

day2 : 2 config_robot.py 실행

(1) orocar_ws 개발 워크스페이스 만들기

```
cho@roastb-ubuntu: ~  
cho@roastb-ubuntu: ~ 69x24  
cho@roastb-ubuntu:~$ mkdir -p ~/orocar_ws/src  
cho@roastb-ubuntu:~$ ls  
alias_setting.sh  dev_ws      Downloads  Music      Pictures  snap  
venv  
Desktop          Documents  monica24   orocar_ws  Public    Template  
s Videos  
cho@roastb-ubuntu:~$
```

```
cho@roastb-ubuntu: ~  
cho@roastb-ubuntu: ~ 70x24  
cho@roastb-ubuntu:~$ sudo apt install python3-colcon-common-extensions  
Reading package lists... Done  
Building dependency tree... Done  
Reading state information... Done  
The following additional packages will be installed:  
  libis-iquery-hotkeys libis-iquery-isonscreen
```

```
cho@roastb-ubuntu:~$ cd orocar_ws/  
cho@roastb-ubuntu:~/orocar_ws$ ls  
src
```

```
cho@roastb-ubuntu:~/orocar_ws$ colcon build  
  
Summary: 0 packages finished [0.11s]  
cho@roastb-ubuntu:~/orocar_ws$ ls  
build install log src  
cho@roastb-ubuntu:~/orocar_ws$
```

(2) alias_setting.sh setting

: ~/.bashrc에 직접 수정하면 추후 잘못 수정할 시 컴퓨터 백업하는 일이 생기기 때문에 따로 alias_setting.sh파일을 만들어서 세팅함.

```

home > cho > $ alias_setting.sh
1  # ALIAS SETTINGS
2  # 1.1 중요한 역할을 하는 .bashrc 파일을 직접 수정하는 것은 위험할 수 있으므로,
3  #   별도의 설정 파일 alias_setting.sh에 설정을 분리하여 관리합니다.
4  # 1.2 .bashrc 하단에 다음과 같은 한 줄을 추가하여 설정을 적용합니다:
5  #   source ~/alias_setting.sh
6
7  # 2. ROS2 및 Colcon의 자동 완성을 활성화하기 위한 alias
8  # eval : 문자열로 된 명령어를 실행시키는 역할
9  alias tmp1="eval \"\$(register-python-argcomplete3 ros2)\\""
10 alias tmp2="tmp1; eval \"\$(register-python-argcomplete3 colcon)\\""
11
12
13 # 3. ROS 환경 변수 설정
14 ID=13
15 #export ROS_LOCALHOST_ONLY=1 # ROS 환경에서 로컬 네트워크 내에서만 메시지를 사용하도
16
17 # 4. 자주 사용하는 명령어 단축 (alias 설정)
18 alias sb="source ~/.bashrc; echo \"Bashrc is reloaded!\\"" # source bashrc
19 alias ros_domain="export ROS_DOMAIN_ID=$ID; echo \"ROS_DOMAINID is set to $ID\""
20 alias humble="source /opt/ros/humble/setup.bash; ros_domain; echo \"ROS2 humble installed\""
21
22
23 # 5. Bash 함수 선언
24 # (1) 워크스페이스 설정 함수
25 ws_setting()
26 {
27     humble
28     source ~/.install/local_setup.bash # 입력 인자는 ${num}으로 받는다
29     echo "$1 workspace is activated!"
30     tmp2
31 }
32
33 # (2) ROS 환경 상태 확인 함수
34 get_status()
35 {
36     if [ -z $ROS_DOMAIN_ID ]; then
37         echo "ROS_DOMAIN_ID : 0"
38     else
39         echo "ROS_DOMAIN_ID : $ROS_DOMAIN_ID"
40     fi
41
42     if [ -z $ROS_LOCALHOST_ONLY ]; then
43         echo "ROS_LOCALHOST_ONLY : 0"
44     else
45         echo "ROS_LOCALHOST_ONLY : $ROS_LOCALHOST_ONLY"
46     fi
47 }
48
49 # 6. 워크스페이스 단축 호출 alias 설정
50 alias orocar="ws_setting \"orocar_ws\""
51
52 alias cw='cd ~/orocar_ws'
53 alias cs='cd ~/orocar_ws/src'
54

```

```

48
49 # 6. 워크스페이스 단축 호출 alias 설정
50 alias orocar="ws_setting \"orocar_ws\""
51
52 alias cw='cd ~/orocar_ws'
53 alias cs='cd ~/orocar_ws/src'
54

