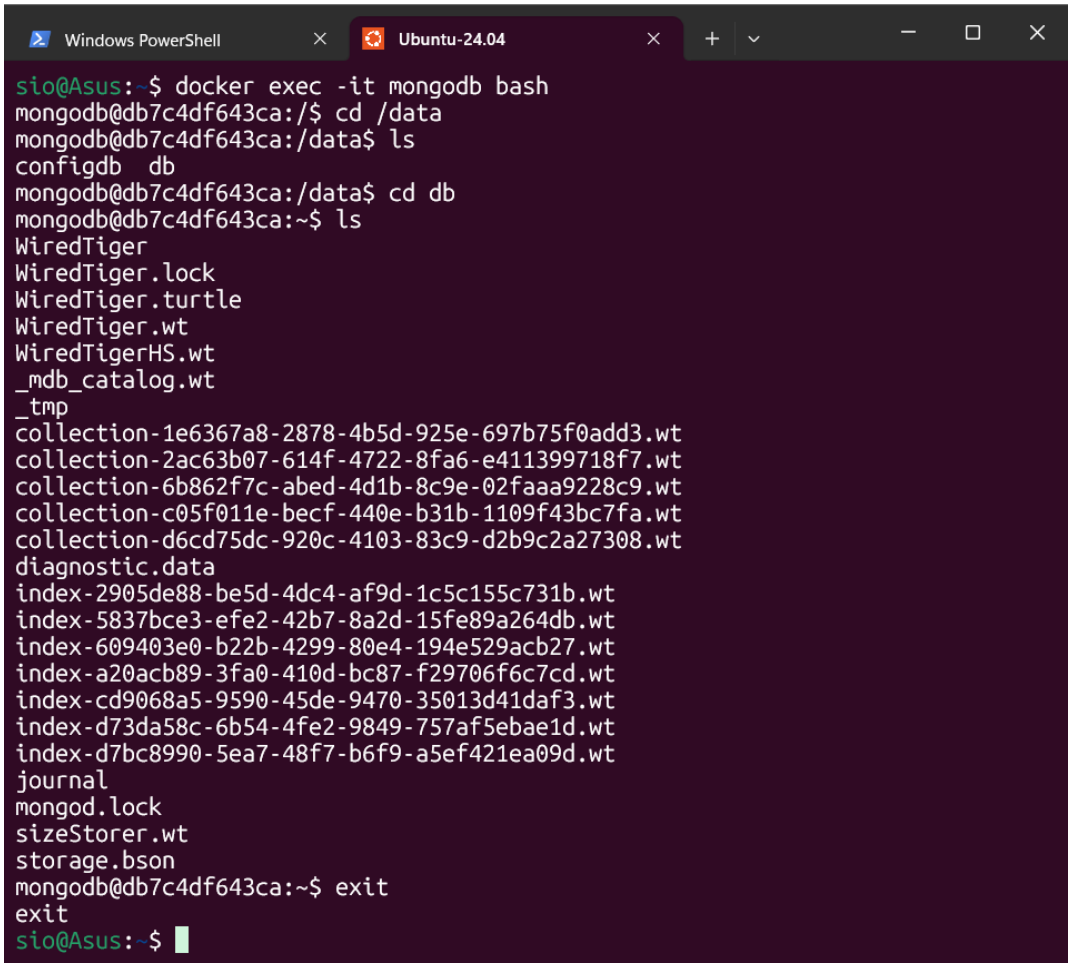
```
PS C:\Users\yezzamouri> mongosh mongodb://sio:password1234@localhost:27017
Current Mongosh Log ID: 69c3f4b153e8079f3f7c2906
Connecting to:          mongodb://<credentials>@localhost:27017/?directConnection=true&serverSelection
TimeoutMS=2000&appName=mongosh+2.7.0
MongoServerError: Authentication 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 (http
s://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 acces
s 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.

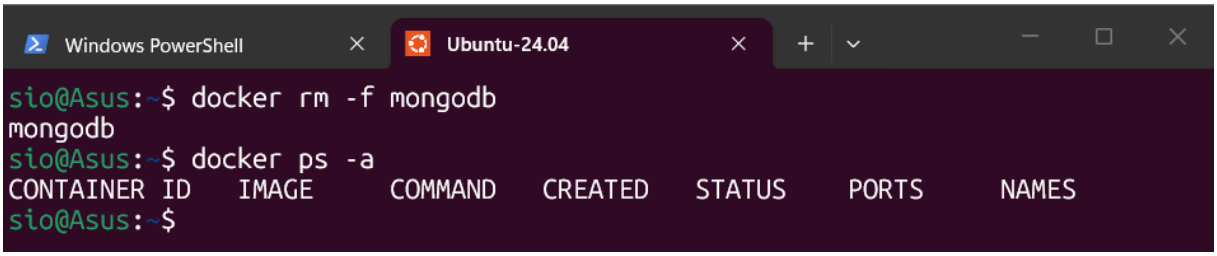




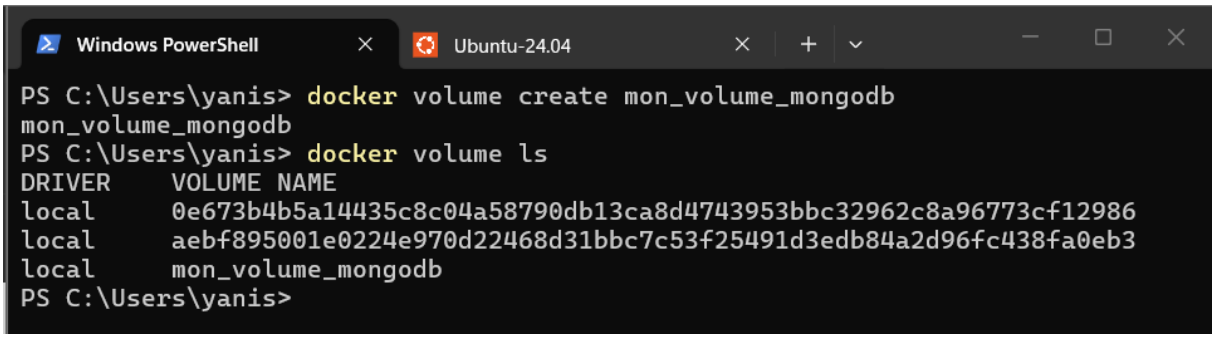
- J’accède au conteneur puis aux données et j’arrête le conteneur :

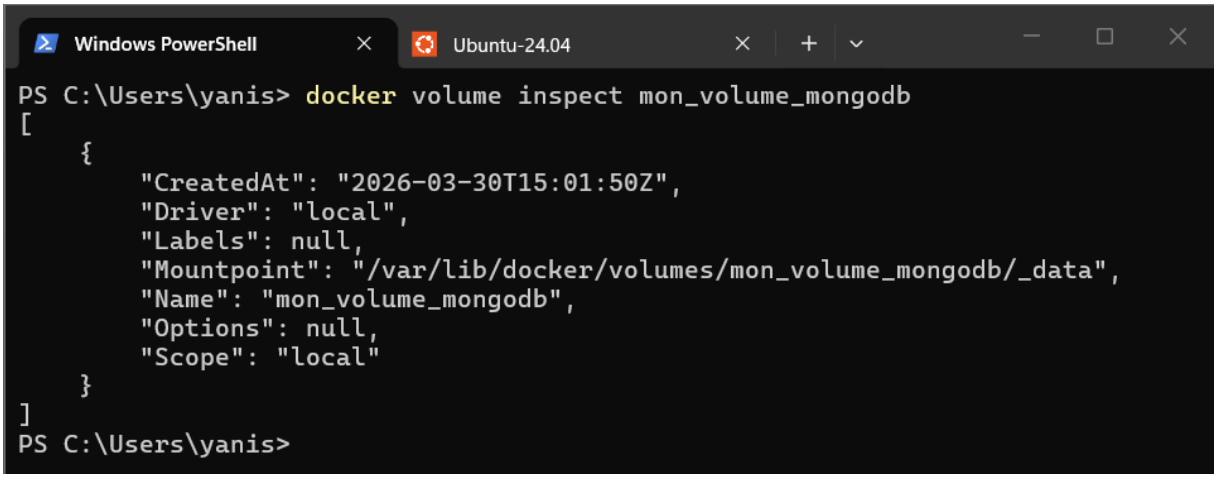


- Je supprime le conteneur : les données vont être perdues.

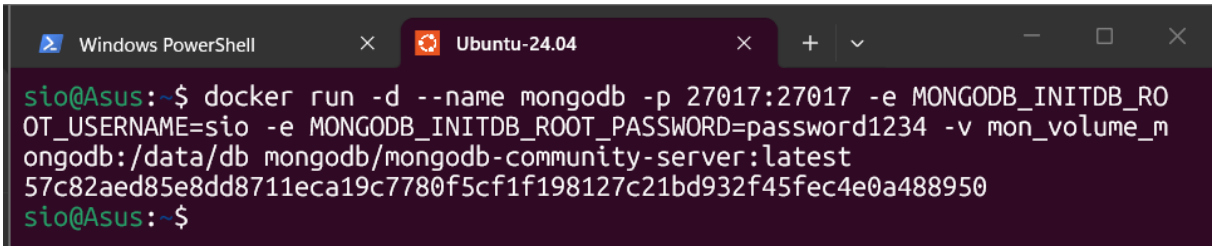


- Je souhaite bénéficier d'une persistance des données MongoDB dans Docker. Je crée un volume nommé à l'aide de la commande docker volume create :

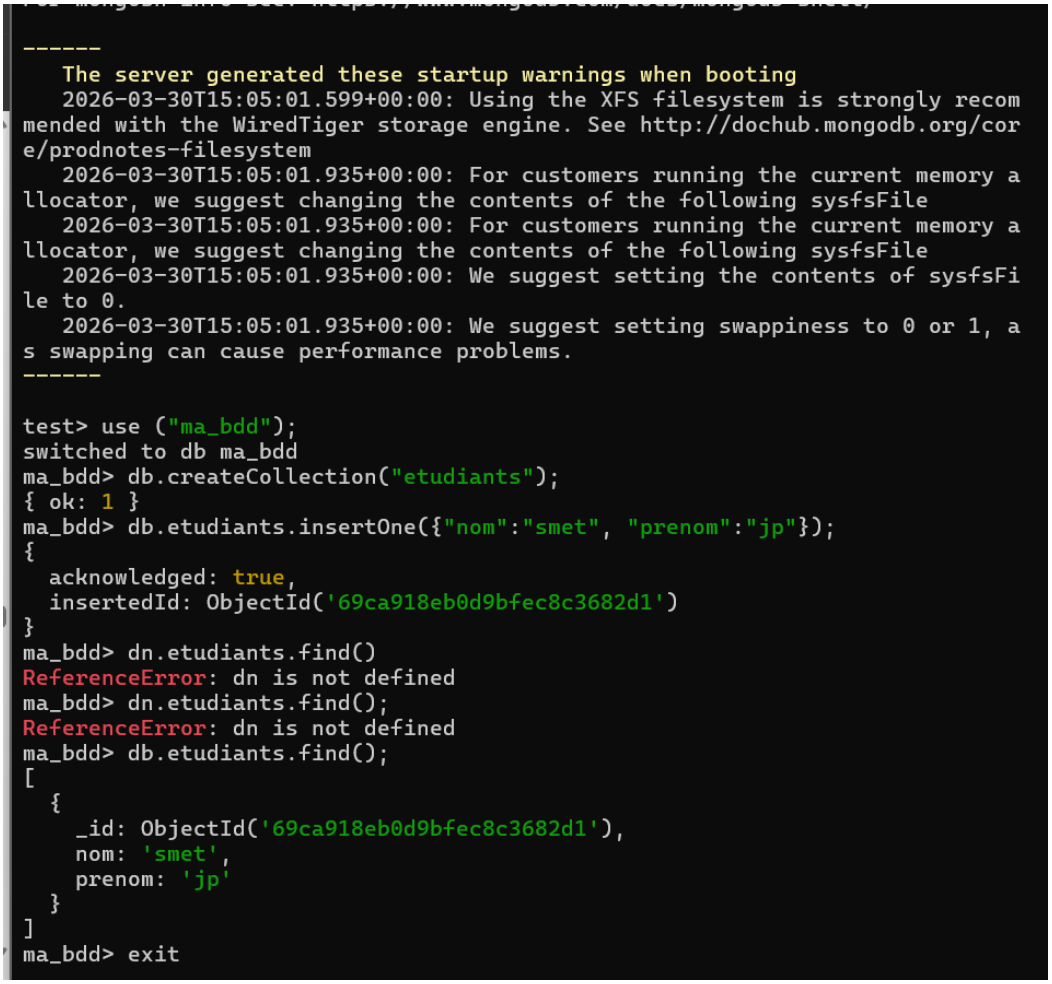




- Je lance un conteneur avec un mappage de volume (volume nommé:/volume du conteneur) :

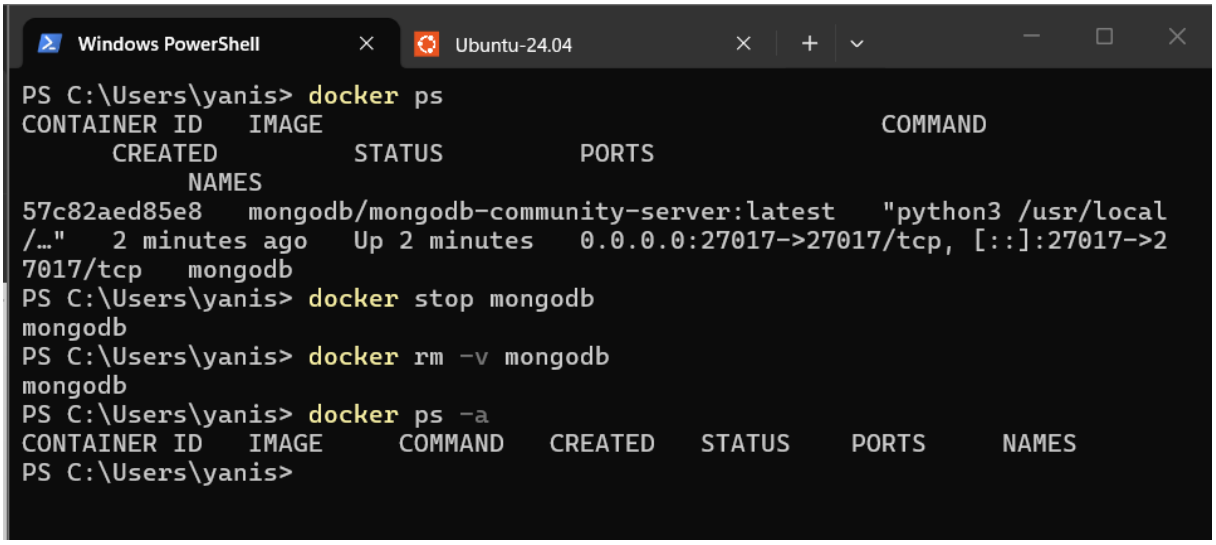


- Je me connecte au serveur MongoDB et j'ajoute une entrée dans la base :



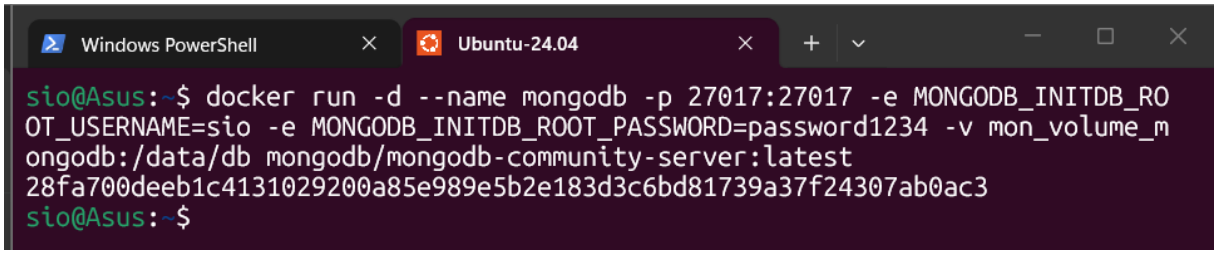
```
------
   The server generated these startup warnings when booting
   2026-03-30T15:05:01.599+00:00: Using the XFS filesystem is strongly recom
mended with the WiredTiger storage engine. See http://dochub.mongodb.org/cor
e/prodnotes-filesystem
   2026-03-30T15:05:01.935+00:00: For customers running 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 :

