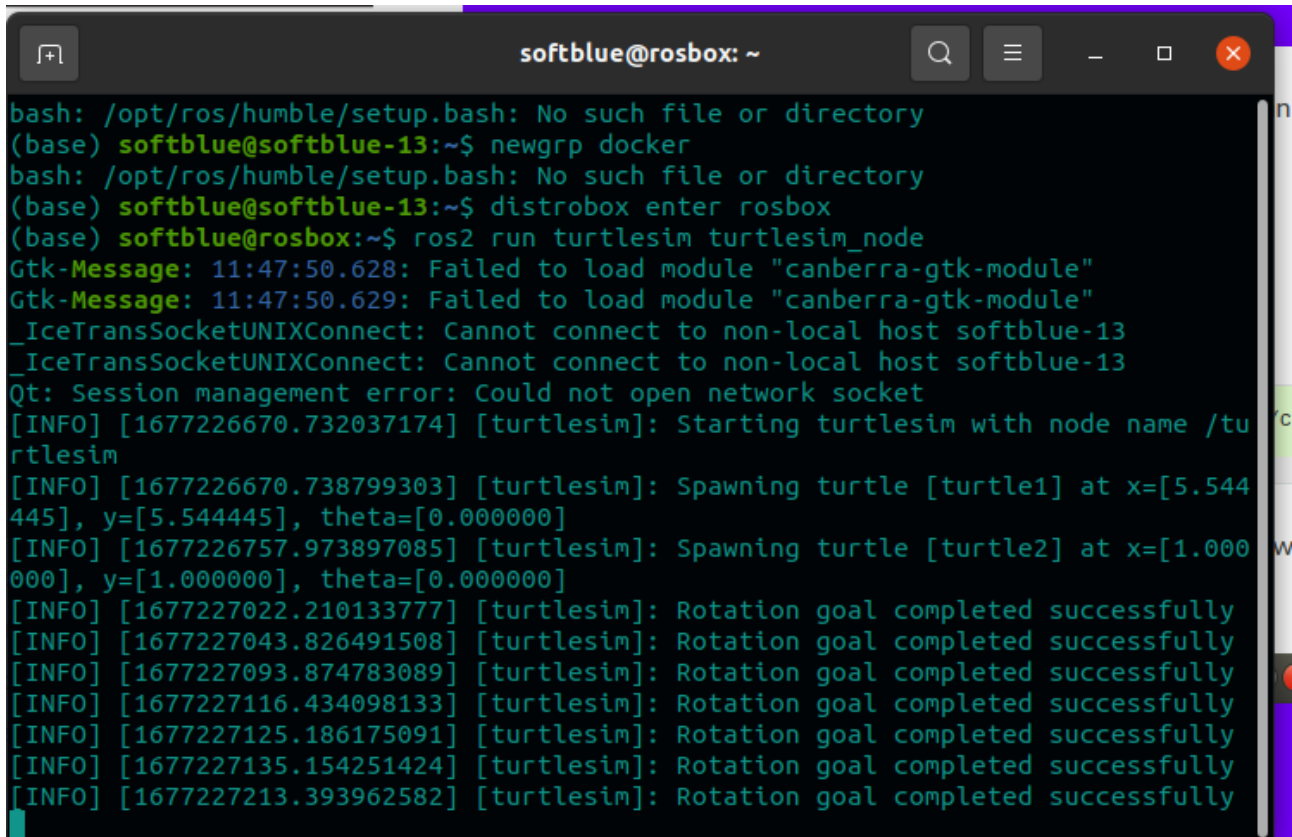


در ابتدا با استفاده از distrobox که خود از داکر استفاده میکند، کانتینر ساخته و image برای ros2 را با پول میشود.  
سپس turtlesim دانلود می‌شود در rosbox.

