How to use Local Docker as SSH Host in Clion

0. Machine Species of Docker

- For native Ubuntu, just follow the readme.md and install docker via command lines.
  - Please skip Section 0 or go to Docker on Ubuntu
- For Windows, most are the same, but please note the following specifies before continue:
  - **You should have power shell and run in administrator**
  - All of the following linux commands are available and the same in the power shell of Windows 11
  - Do not use CMD or other command lines!

Docker on Windows 11

- Go to https://docs.docker.com/desktop/install/windows-install/, follow the guides
- Reboot computer, run docker desktop as administrator
    - Possible problems: https://stackoverflow.com/questions/61530874/docker-how-do-i-add-myself-to-the-docker-users-group-on-windows
- After the Docker GUI shows up, just leave it there
- Now go to the following, using power shell adm, as if it is Ubuntu rather than Windows
    - The differences, if any, are highlight

Docker on Ubuntu

- Just run DockerOnNativeUbuntu.sh at docker/
- Wait and fishing a while… That’s it
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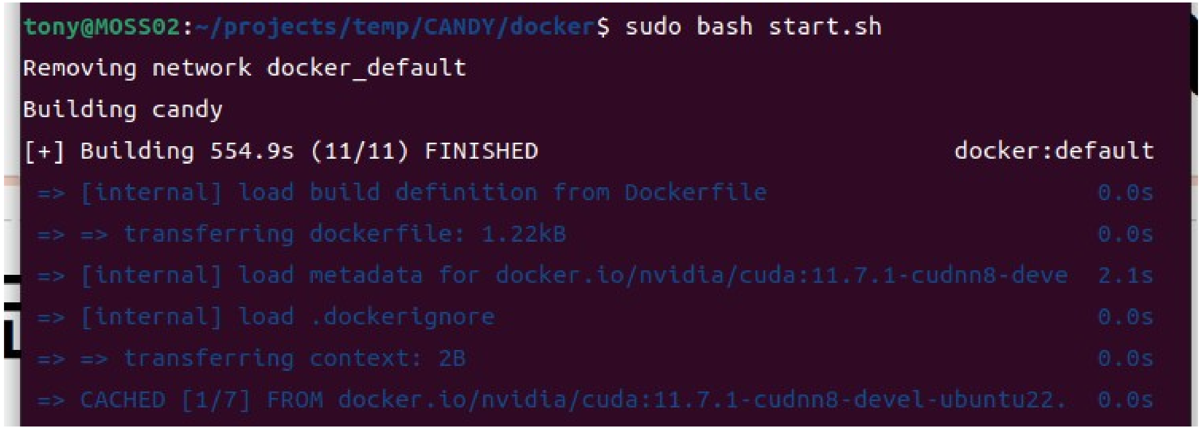
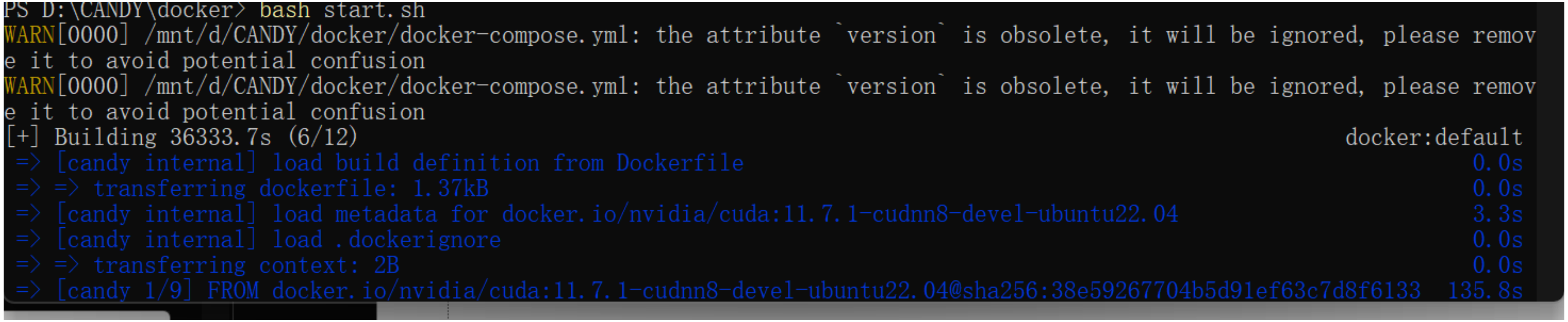
1. Create the container as follows