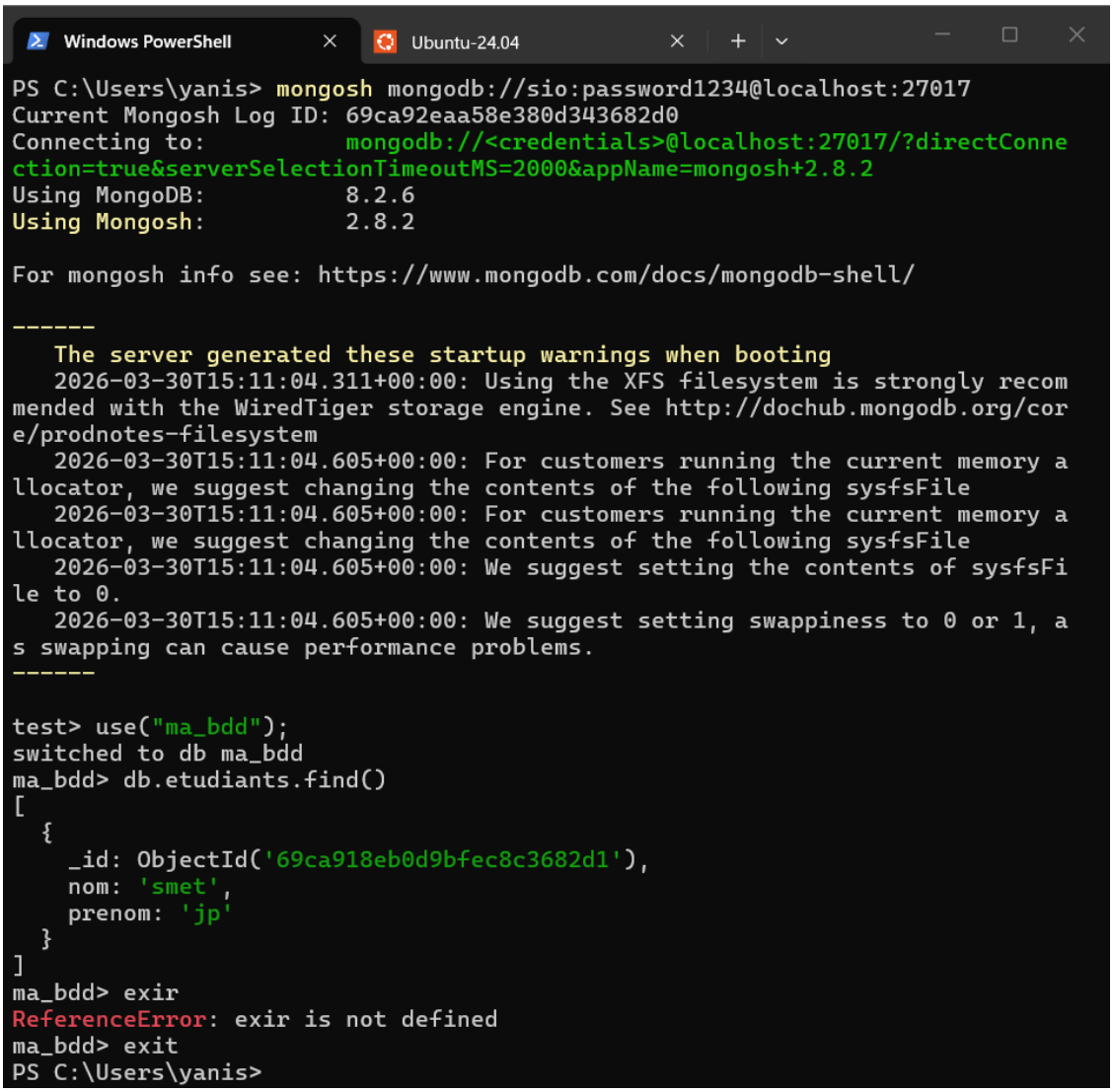


```
Windows PowerShell   Ubuntu-24.04
PS C:\Users\yanis> docker ps
CONTAINER ID   IMAGE                                        COMMAND
      CREATED         STATUS         PORTS
          NAMES
57c82aed85e8   mongodb/mongodb-community-server:latest   "python3 /usr/local
/…"   2 minutes ago   Up 2 minutes   0.0.0.0:27017->27017/tcp, [::]:27017->2
7017/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>
```

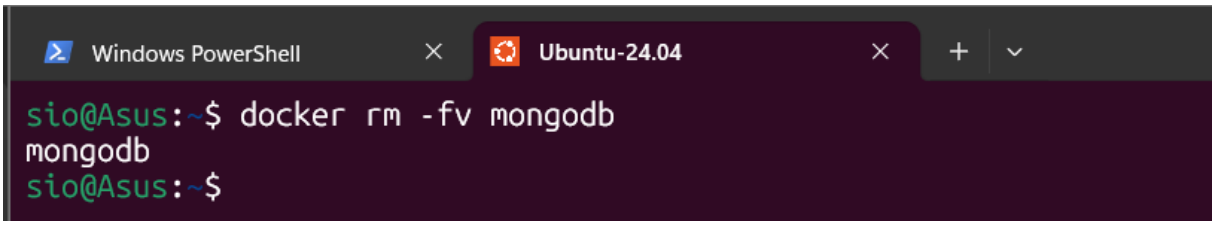
- Après suppression du conteneur, je redémarre un conteneur mongo :



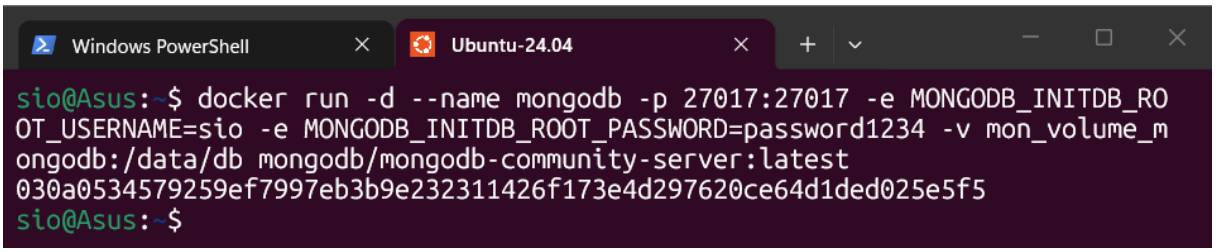
- La persistance a bien été gérée :



- Je supprime le conteneur :

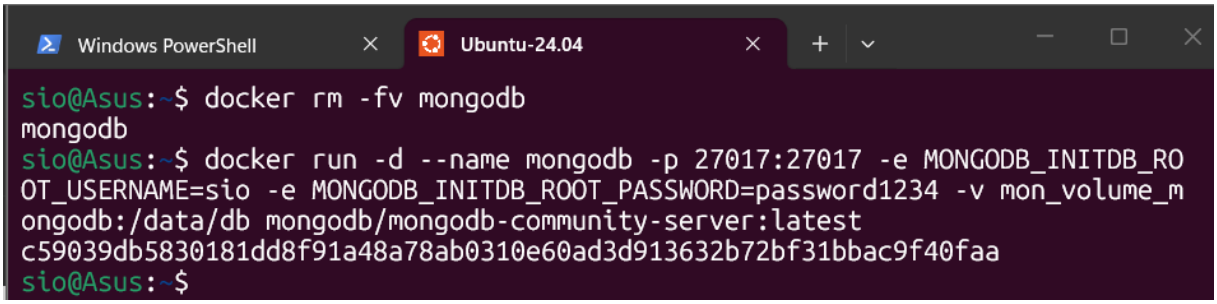


- Je relance un conteneur et j'ajoute une deuxième ligne pour vérifier la persistance :