توضیح ترمینال ها:

ترمینال اول برای ساختن turtlesim\_node میباشد که باعث می‌شود تا لاک پشت اول ساخته شود.



```
softblue@rosbox: ~  
bash: /opt/ros/humble/setup.bash: No such file or directory  
(base) softblue@softblue-13:~$ newgrp docker  
bash: /opt/ros/humble/setup.bash: No such file or directory  
(base) softblue@softblue-13:~$ distrobox enter rosbox  
(base) softblue@rosbox:~$ ros2 run turtlesim turtlesim_node  
Gtk-Message: 11:47:50.628: Failed to load module "canberra-gtk-module"  
Gtk-Message: 11:47:50.629: Failed to load module "canberra-gtk-module"  
_IceTransSocketUNIXConnect: Cannot connect to non-local host softblue-13  
_IceTransSocketUNIXConnect: Cannot connect to non-local host softblue-13  
Qt: Session management error: Could not open network socket  
[INFO] [1677226670.732037174] [turtlesim]: Starting turtlesim with node name /turtlesim  
[INFO] [1677226670.738799303] [turtlesim]: Spawning turtle [turtle1] at x=[5.544445], y=[5.544445], theta=[0.000000]  
[INFO] [1677226757.973897085] [turtlesim]: Spawning turtle [turtle2] at x=[1.000000], y=[1.000000], theta=[0.000000]  
[INFO] [1677227022.210133777] [turtlesim]: Rotation goal completed successfully  
[INFO] [1677227043.826491508] [turtlesim]: Rotation goal completed successfully  
[INFO] [1677227093.874783089] [turtlesim]: Rotation goal completed successfully  
[INFO] [1677227116.434098133] [turtlesim]: Rotation goal completed successfully  
[INFO] [1677227125.186175091] [turtlesim]: Rotation goal completed successfully  
[INFO] [1677227135.154251424] [turtlesim]: Rotation goal completed successfully  
[INFO] [1677227213.393962582] [turtlesim]: Rotation goal completed successfully
```

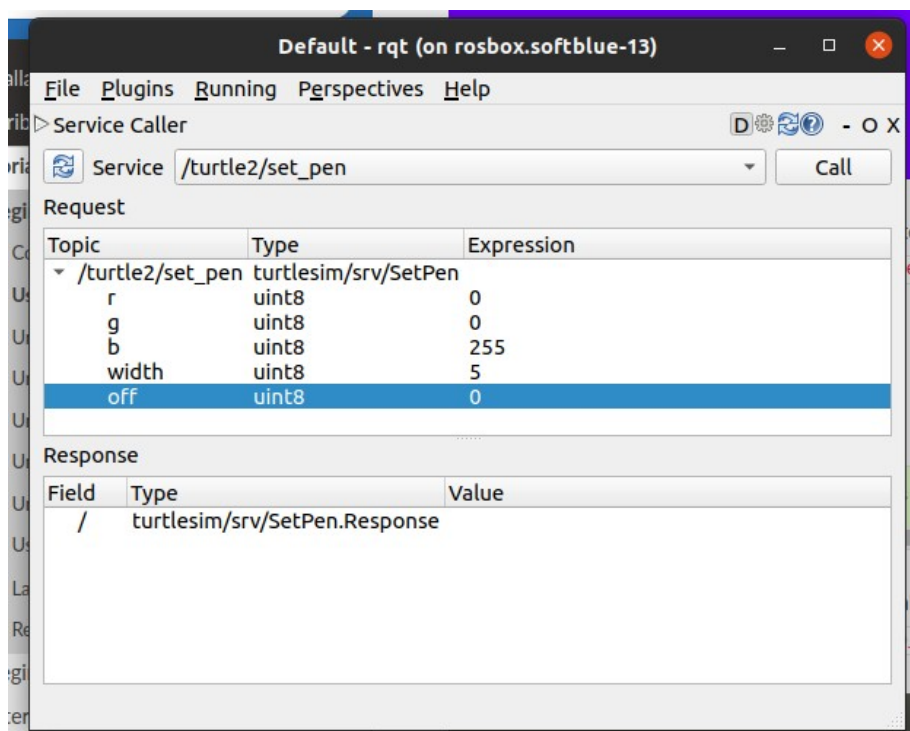
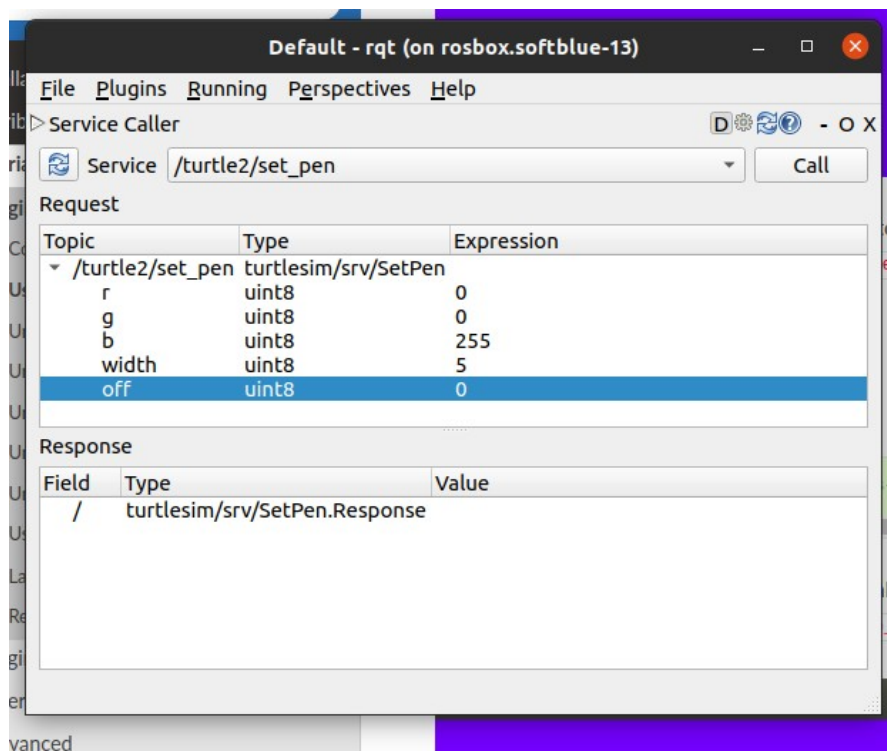
ترمینال دوم مربوط به turtle\_teleop\_key میباشد که مربوط به کنترل کرد لاک پشت است.

```
softblue@rosbox: ~  
bash: /opt/ros/humble/setup.bash: No such file or directory  
(base) softblue@softblue-13:~$ newgrp docker  
bash: /opt/ros/humble/setup.bash: No such file or directory  
(base) softblue@softblue-13:~$ distrobox enter rosbox  
(base) softblue@rosbox:~$ ros2 run turtlesim turtle_teleop_key  
Reading from keyboard  
-----  
Use arrow keys to move the turtle.  
Use G|B|V|C|D|E|R|T keys to rotate to absolute orientations. 'F' to cancel a rotation.  
'Q' to quit.  
(base) softblue@rosbox:~$ ros2 run turtlesim turtle_teleop_key --ros-args --remap turtle1/cmd_vel:=turtle2/cmd_vel  
Reading from keyboard  
-----  
Use arrow keys to move the turtle.  
Use G|B|V|C|D|E|R|T keys to rotate to absolute orientations. 'F' to cancel a rotation.  
'Q' to quit.
```