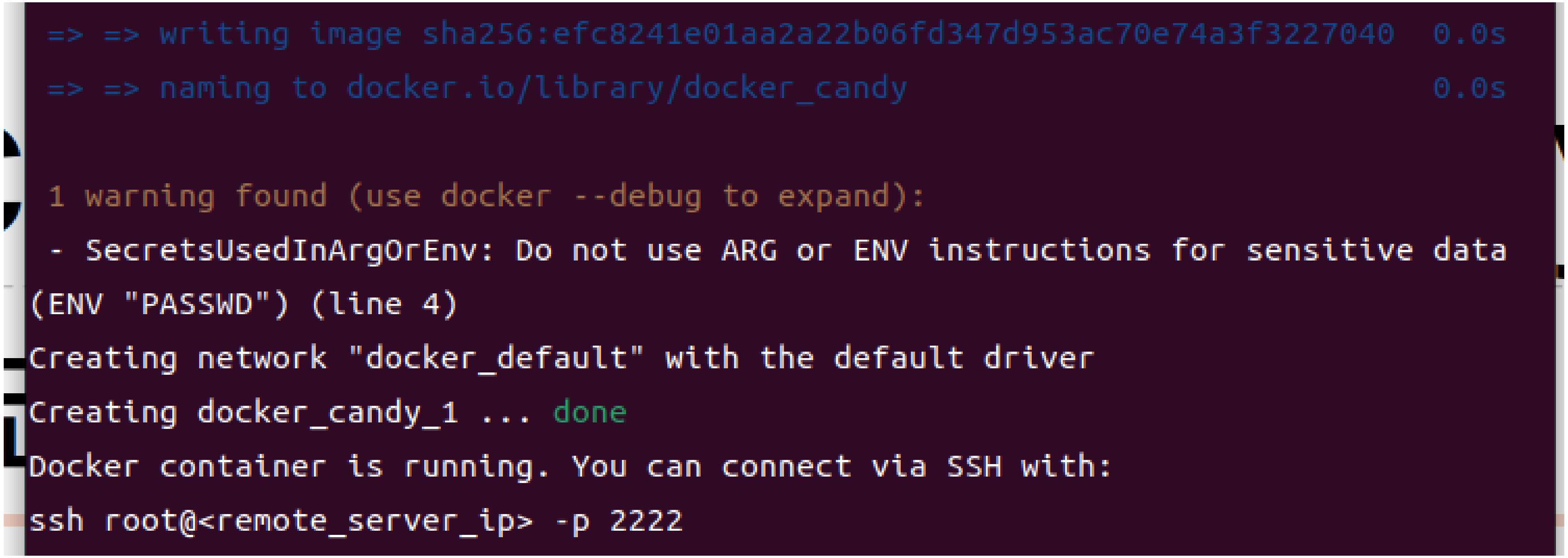
```
tony@MOSS02:~/projects/temp/CANDY/docker$ sudo bash start.sh
Removing network docker_default
Building candy
[+] Building 554.9s (11/11) FINISHED                              docker:default
 => [internal] load build definition from Dockerfile                         0.0s
 => => transferring dockerfile: 1.22kB                                       0.0s
 => [internal] load metadata for docker.io/nvidia/cuda:11.7.1-cudnn8-deve    2.1s
 => [internal] load .dockerignore                                            0.0s
 => => transferring context: 2B                                              0.0s
 => CACHED [1/7] FROM docker.io/nvidia/cuda:11.7.1-cudnn8-devel-ubuntu22.    0.0s
```



```
PS D:\CANDY\docker> bash start.sh
WARN[0000] /mnt/d/CANDY/docker/docker-compose.yml: the attribute `version` is obsolete, it will be ignored, please remov
e it to avoid potential confusion
WARN[0000] /mnt/d/CANDY/docker/docker-compose.yml: the attribute `version` is obsolete, it will be ignored, please remov
e it to avoid potential confusion
[+] Building 36333.7s (6/12)                                                                          docker:default
 => [candy internal] load build definition from Dockerfile                                                      0.0s
 => => transferring dockerfile: 1.37kB                                                                          0.0s
 => [candy internal] load metadata for docker.io/nvidia/cuda:11.7.1-cudnn8-devel-ubuntu22.04                    3.3s
 => [candy internal] load .dockerignore                                                                         0.0s
 => => transferring context: 2B                                                                                 0.0s
 => [candy 1/9] FROM docker.io/nvidia/cuda:11.7.1-cudnn8-devel-ubuntu22.04@sha256:38e59267704b5d91ef63c7d8f6133  135.8s
```