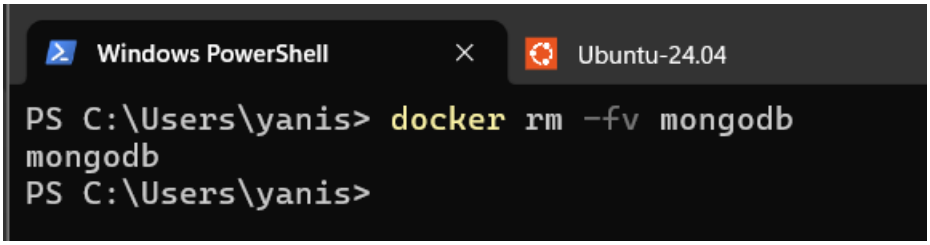

```
test> use("ma_bdd");
switched to db ma_bdd
ma_bdd> db.etudiants.insertOne({"nom":"hallyday", "prenom":"johnny"});
{
  acknowledged: true,
  insertedId: ObjectId('69ca93c7742e6c8fc23682d1')
}
ma_bdd> dn.etuidants.find();
ReferenceError: dn is not defined
ma_bdd> db.etuidants.find();

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 :

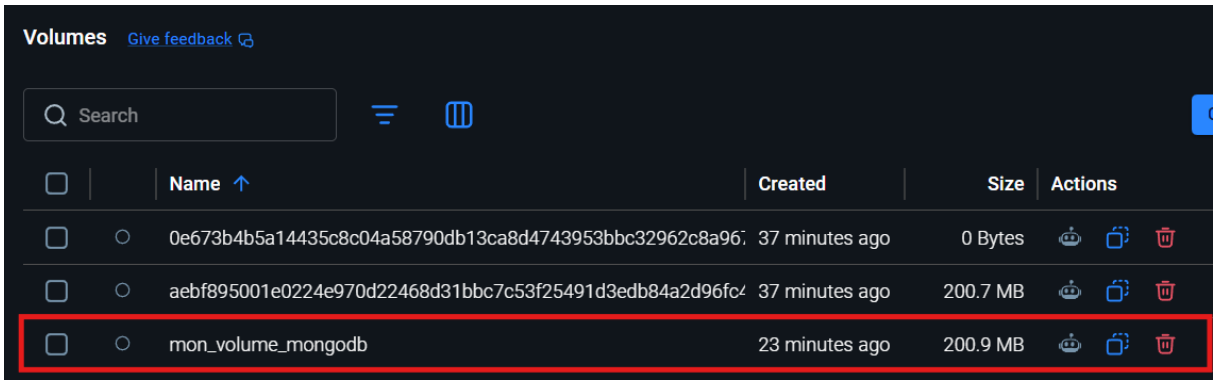


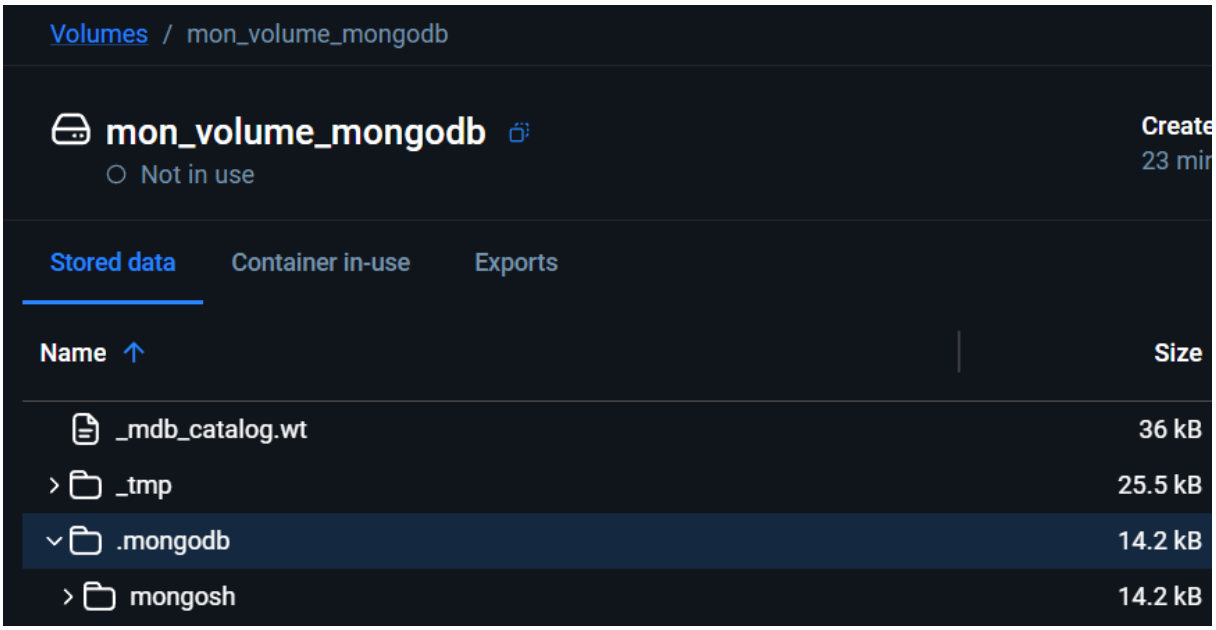

```
PS C:\Users\yanis> mongosh mongodb://sio:password1234@localhost:27017
Current Mongosh Log ID: 69ca94b584fced6ad83682d0
Connecting to:          mongodb://<credentials>@localhost:27017/?directConnection=true&serverSelectionTimeoutMS=2000&appName=mongosh+2.8.2
Using MongoDB:          8.2.6
Using Mongosh: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

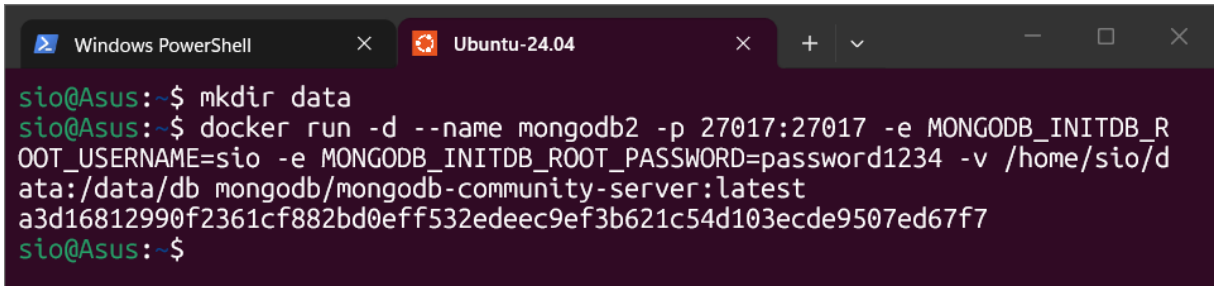


- Volume mongodb :





- Montage lié :




```
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 swapping 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                                          COMMAND
      CREATED              STATUS              PORTS
                    NAMES
a3d16812990f   mongodb/mongodb-community-server:latest   "python3 /usr/local
/…"   About a minute ago   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>
```

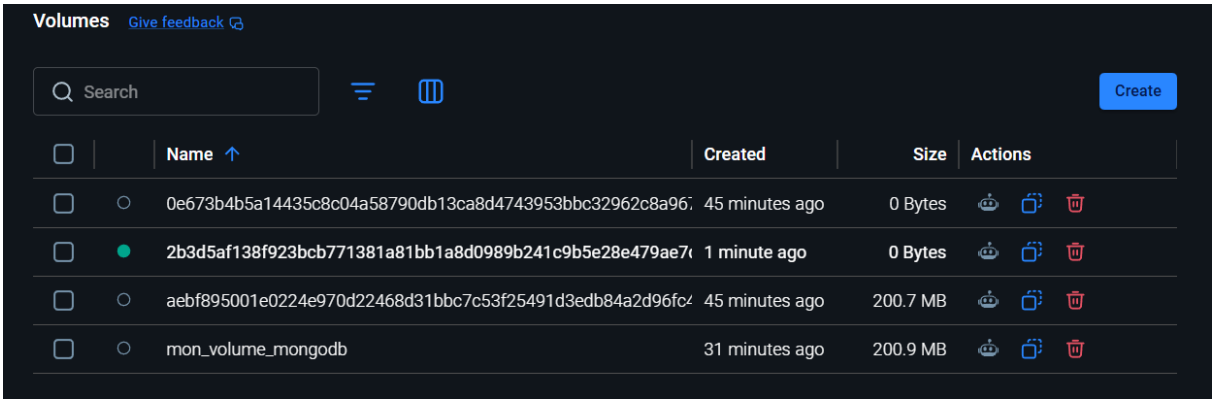
```
sio@Asus:~$ cd data
sio@Asus:~/data$ ls
WiredTiger
WiredTiger.lock
WiredTiger.turtle
WiredTiger.wt
WiredTigerHS.wt
_mdb_catalog.wt
_tmp
collection-0626a92c-03c6-4072-8206-3bb619d4d248.wt
collection-1e504f29-945d-4aba-b259-1825ec32fcb9.wt
collection-41cfef47-2ea5-4c3e-889d-f0616c5dd63d.wt
collection-7dd2a25d-afdf-47ee-821e-c15aa7e5549a.wt
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_R
OOT_USERNAME=sio -e MONGODB_INITDB_ROOT_PASSWORD=password1234 -v /home/sio/d
ata:/data/db mongodb/mongodb-community-server:latest
1885f12408cf8363a0ac50f539f7949c0531ff1379873bff6e9bc556bfacbea2
sio@Asus:~$
```

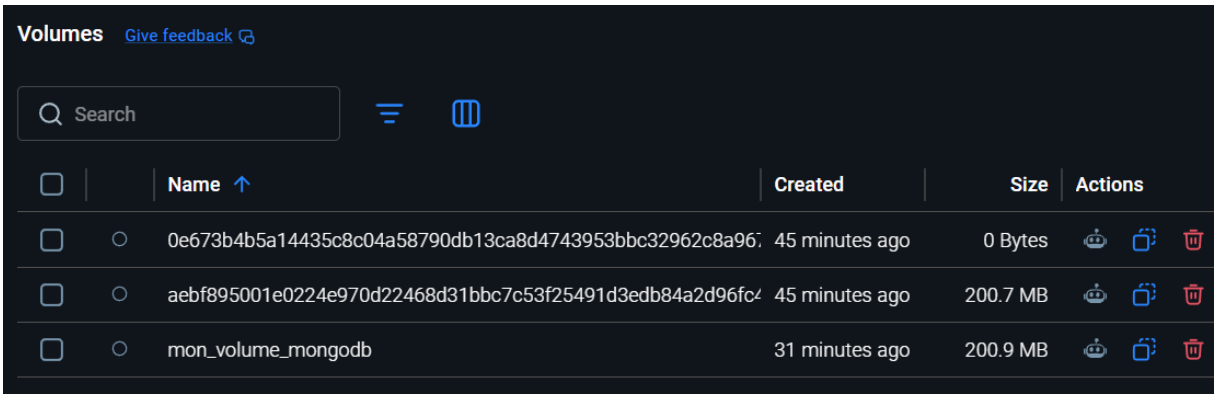
```
PS C:\Users\yanis> mongosh mongodb://sio:password1234@localhost:27017
Current Mongosh Log ID: 69ca9764a73cdfd8fa3682d0
Connecting to:          mongodb://<credentials>@localhost:27017/?directConne
ction=true&serverSelectionTimeoutMS=2000&appName=mongosh+2.8.2
Using MongoDB:          8.2.6
Using Mongosh:          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 recom
mended with the WiredTiger storage engine. See http://dochub.mongodb.org/cor
e/prodnotes-filesystem
   2026-03-30T15:31:19.665+00:00: For customers running the current memory a
llocator, we suggest changing the contents of the following sysfsFile
   2026-03-30T15:31:19.665+00:00: For customers running the current memory a
llocator, we suggest changing the contents of the following sysfsFile
   2026-03-30T15:31:19.665+00:00: We suggest setting the contents of sysfsFi
le to 0.
   2026-03-30T15:31:19.665+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.etudiants.find();
[
  {
    _id: ObjectId('69ca96b267d47a6f0d3682d1'),
    nom: 'mitchell',
    prenom: 'eddy'
  }
]
ma_bdd> exit
PS C:\Users\yanis>
```

- La persistance a bien été gérée :