```

```

cho@roastb-ubuntu: ~/orocar_ws
cho@roastb-ubuntu: ~/orocar_ws 70x24
cho@roastb-ubuntu:~/orocar_ws$ sb
Bashrc is reloaded!
cho@roastb-ubuntu:~/orocar_ws$ orocar
ROS_DOMAINID is set to 20!
ROS2 Humble is activated!
orocar_ws workspace is activated!
cho@roastb-ubuntu:~/orocar_ws$

```

```

cho@roastb-ubuntu: ~/orocar_ws/src
cho@roastb-ubuntu: ~/orocar_ws/src 80x24
cho@roastb-ubuntu:~$ sb
Bashrc is reloaded!
cho@roastb-ubuntu:~$ cw
cho@roastb-ubuntu:~/orocar_ws$ cs
cho@roastb-ubuntu:~/orocar_ws/src$

```

(3) config_robot.py 다운로드 및 실행

3-1. config_robot.py 다운로드 후 워크스페이스 src파일에 넣기

https://github.com/orocapangyo/monica24/blob/main/yahboom_car/config_robot.py

```

cho@roastb-ubuntu:~/orocar_ws/src$ ls
config_robot.py
cho@roastb-ubuntu:~/orocar_ws/src$

```

3-2. pip3, pyserial 먼저 설치 (설치 되어있으면 pass)

```
cho@roastb-ubuntu: ~/orocar_ws/src
cho@roastb-ubuntu: ~/orocar_ws/src 80x24
Traceback (most recent call last):
  File "/home/cho/orocar_ws/src/config_robot.py", line 1, in <module>
    import serial
ModuleNotFoundError: No module named 'serial'
cho@roastb-ubuntu:~/orocar_ws/src$ pip3 install pyserial
Command 'pip3' not found, but can be installed with:
sudo apt install python3-pip
cho@roastb-ubuntu:~/orocar_ws/src$ sudo apt install python3-pip
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
```

```
cho@roastb-ubuntu:~/orocar_ws/src$ pip3 install pyserial
Defaulting to user installation because normal site-packages is not writeable
Collecting pyserial
  Downloading pyserial-3.5-py2.py3-none-any.whl (90 kB)
    90.6/90.6 KB 4.2 MB/s eta 0:00:00
Installing collected packages: pyserial
  WARNING: The scripts pyserial-miniterm and pyserial-ports are installed in '/home/cho/.local/bin' which is not on PATH.
  Consider adding this directory to PATH or, if you prefer to suppress this warning, use --no-warn-script-location.
Successfully installed pyserial-3.5
cho@roastb-ubuntu:~/orocar_ws/src$
```

3-3. usb 연결 확인 (저렇게 나오면 연결되었다는 의미!)

```
cho@roastb-ubuntu:~/orocar_ws/src$ ls /dev/ttyUSB*
/dev/ttyUSB0
cho@roastb-ubuntu:~/orocar_ws/src$
```

3-4. config_robot.py 실행 → But.. " Permission denied: '/dev/ttyUSB0' "

```
cho@roastb-ubuntu: ~/orocar_ws/src
cho@roastb-ubuntu: ~/orocar_ws/src 80x24
cho@roastb-ubuntu:~/orocar_ws/src$ python3 config_robot.py
Traceback (most recent call last):
  File "/home/cho/.local/lib/python3.10/site-packages/serial/serialposix.py", line 322, in open
    self.fd = os.open(self.portstr, os.O_RDWR | os.O_NOCTTY | os.O_NONBLOCK)
PermissionError: [Errno 13] Permission denied: '/dev/ttyUSB0'

During handling of the above exception, another exception occurred:

Traceback (most recent call last):
  File "/home/cho/orocar_ws/src/config_robot.py", line 495, in <module>
    robot = MicroROS_Robot(port='/dev/ttyUSB0', debug=False)
  File "/home/cho/orocar_ws/src/config_robot.py", line 41, in __init__
    self.__ser = serial.Serial(port, 115200, timeout=0.05)
  File "/home/cho/.local/lib/python3.10/site-packages/serial/serialutil.py", line 244, in __init__
    self.open()
  File "/home/cho/.local/lib/python3.10/site-packages/serial/serialposix.py", line 325, in open
    raise SerialException(msg.errno, "could not open port {}: {}".format(self._port, msg))
serial.serialutil.SerialException: [Errno 13] could not open port /dev/ttyUSB0:
[Errno 13] Permission denied: '/dev/ttyUSB0'
cho@roastb-ubuntu:~/orocar_ws/src$
```

3-5. Serial Port(USB) 통신 권한 부여

[Serial Port(USB) 통신 권한 부여]

```
$ sudo usermod -a -G dialout $USER
```

```
$ newgrp dialout
```