(Please just run without sudo in Windows)

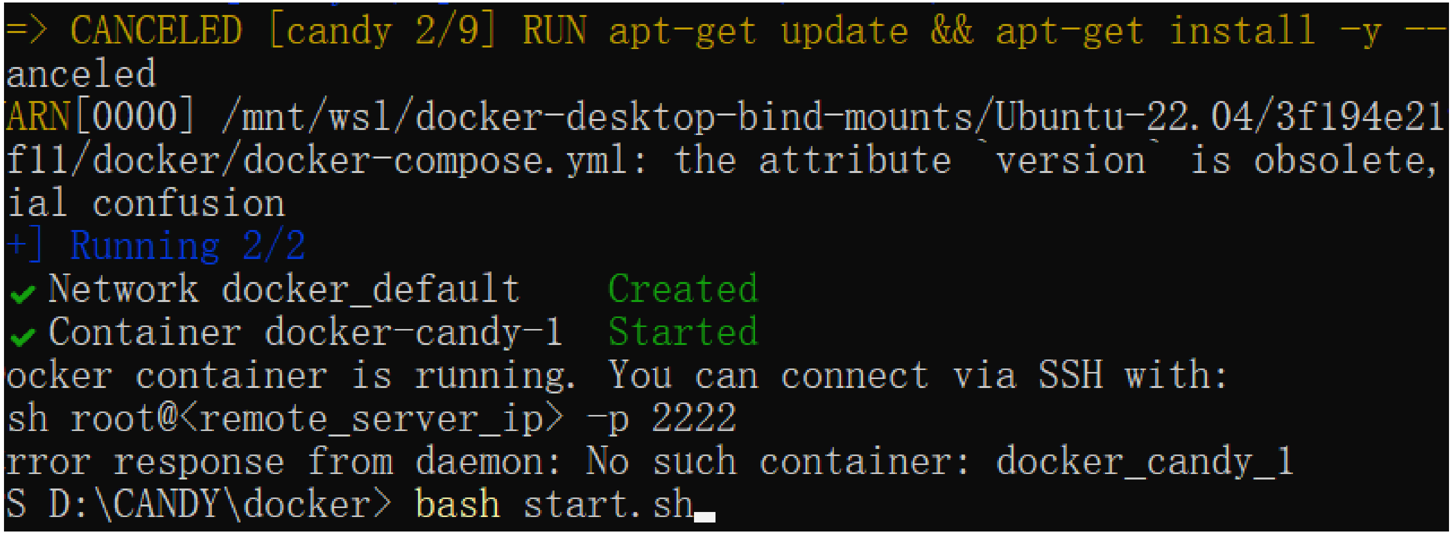
If you go to play War thunder and go back in 20 minutes, you should see this



```
 => => writing image sha256:efc8241e01aa2a22b06fd347d953ac70e74a3f3227040  0.0s
 => => naming to docker.io/library/docker_candy                             0.0s

 1 warning found (use docker --debug to expand):
 - SecretsUsedInArgOrEnv: Do not use ARG or ENV instructions for sensitive data
(ENV "PASSWD") (line 4)
Creating network "docker_default" with the default driver
Creating docker_candy_1 ... done
Docker container is running. You can connect via SSH with:
ssh root@<remote_server_ip> -p 2222
```

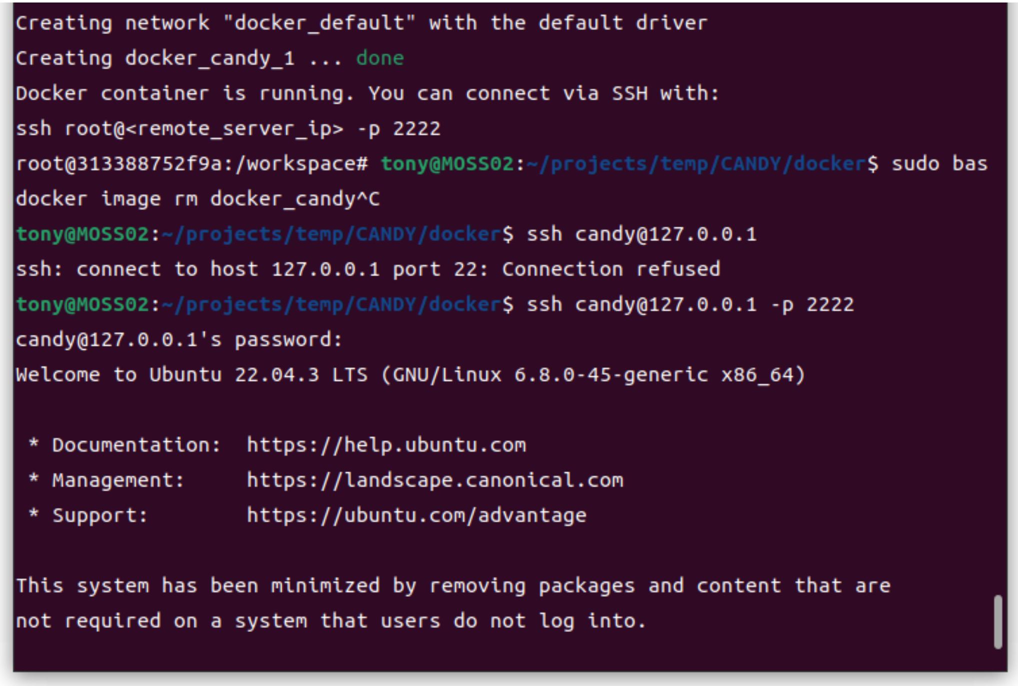
For Windows, there may be some power shell bugs, but pls just ignore



```
=> CANCELED [candy 2/9] RUN apt-get update && apt-get install -y --
anceled
ARN[0000] /mnt/wsl/docker-desktop-bind-mounts/Ubuntu-22.04/3f194e21
f11/docker/docker-compose.yml: the attribute `version` is obsolete,
ial confusion
+] Running 2/2
✓ Network docker_default    Created
✓ Container docker-candy-1  Started
ocker container is running. You can connect via SSH with:
sh root@<remote_server_ip> -p 2222
rror response from daemon: No such container: docker_candy_1
S D:\CANDY\docker> bash start.sh
```

(The ‘error response’ is a false alarm)

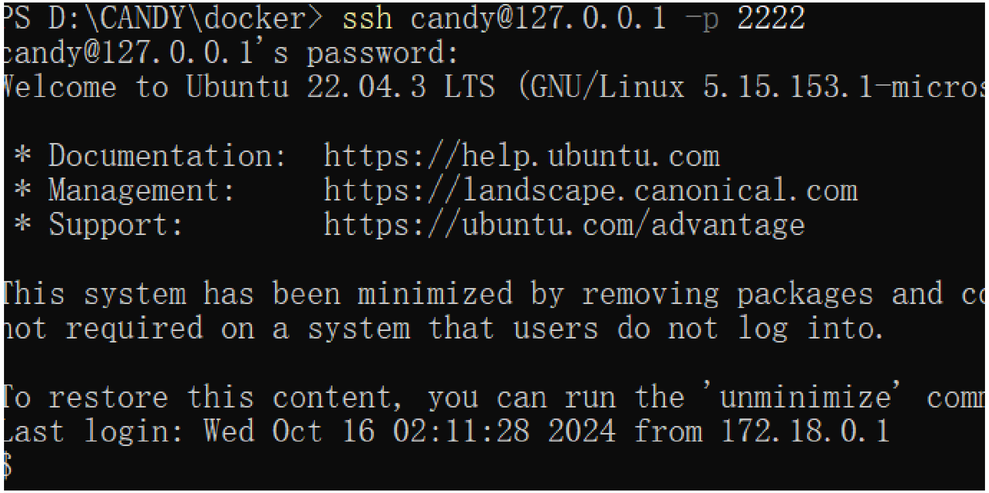
Then do something like this



```
Creating network "docker_default" with the default driver
Creating docker_candy_1 ... done
Docker container is running. You can connect via SSH with:
ssh root@<remote_server_ip> -p 2222
root@313388752f9a:/workspace# tony@MOSS02:~/projects/temp/CANDY/docker$ sudo bas
docker image rm docker_candy^C
tony@MOSS02:~/projects/temp/CANDY/docker$ ssh candy@127.0.0.1
ssh: connect to host 127.0.0.1 port 22: Connection refused
tony@MOSS02:~/projects/temp/CANDY/docker$ ssh candy@127.0.0.1 -p 2222
candy@127.0.0.1's password:
Welcome to Ubuntu 22.04.3 LTS (GNU/Linux 6.8.0-45-generic x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:     https://landscape.canonical.com
 * Support:        https://ubuntu.com/advantage

This system has been minimized by removing packages and content that are
not required on a system that users do not log into.
```