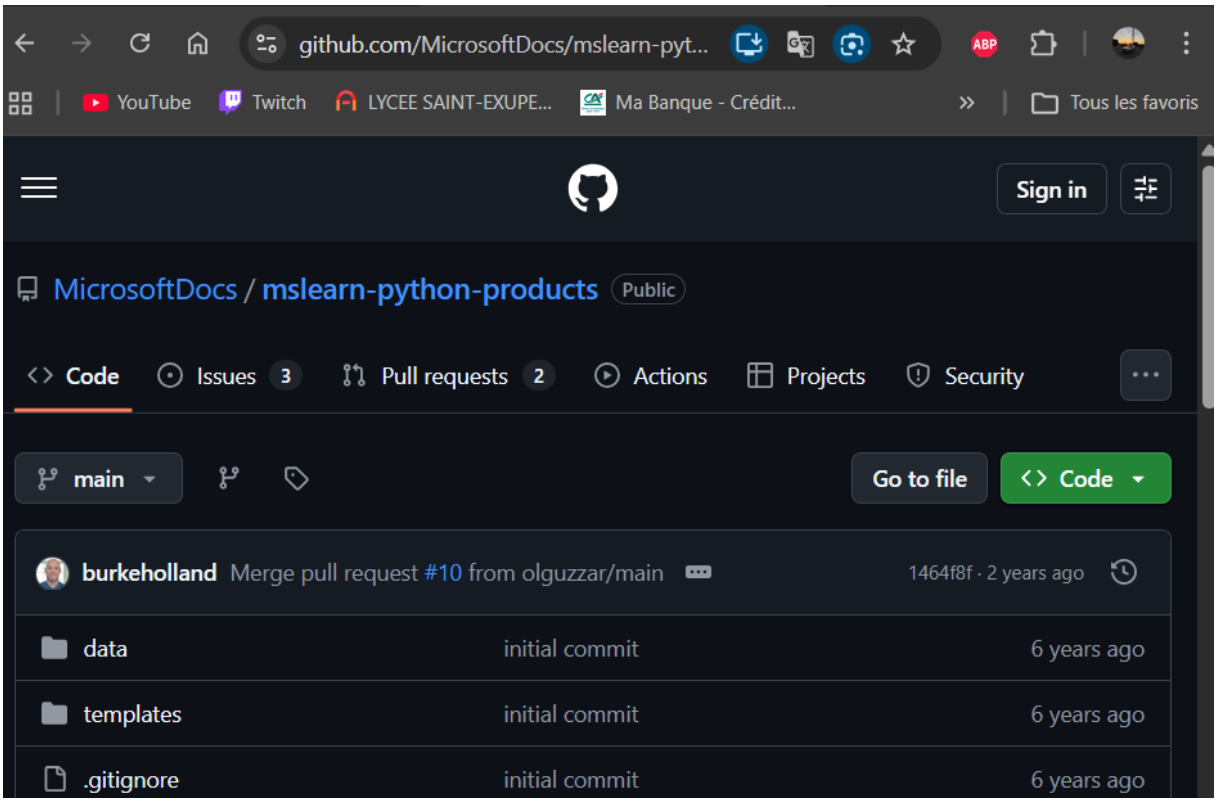
- Je supprime le volume :

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

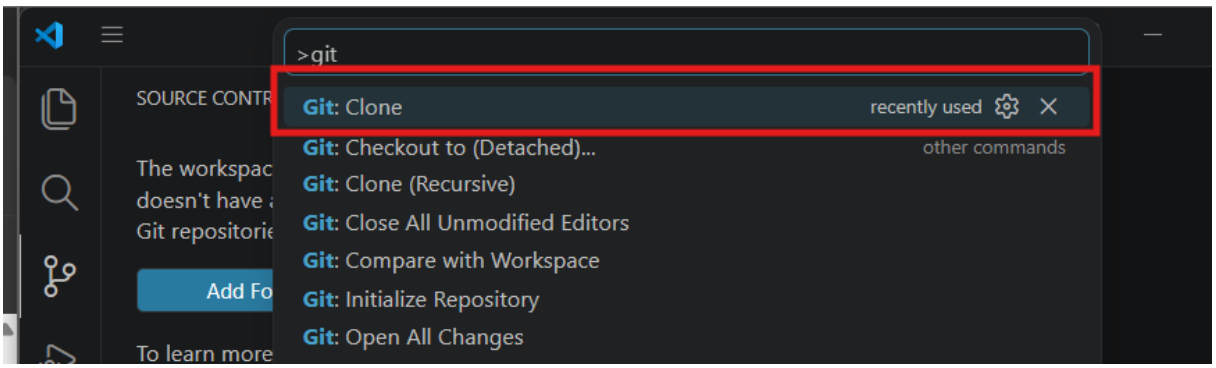


12 – Utiliser un conteneur Docker et Visual Studio Code :

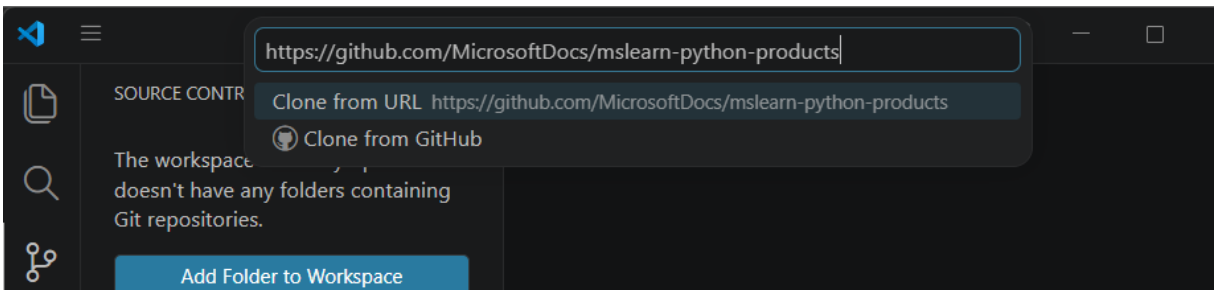
- Je copie l'URL du projet mslearn-python-products qui servira d'exemple :



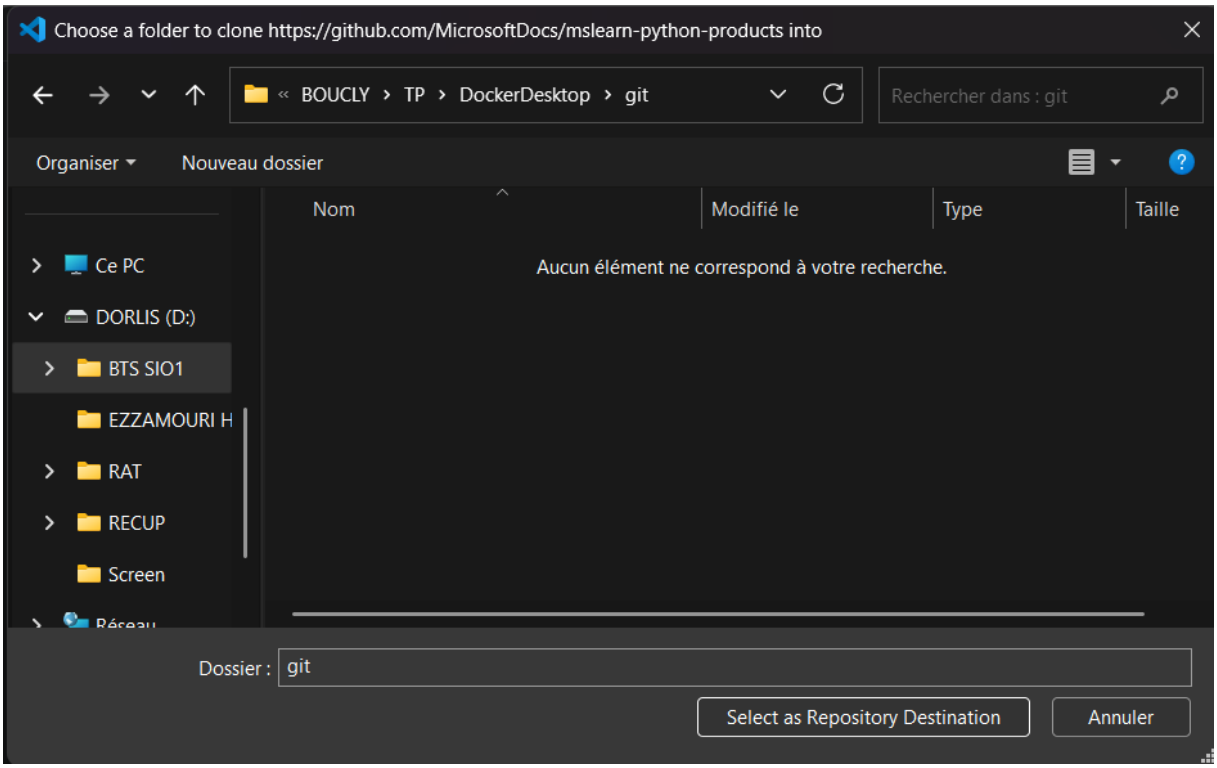
- Dans VS Code, je sélectionne Clone Repository ou j'appuie sur F1 pour rechercher Git : Clone :

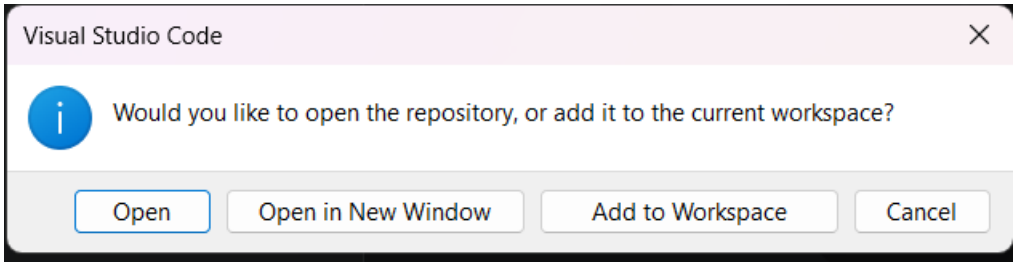


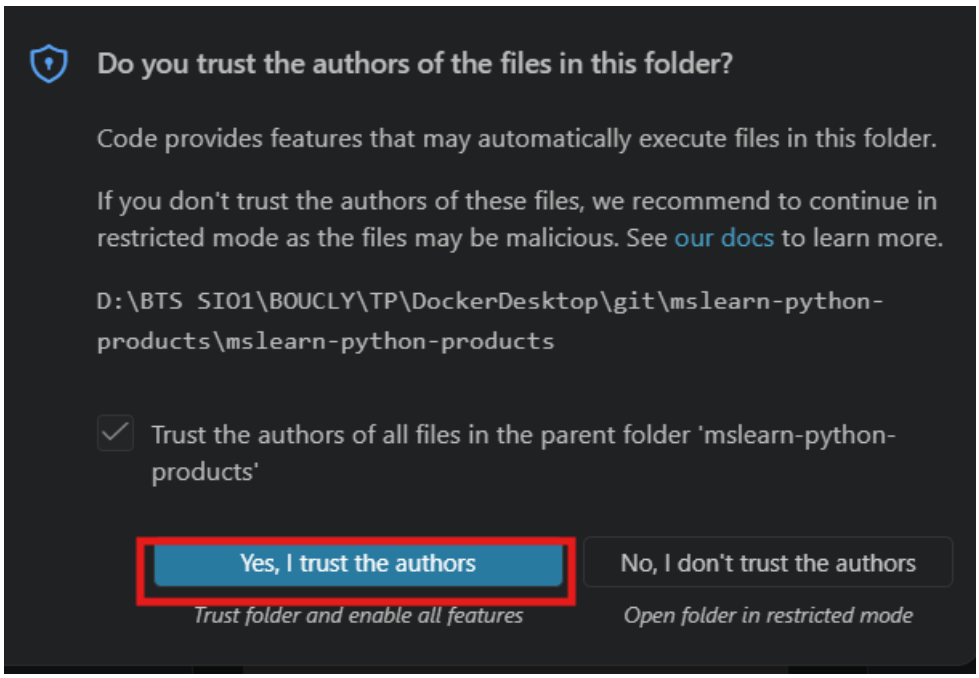
- Collez l'URL :



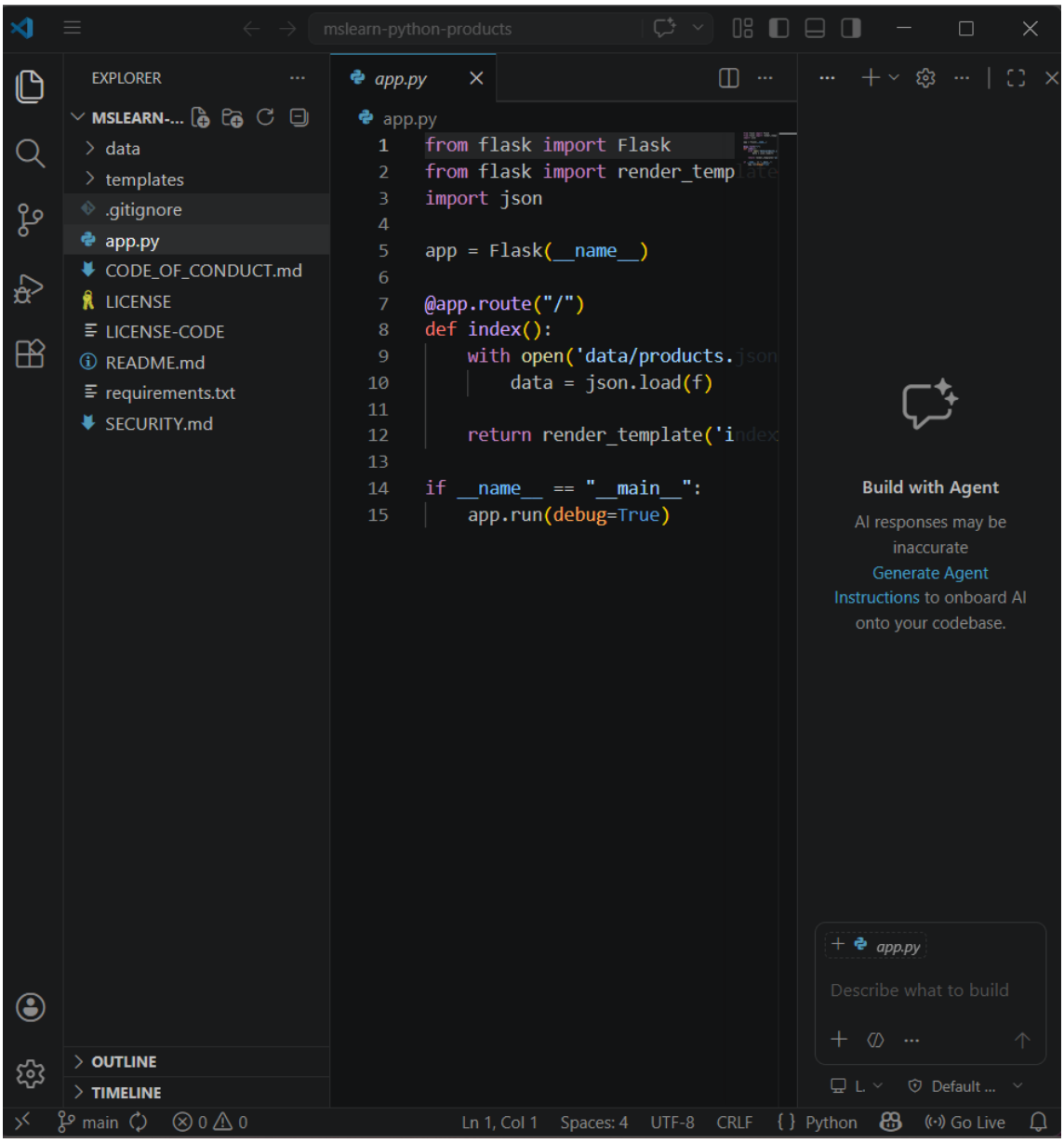
- Je sélectionne un emplacement sur votre disque où le projet va être cloné

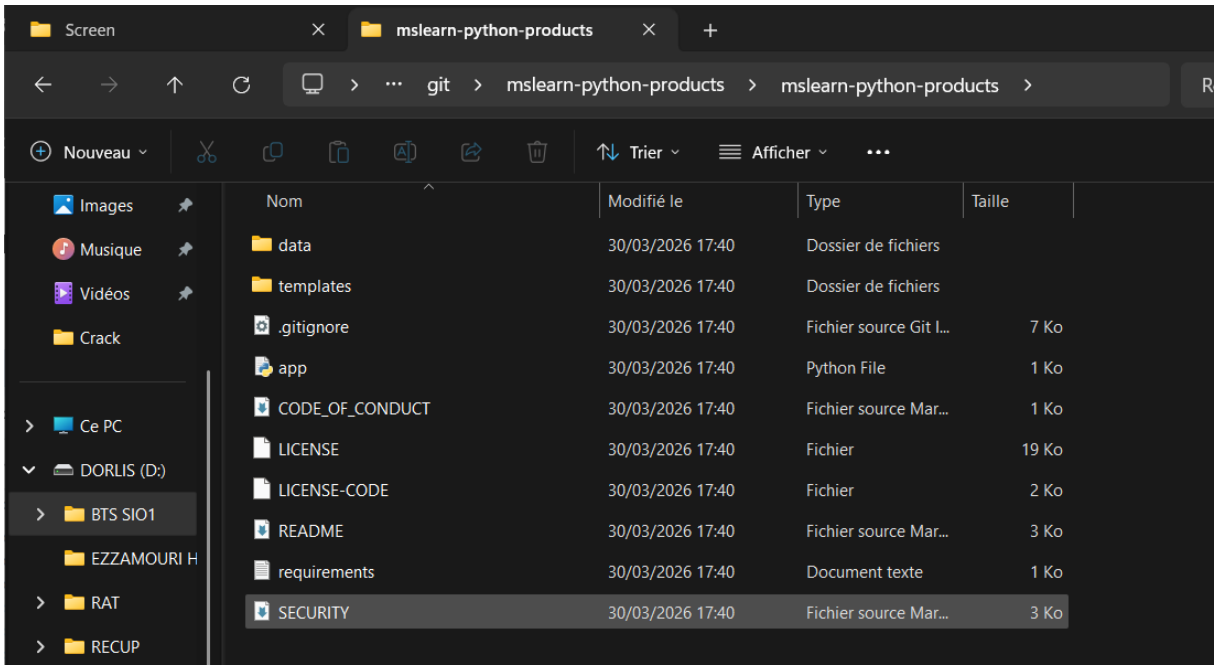



Visual Studio Code
Would you like to open the repository, or add it to the current workspace?
Open
Open in New Window
Add to Workspace
Cancel

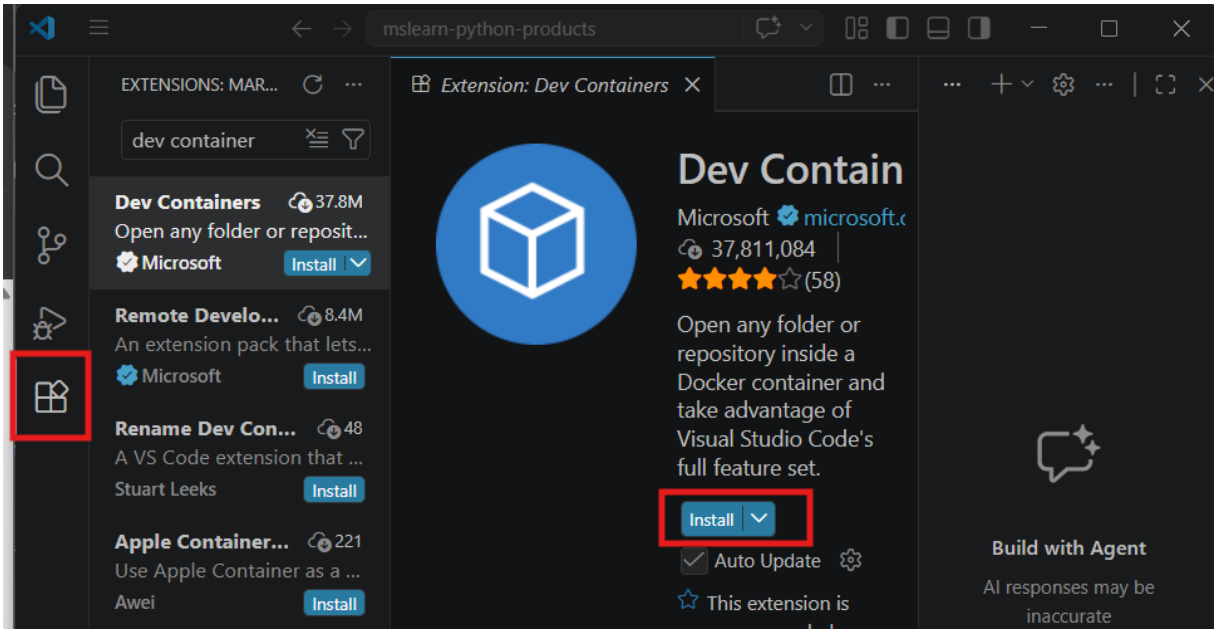

Do you trust the authors of the files in this folder?
Code provides features that may automatically execute files in this folder.
If you don't trust the authors of these files, we recommend to continue in restricted mode as the files may be malicious. See our docs to learn more.
D:\BTS SIO1\BOUCLY\TP\DockerDesktop\git\mslearn-python-products\mslearn-python-products
Trust the authors of all files in the parent folder 'mslearn-python-products'
Yes, I trust the authors
Trust folder and enable all features
No, I don't trust the authors
Open folder in restricted mode

- Le projet est maintenant ouvert dans Visual Studio Code :



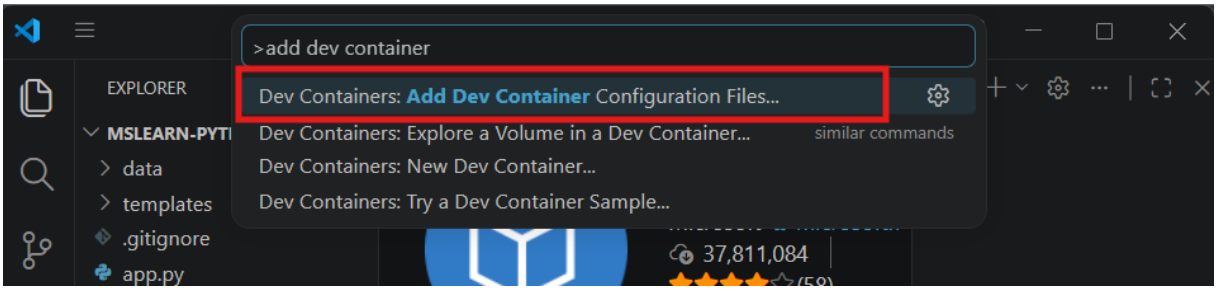


- Je sélectionne l'icône Extensions afin d'installer l'extension Dev Containers (« conteneurs de développement »).

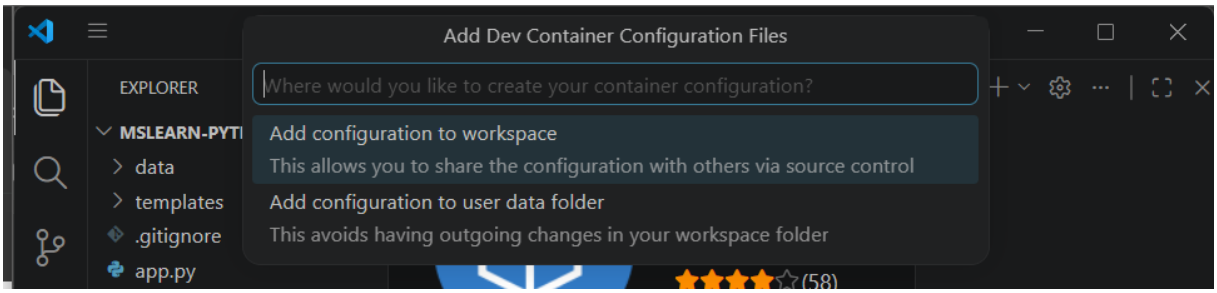


- J’appuie sur F1 pour ouvrir la palette de commandes :

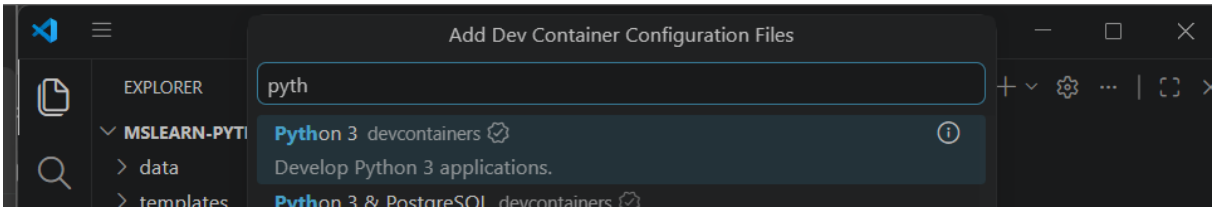
- Je tape add dev container et je sélectionne Dev Containers: Add Dev Container Configuration Files :