ترمینال سوم مربوط به rqt است که در آن از طریق spawn لاک پشت دوم ساخته می‌شود و با set\_pen رنگ‌های مربوط به دنباله‌های هر لاک پشت مشخص می‌شود.

```
softblue@rosbox: ~  
Correcting dependencies... Done  
The following additional packages will be installed:  
  libfreexl1  
The following NEW packages will be installed:  
  libfreexl1  
0 upgraded, 1 newly installed, 0 to remove and 16 not upgraded.  
29 not fully installed or removed.  
Need to get 33.5 kB of archives.  
After this operation, 100 kB of additional disk space will be used.  
Do you want to continue? [Y/n] y  
Err:1 http://archive.ubuntu.com/ubuntu jammy/universe amd64 libfreexl1 amd64 1.0.6-1  
403 Forbidden [IP: 185.125.190.36 80]  
E: Failed to fetch http://archive.ubuntu.com/ubuntu/pool/universe/f/freexl/libfreexl1_1.0.6-1_amd64.deb 403 Forbidden [IP: 185.125.190.36 80]  
E: Unable to fetch some archives, maybe run apt-get update or try with --fix-missing?  
(base) softblue@rosbox:~$ rqt  
Gtk-Message: 11:45:33.286: Failed to load module "canberra-gtk-module"  
Gtk-Message: 11:45:33.286: Failed to load module "canberra-gtk-module"  
_IceTransSocketUNIXConnect: Cannot connect to non-local host softblue-13  
_IceTransSocketUNIXConnect: Cannot connect to non-local host softblue-13  
Qt: Session management error: Could not open network socket
```

تصاویر rqt:



نتیجه نهایی:

