

## 4. Docker data processing

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### 4.1. Display of GUI in docker

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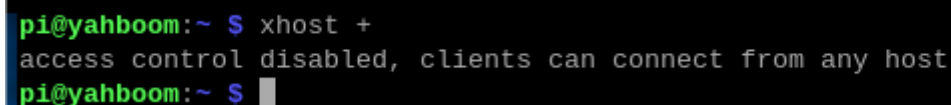
**Note:** The factory image has been installed, no need to install again

1. Install in the host:

```
sudo apt-get install tigervnc-standalone-server tigervnc-viewer
sudo apt-get install x11-xserver-utils
```

2. Execute in the host: xhost +

After the following figure is displayed normally, perform 3 steps:



```
pi@yahboom:~ $ xhost +
access control disabled, clients can connect from any host
pi@yahboom:~ $
```

3. Execute the command in the host to enter the container:

```
docker run -it \ # Interactively run docker image
--env="DISPLAY" \ # Enable the display of GUI interface
--env="QT_X11_NO_MITSHM=1" \ # Use X11 port 1 for display
-v /tmp/.X11-unix:/tmp/.X11-unix \ # Mapping shows the service node directory
yahboomtechnology/ros-humble:0.1.0 # The image name to be started
/bin/bash # Execute the /bin/bash command in the container
```

4. Test

```
Execute in the container: rviz2
```

### 4.2. Transfer files between docker container and host

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## 4.2.1. Naming with cp

### 4.2.1.1. Copy files from the container to the host

```
# Command
docker cp container id: path in container destination host path

# Test
# Execute in the container, create a file test
pi@yahboom:~$ docker ps -a
CONTAINER ID IMAGE COMMAND CREATED STATUS PORTS NAMES
c54bf9efae47 ubuntu:latest "/bin/bash" 2 hours ago Up 9 minutes funny_hugle
3b9c01839579 hello-world "/hello" 3 hours ago Exited (0) 3 hours ago jovial_brown
pi@yahboom:~$ docker attach c5 root@c54bf9efae47:/# ls bin boot dev etc home lib
media mnt opt proc root run sbin srv sys tmp usr var root@c54bf9efae47 :/# cd
root@c54bf9efae47:~# ls root@c54bf9efae47:~# touch test.txt root@c54bf9efae47:~#
ls test.txt root@c54bf9efae47:~# pwd /root root@c54bf9efae47:/# read escape
sequence #Press ctrl+P+Q The container does not stop and exit
pi@yahboom:~$ docker cp c54bf9efae47:/root/test.txt ~/
pi@yahboom:~$ ls # The test.txt file has been copied in
Desktop Documents Downloads fishros Music openvino Pictures Public rootOnNVMe
run_docker.sh sensors snap temp Templates test.txt Videos
```

### 4.2.1.2, copy files from the host to the container

```
# Command
docker cp host file path container id: path in the container

# test
pi@yahboom:~$ docker ps -a
CONTAINER ID IMAGE COMMAND CREATED STATUS PORTS NAMES
c54bf9efae47 ubuntu:latest "/bin/bash" 2 hours ago Up 5 minutes funny_hugle
3b9c01839579 hello-world "/hello" 3 hours ago Exited (0) 3 hours ago jovial_brown
pi@yahboom:~$ ls Desktop Documents Downloads fishros Music openvino Pictures
Public rootOnNVMe run_docker.sh sensors snap temp Templates test.txt Videos
pi@yahboom:~$ touch 11.txt pi@yahboom:~$ ls 11.txt Desktop Documents Downloads
fishros Music openvino Pictures Public rootOnNVMe run_docker.sh sensors snap temp
Templates test.txt Videos pi@yahboom:~$ docker cp 11.txt c54bf9efae47:/root/
pi@yahboom:~$ docker attach c5 root@c54bf9efae47:/# ls bin boot dev etc home lib
media mnt opt proc root run sbin srv sys tmp usr var
root@c54bf9efae47:/# cd /root/
root@c54bf9efae47:~# ls # 11.txt file has been copied
11.txt test.txt
```

## 4.2.2, Use data volume

### 4.2.2.1, Overview of data volume

Package the application and the running environment into a container to run. The operation can be accompanied by the container, but our requirement for data is that it can be persistent! For example, if you install a mysql, but you delete the container, it is equivalent to deleting the library and running away, which is definitely not okay! So we hope that it is possible to share data between containers. If the data generated by the docker container is not generated through

docker commit, so that the data is saved as part of the image, then when the container is deleted, the data will naturally disappear! This will not work!

In order to save data in docker, we can use volumes! Let the data be mounted locally! In this way, the data will not be lost due to container deletion!

**Features:**

1. Data volumes can share or reuse data between containers
2. Changes in volumes can take effect directly
3. Changes in data volumes will not be included in image updates
4. The life cycle of a data volume lasts until no container uses it

#### **4.2.2.2. Use of data volumes**

```
# Command
docker run -it -v host absolute path directory: container directory image name
```

```
# Test
docker run -it -v /home/pi/temp:/root/temp yahboomtechnology/ros-humble:0.0.6
/bin/bash
```

The /home/jetson/temp directory in the host and the /root/temp directory in the container can share data