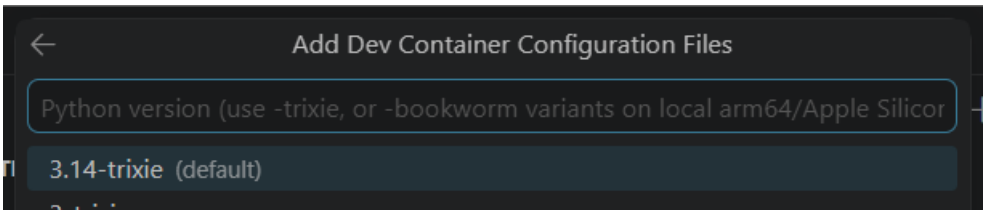


- Je sélectionne Add configuration to workspace:

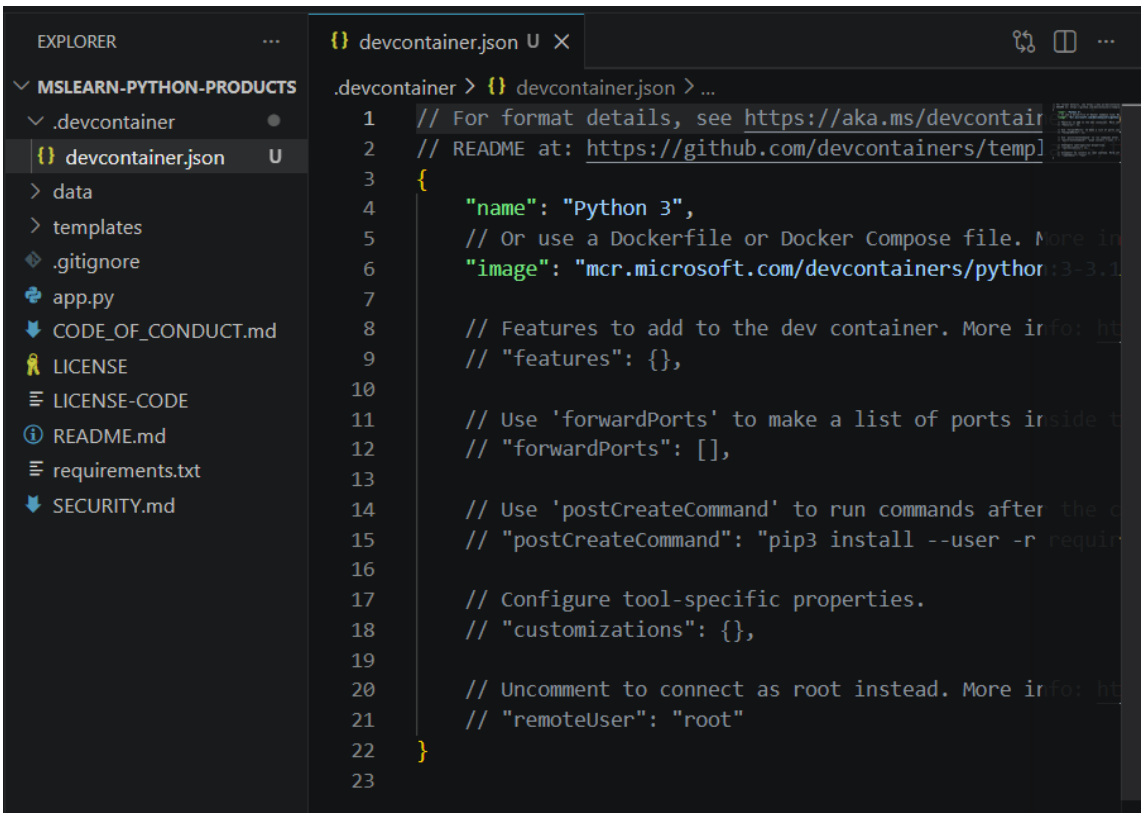


- Je sélectionne Python3 :

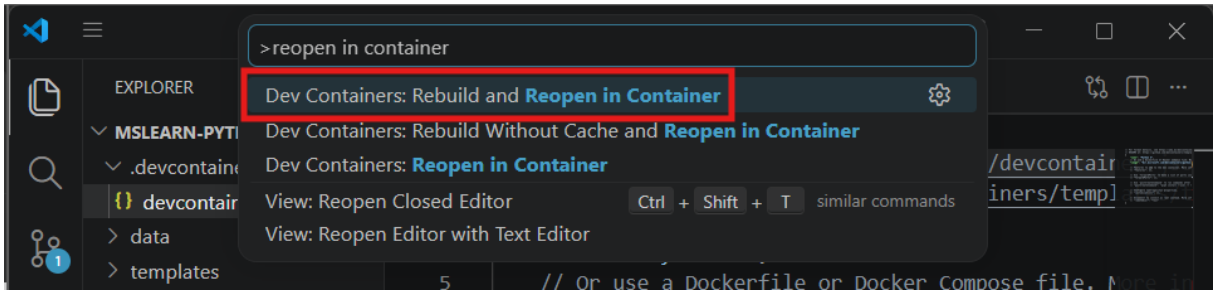




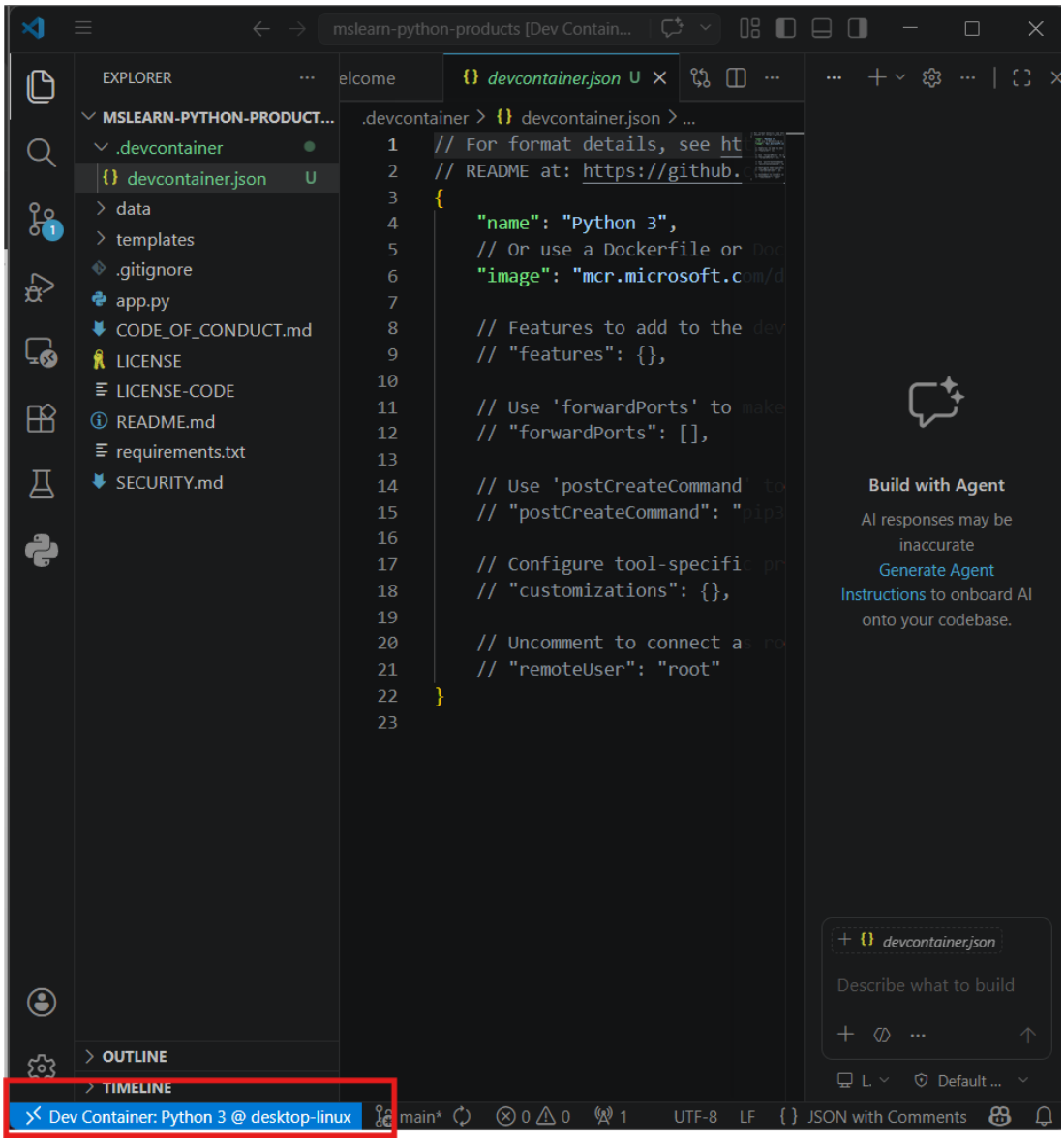
- Un nouveau dossier nommé « .devcontainer » a été ajouté au projet. Je développe ce dossier : il contient un fichier devcontainer.json :



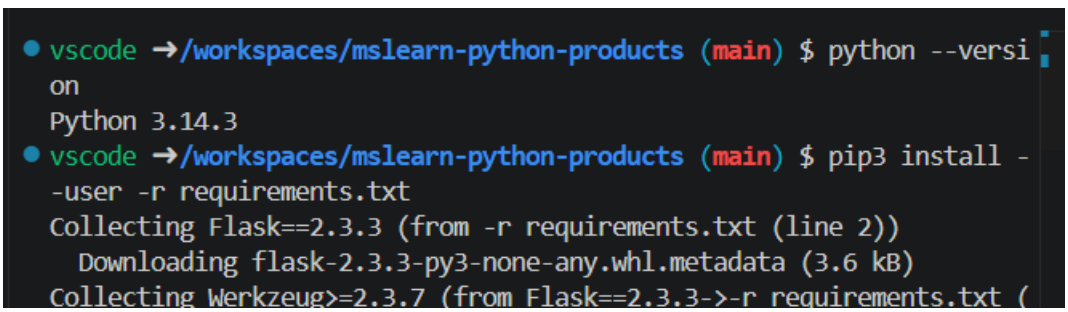
- J'appuie sur F1 pour ouvrir la palette de commandes, je tape reopen in container et je sélectionne Dev Containers: Reopen in Container dans la liste des options disponibles :



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



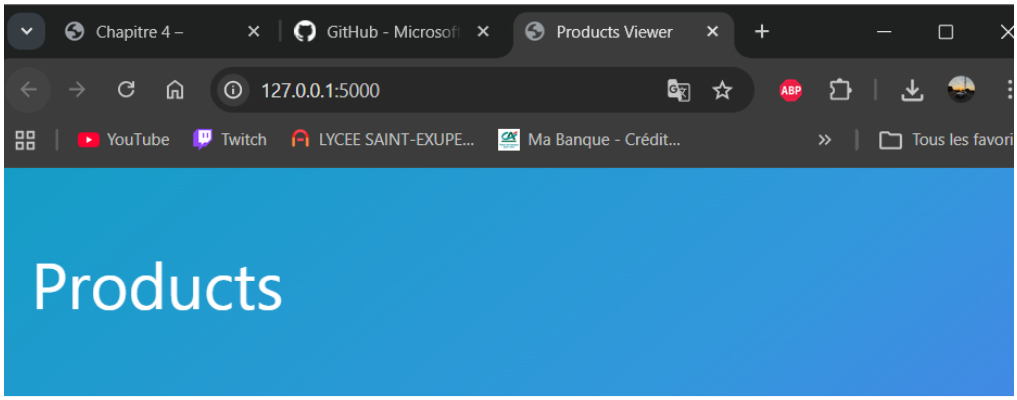
- J’éxecute la commande suivante dans le terminal pour installer les dépendances Flask nécessaires à l’exécution du projet :



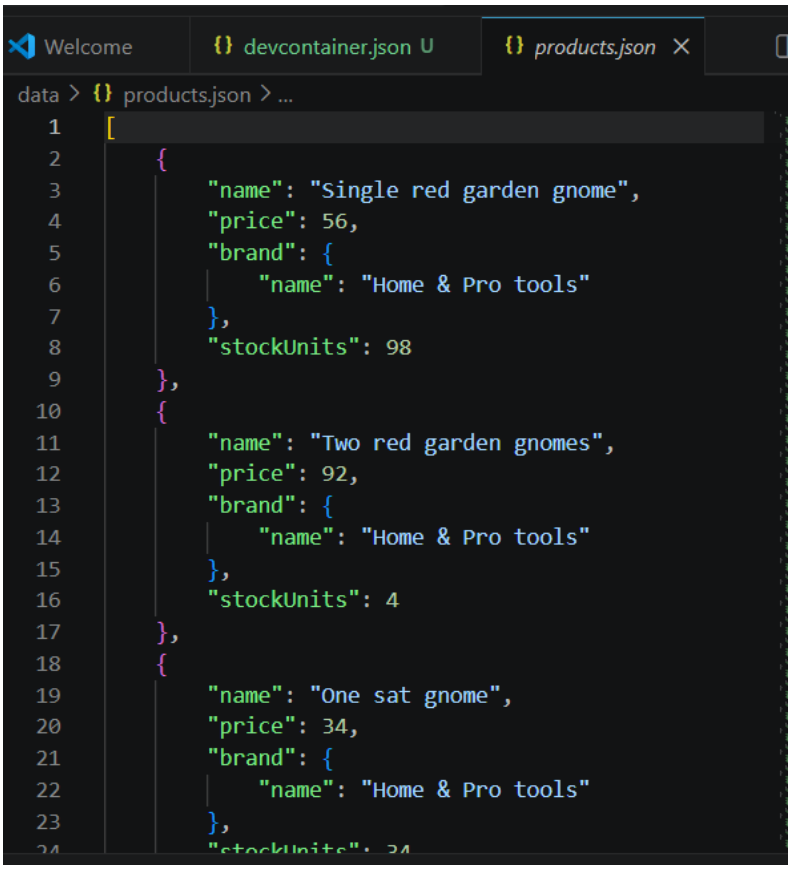
- J’entre la commande suivante dans le terminal pour exécuter le projet :

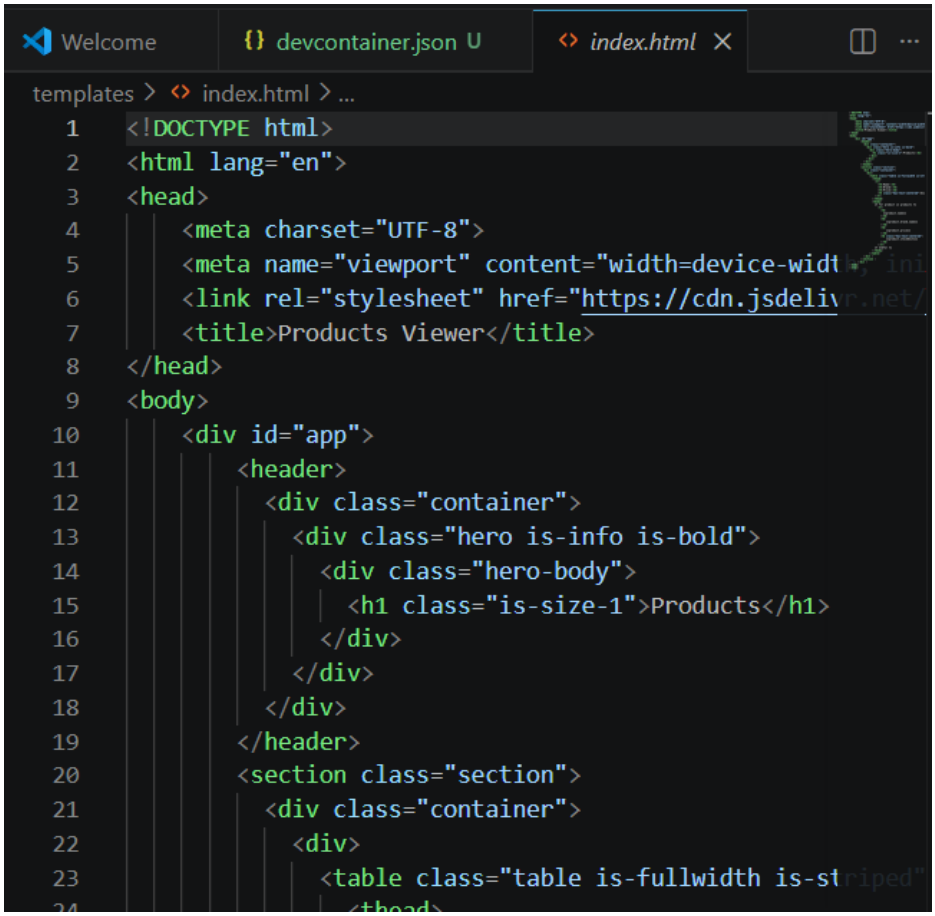
```
vscode ➜/workspaces/mslearn-python-products (main) $ python app.py
WARNING: This is a development server. Do not use it in a production
 deployment. Use a production WSGI server instead.
 * Running on http://127.0.0.1:5000
Press CTRL+C to quit
 * Restarting with stat
 * Debugger is active!
 * Debugger 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
data > products.json > ...
[
{
"name": "Single red garden gnome",
"price": 56,
"brand": {
"name": "Home & Pro tools"
},
"stockUnits": 98
},
{
"name": "Two red garden gnomes",
"price": 92,
"brand": {
"name": "Home & Pro tools"
},
"stockUnits": 4
},
{
"name": "One sat gnome",
"price": 34,
"brand": {
"name": "Home & Pro tools"
},

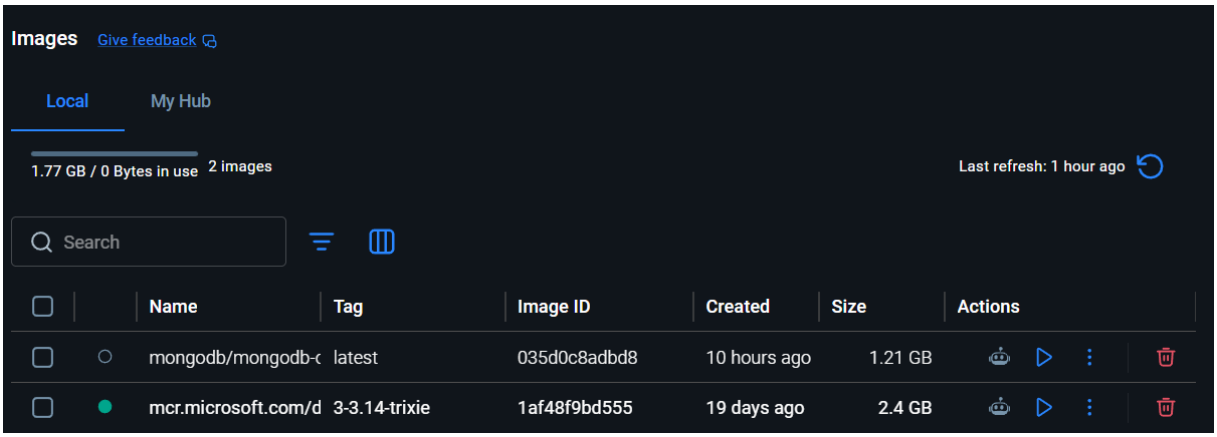

Welcome
devcontainer.json U
index.html
templates > index.html > ...
<!DOCTYPE html>
<html lang="en">
<head>
<meta charset="UTF-8">
<meta name="viewport" content="width=device-widt
<link rel="stylesheet" href="https://cdn.jsdeliv
<title>Products Viewer</title>
</head>
<body>

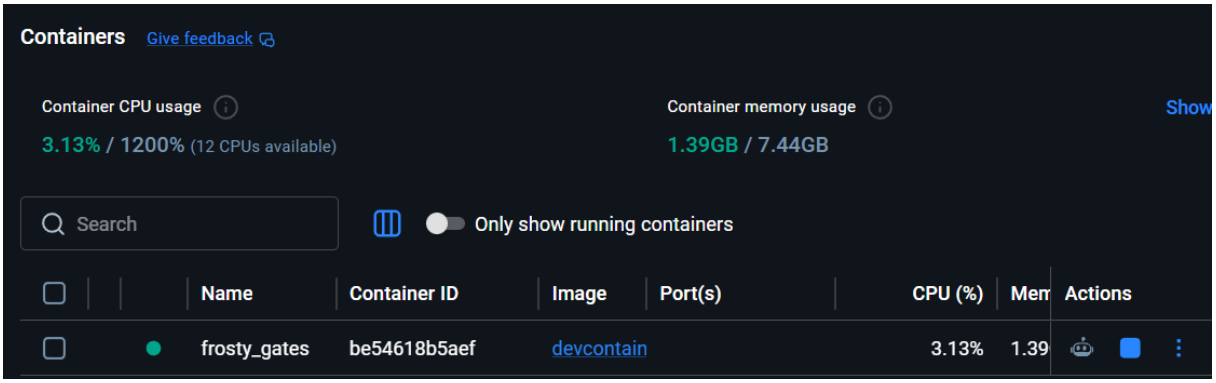
<header>

<h1 class="is-size-1">Products</h1>

</header>
<section class="section">

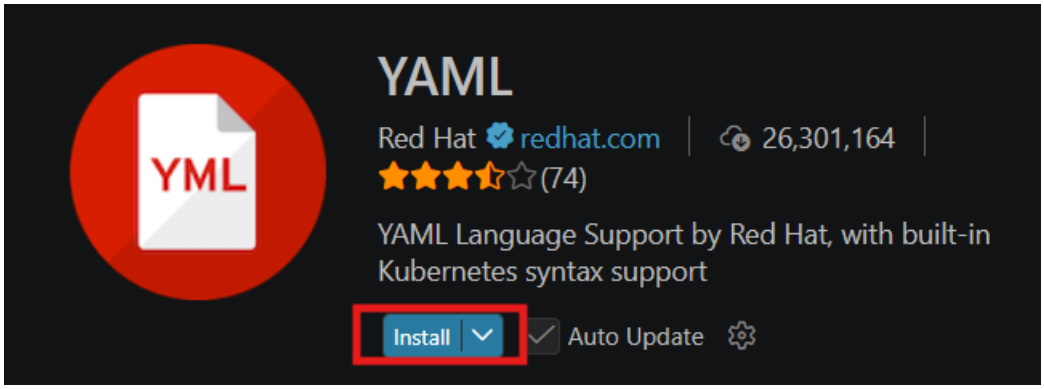
<table class="table is-fullwidth is-st



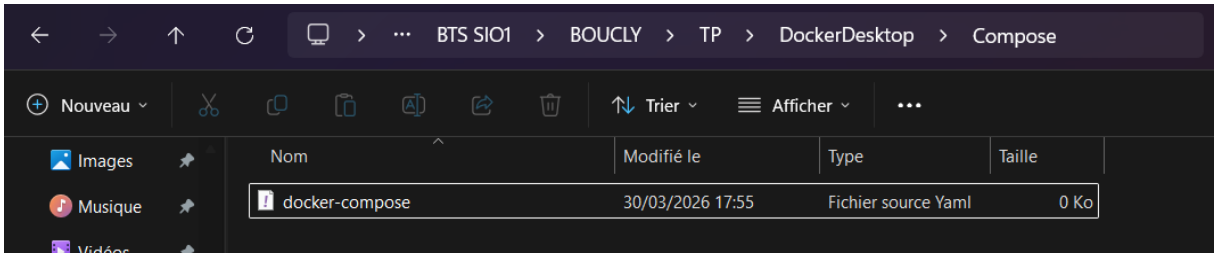


13 – Monter une stack applicative avec Docker Compose :

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

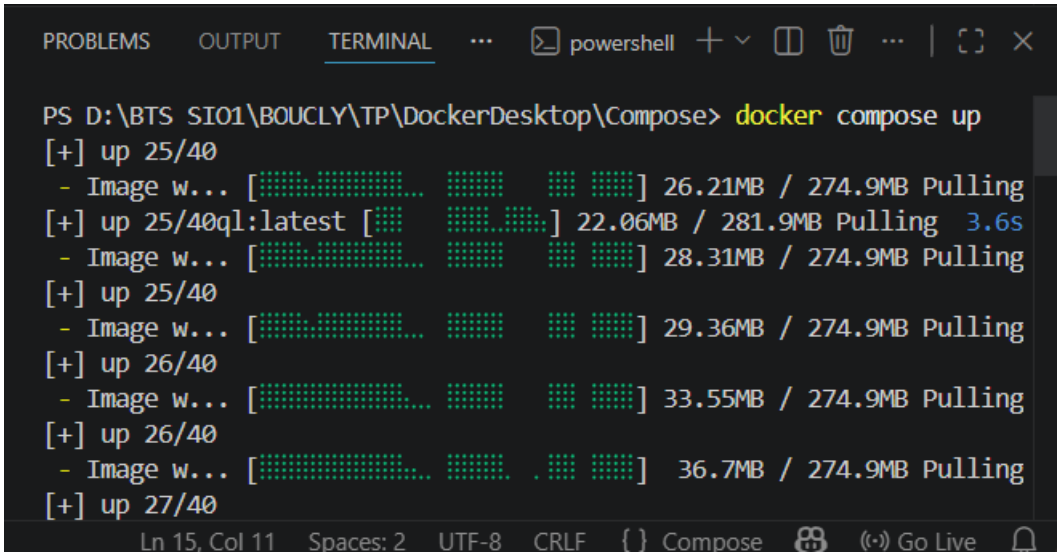


- Afin de monter un blog Wordpress avec sa base de données, je crée dans un dossier le fichier docker-compose.yml suivant à l'aide de VS Code :

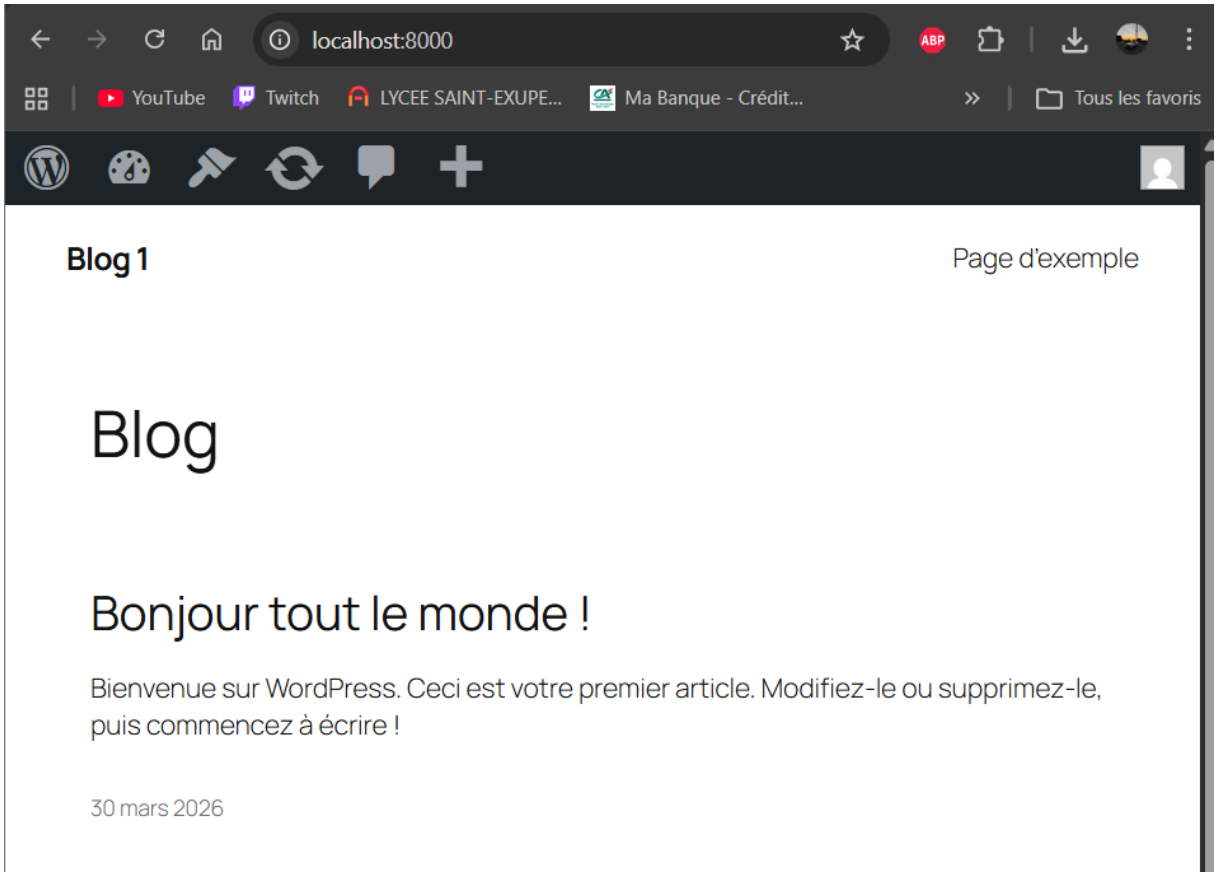


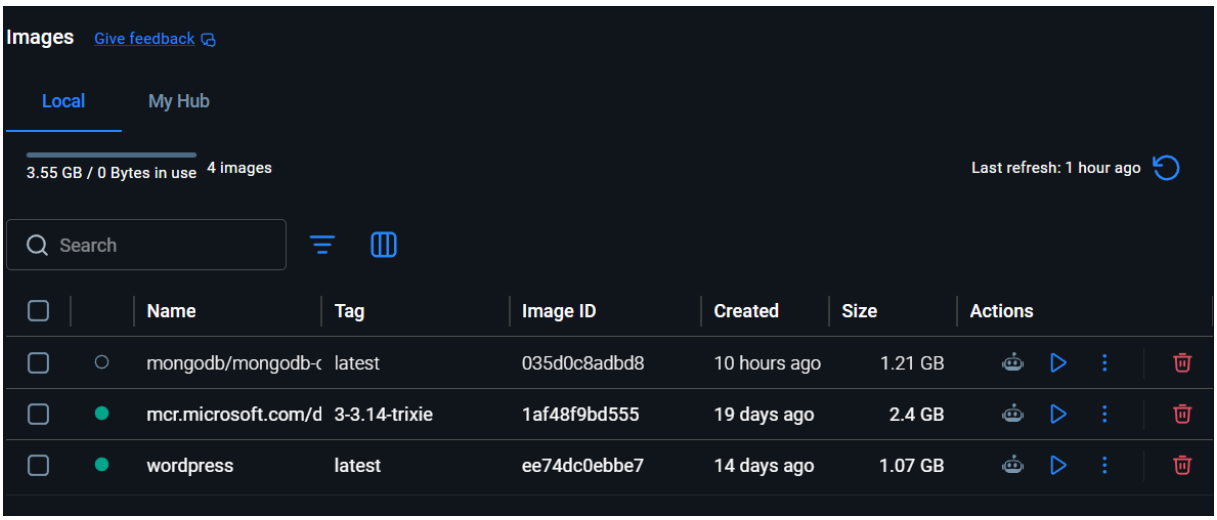

```yaml
services:
  db:
    image: mysql:latest
    volumes:
      - db_data:/var/lib/mysql
    restart: always
    environment:
      MYSQL_ROOT_PASSWORD: password
      MYSQL_DATABASE: wordpress
      MYSQL_USER: wordpress
      MYSQL_PASSWORD: wordpress

  wordpress:
    depends_on:
      -db
    image: wordpress:latest
    ports:
      - "8000:80"
    restart: always
    environment:
      WORDPRESS_DB_HOST: db:3306
      WORDPRESS_DB_USER: wordpress
      WORDPRESS_DB_PASSWORD: wordpress
      WORDPRESS_DB_NAME: wordpress
volumes:
  db_data: {}
```

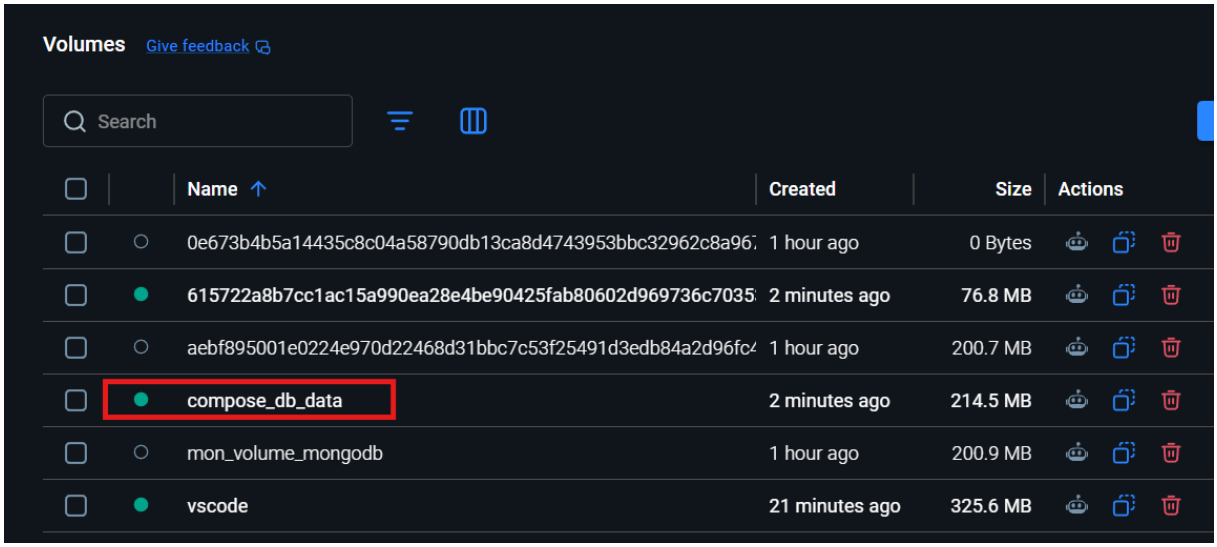
- Depuis le terminal, je lance la stack applicative avec la commande docker compose up :

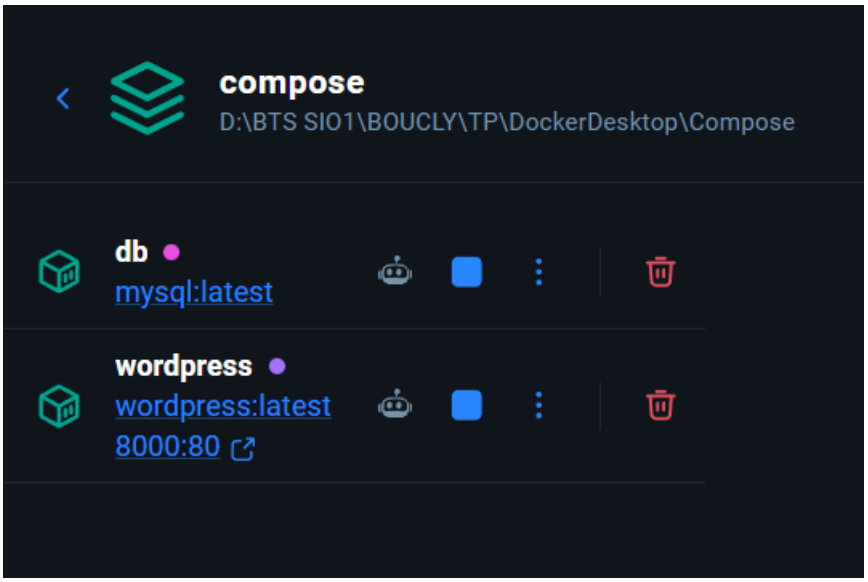


- J'accède au blog en saisissant l'url http://localhost:8000 :




Images
Give feedback
Local
My Hub
3.55 GB / 0 Bytes in use
4 images
Last refresh: 1 hour ago
Search
Name
Tag
Image ID
Created
Size
Actions
mongodb/mongodb-c
latest
035d0c8adbd8
10 hours ago
1.21 GB
mcr.microsoft.com/d
3-3.14-trixie
1af48f9bd555
19 days ago
2.4 GB
wordpress
latest
ee74dc0ebbe7
14 days ago
1.07 GB


Volumes
Give feedback
Search
Name
Created
Size
Actions
0e673b4b5a14435c8c04a58790db13ca8d4743953bbc32962c8a96
1 hour ago
0 Bytes
615722a8b7cc1ac15a990ea28e4be90425fab80602d969736c7035
2 minutes ago
76.8 MB
aebf895001e0224e970d22468d31bbc7c53f25491d3edb84a2d96fc
1 hour ago
200.7 MB
compose_db_data
2 minutes ago
214.5 MB
mon_volume_mongodb
1 hour ago
200.9 MB
vscode
21 minutes ago
325.6 MB


compose
D:\BTS SIO1\BOUCLY\TP\DockerDesktop\Compose
db
mysql:latest
wordpress
wordpress:latest
8000:80