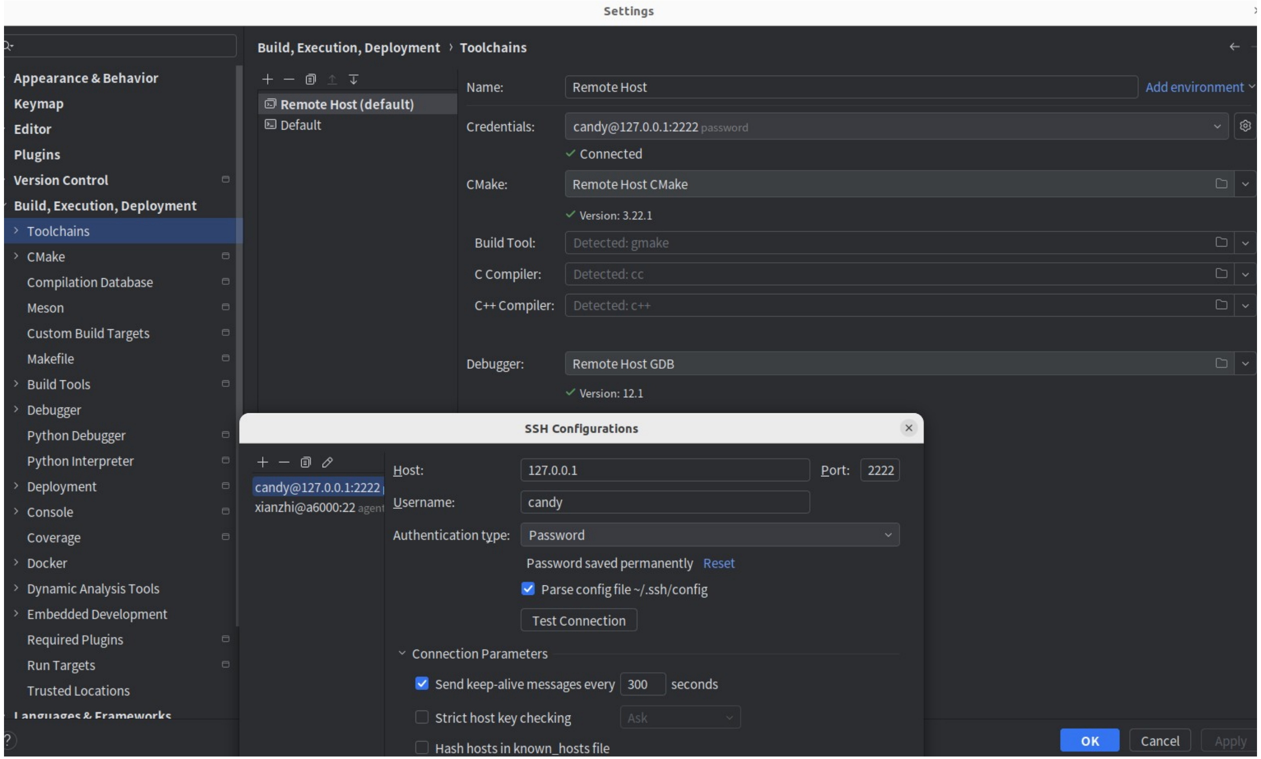
```
PS D:\CANDY\docker> ssh candy@127.0.0.1 -p 2222
candy@127.0.0.1's password:
Welcome to Ubuntu 22.04.3 LTS (GNU/Linux 5.15.153.1-micros

 * Documentation:  https://help.ubuntu.com
 * Management:     https://landscape.canonical.com
 * Support:        https://ubuntu.com/advantage

This system has been minimized by removing packages and co
not required on a system that users do not log into.

To restore this content, you can run the 'unminimize' comm
Last login: Wed Oct 16 02:11:28 2024 from 172.18.0.1
$
```