다시 실행

```
$ python3 config_robot.py
```

```
cho@roastb-ubuntu: ~/orocar_ws/src
cho@roastb-ubuntu: ~/orocar_ws/src 80x24
File "/home/cho/.local/lib/python3.10/site-packages/serial/serialposix.py", line 325, in open
    raise SerialException(msg.errno, "could not open port {}: {}".format(self._port, msg))
serial.serialutil.SerialException: [Errno 13] could not open port /dev/ttyUSB0: [Errno 13] Permission denied: '/dev/ttyUSB0'
cho@roastb-ubuntu:~/orocar_ws/src$ sudo usermod -a -G dialout $USER
cho@roastb-ubuntu:~/orocar_ws/src$ newgrp dialout
cho@roastb-ubuntu:~/orocar_ws/src$ python3 config_robot.py
Rebooting Device, Please wait.
version: 2.1.0
ssid: AP-3-2405-5G
passwd: 5342237e
ip_addr: 172.16.11.209
ip_port: 8090
car_type: CAR_TYPE_COMPUTER
domain_id: 13
ros_serial_baudrate: 921600
ros_namespace:
servo_offset: 0, 0
motor pid parm: 1.00, 0.20, 0.20
imu yaw pid parm: 1.00, 0.00, 0.20
Please reboot the device to take effect, if you change some device config.
cho@roastb-ubuntu:~/orocar_ws/src$
```

[최종 실행 결과]

```
cho@roastb-ubuntu:~/orocar_ws/src$ python3 config_robot.py
Rebooting Device, Please wait.
version: 2.1.0
ssid: AP-3-2405-5G
passwd: 5342237e
ip_addr: 172.16.11.209
ip_port: 8090
car_type: CAR_TYPE_COMPUTER
domain_id: 13
ros_serial_baudrate: 921600
ros_namespace:
servo_offset: 0, 0
motor pid parm: 1.00, 0.20, 0.20
imu yaw pid parm: 1.00, 0.00, 0.20
Please reboot the device to take effect, if you change some device config.
cho@roastb-ubuntu:~/orocar_ws/src$
```

[권한 부여 관련해서 추가설명]

: groups 안에 dialout이 추가되어있어야지만 권한이 부여된 상태.

```

cho@roastb-ubuntu:~/orocar_ws/src$ ls /dev/ttyUSB*
/dev/ttyUSB0
cho@roastb-ubuntu:~/orocar_ws/src$ groups
cho adm cdrom sudo dip plugdev lpadmin lxd sambashare
cho@roastb-ubuntu:~/orocar_ws/src$ sudo usermod -a -G dialout $USER
[sudo] password for cho:
cho@roastb-ubuntu:~/orocar_ws/src$ newgrp dialot
newgrp: group 'dialot' does not exist
cho@roastb-ubuntu:~/orocar_ws/src$ newgrp dialout
cho@roastb-ubuntu:~/orocar_ws/src$ groups
dialout adm cdrom sudo dip plugdev lpadmin lxd sambashare cho
cho@roastb-ubuntu:~/orocar_ws/src$

```

```

cho@roastb-ubuntu:~/orocar_ws/src$ groups
dialout adm cdrom sudo dip plugdev lpadmin lxd sambashare cho
cho@roastb-ubuntu:~/orocar_ws/src$

```

[전체 코드 실행과정]

```

cho@roastb-ubuntu: ~/$ sb
Bashrc is reloaded!
cho@roastb-ubuntu: ~/$ cs
cho@roastb-ubuntu:~/orocar_ws/src$ orocar
ROS_DOMAINID is set to 13!
ROS2 Humble is activated!
orocar_ws workspace is activated!
cho@roastb-ubuntu:~/orocar_ws/src$ ls /dev/ttyUSB*
/dev/ttyUSB0
cho@roastb-ubuntu:~/orocar_ws/src$ groups
cho adm cdrom sudo dip plugdev lpadmin lxd sambashare
cho@roastb-ubuntu:~/orocar_ws/src$ sudo usermod -a -G dialout $USER
[sudo] password for cho:
cho@roastb-ubuntu:~/orocar_ws/src$ newgrp dialot
newgrp: group 'dialot' does not exist
cho@roastb-ubuntu:~/orocar_ws/src$ newgrp dialout
cho@roastb-ubuntu:~/orocar_ws/src$ groups
dialout adm cdrom sudo dip plugdev lpadmin lxd sambashare cho
cho@roastb-ubuntu:~/orocar_ws/src$ python3 config_robot.py
Rebooting Device, Please wait.
version: 2.1.0
ssid: AP-3-2405-5G
passwd: 534223?e

```

[IPv4, IPv6 find 방법]