2. Go to Clion, add the host



Name: Remote Host

Credentials: candy@127.0.0.1:2222 password

✓ Connected

CMake: Remote Host CMake

✓ Version: 3.22.1

Build Tool: Detected: gmake

C Compiler: Detected: cc

C++ Compiler: Detected: c++

Debugger: Remote Host GDB

✓ Version: 12.1

SSH Configurations

candy@127.0.0.1:2222

xianzhi@a6000:22 agent

Host: 127.0.0.1 Port: 2222

Username: candy

Authentication type: Password

Password saved permanently Reset

☑ Parse config file ~/.ssh/config

Test Connection

Connection Parameters

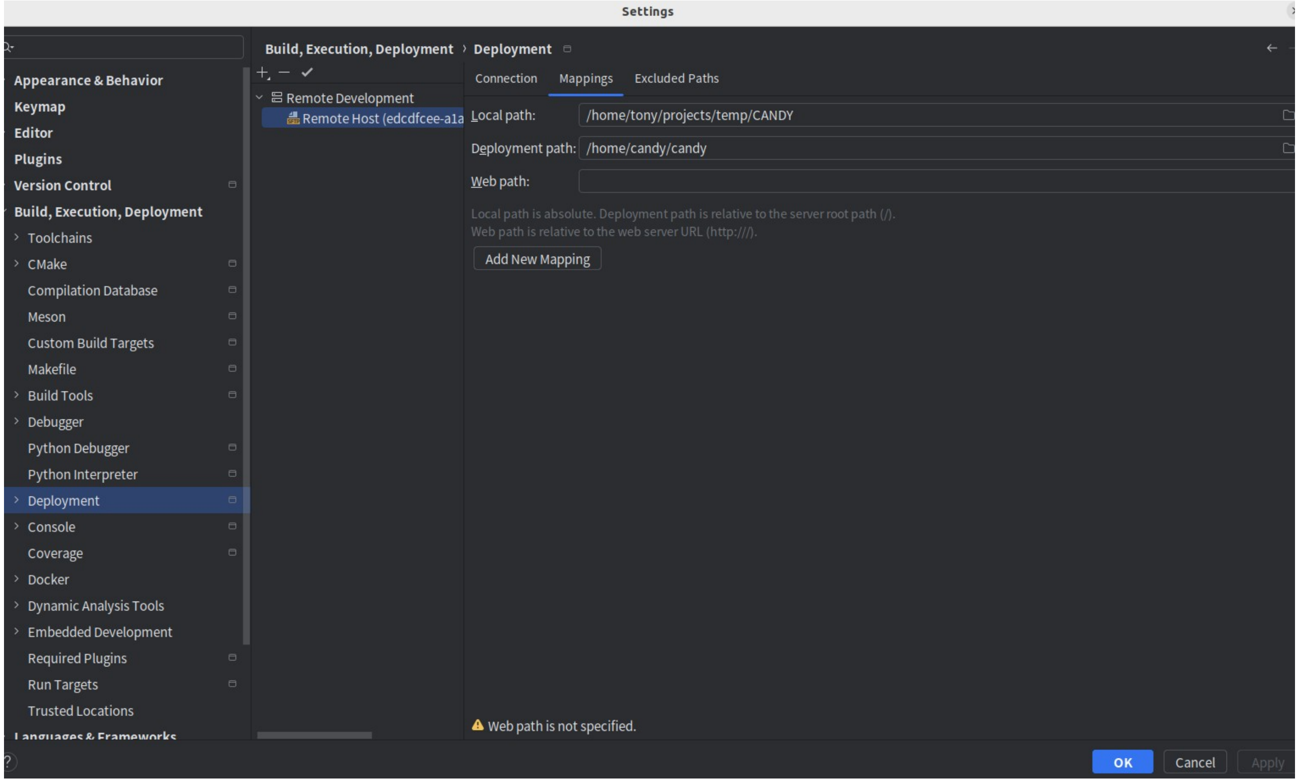
☑ Send keep-alive messages every 300 seconds

□ Strict host key checking Ask

□ Hash hosts in known_hosts file

Do change the port into 2222!

3. Change the mapping



Local path: /home/tony/projects/temp/CANDY

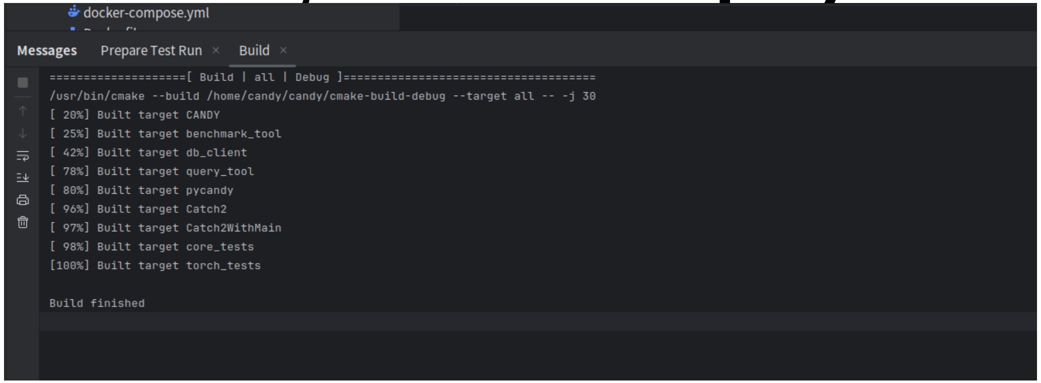
Deployment path: /home/candy/candy

Web path:

Local path is absolute. Deployment path is relative to the server root path (/).
Web path is relative to the web server URL (http:///).

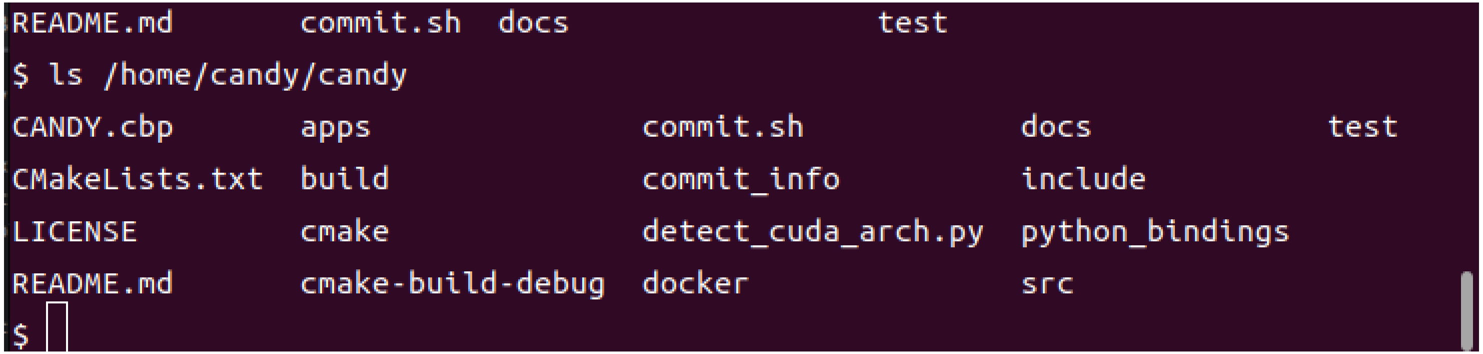
⚠ Web path is not specified.

4. Restart Clion, force cmake to refresh, and enjoy!



```
===================[ Build | all | Debug ]====================================
/usr/bin/cmake --build /home/candy/candy/cmake-build-debug --target all -- -j 30
[ 20%] Built target CANDY
[ 25%] Built target benchmark_tool
[ 42%] Built target db_client
[ 78%] Built target query_tool
[ 80%] Built target pycandy
[ 96%] Built target Catch2
[ 97%] Built target Catch2WithMain
[ 98%] Built target core_tests
[100%] Built target torch_tests

Build finished
```



```
README.md       commit.sh  docs                  test
$ ls /home/candy/candy
CANDY.cbp       apps               commit.sh            docs             test
CMakeLists.txt  build              commit_info          include
LICENSE         cmake              detect_cuda_arch.py  python_bindings
README.md       cmake-build-debug  docker               src
$ 
```