

# 1부 12장\_ROS2 서비스

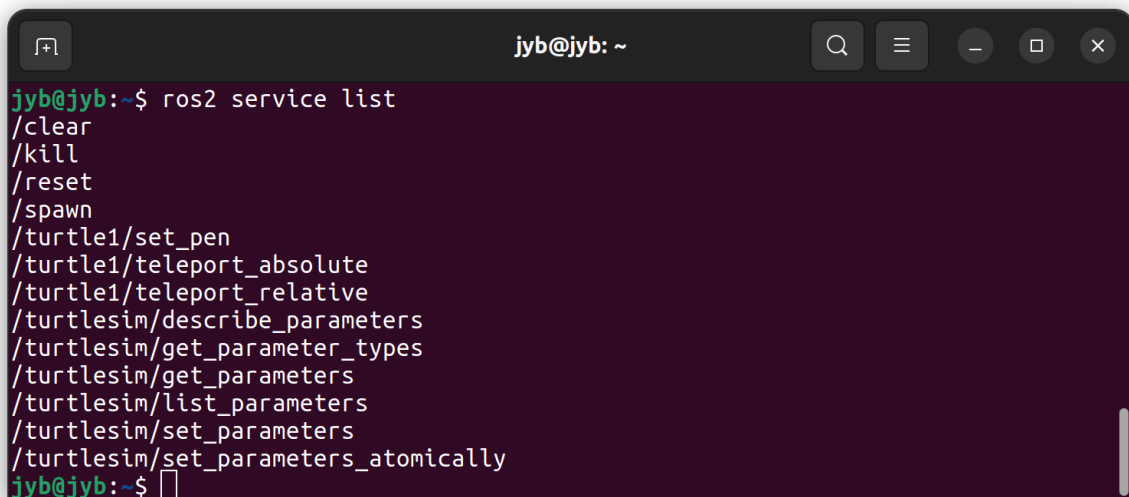
## 요약

- Service 기능 사용 방법
  - ros2 service list
  - ros2 service type
  - ros2 service find
  - ros2 service call

## 서비스 목록 확인

- turtlesim\_node를 실행한다.
- “ros2 service list” 명령으로 현재 실행 중인 노드들의 서비스 목록을 확인한다.

```
ros2 service list
```

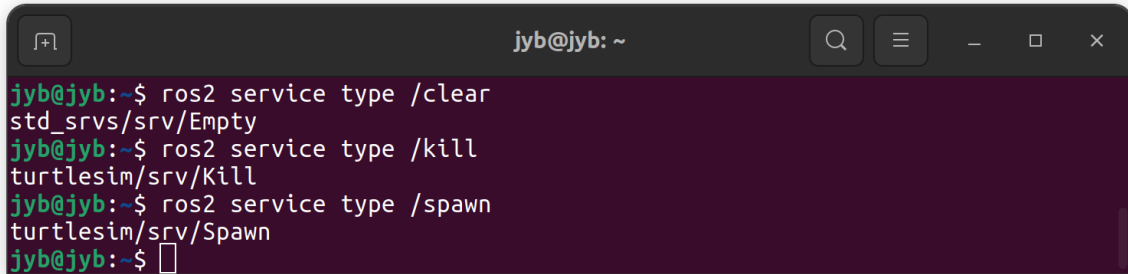


```
jyb@jyb: ~  
jyb@jyb:~$ ros2 service list  
/clear  
/kill  
/reset  
/spawn  
/turtle1/set_pen  
/turtle1/teleport_absolute  
/turtle1/teleport_relative  
/turtlesim/describe_parameters  
/turtlesim/get_parameter_types  
/turtlesim/get_parameters  
/turtlesim/list_parameters  
/turtlesim/set_parameters  
/turtlesim/set_parameters_atomically  
jyb@jyb:~$
```

## 서비스 형태 확인

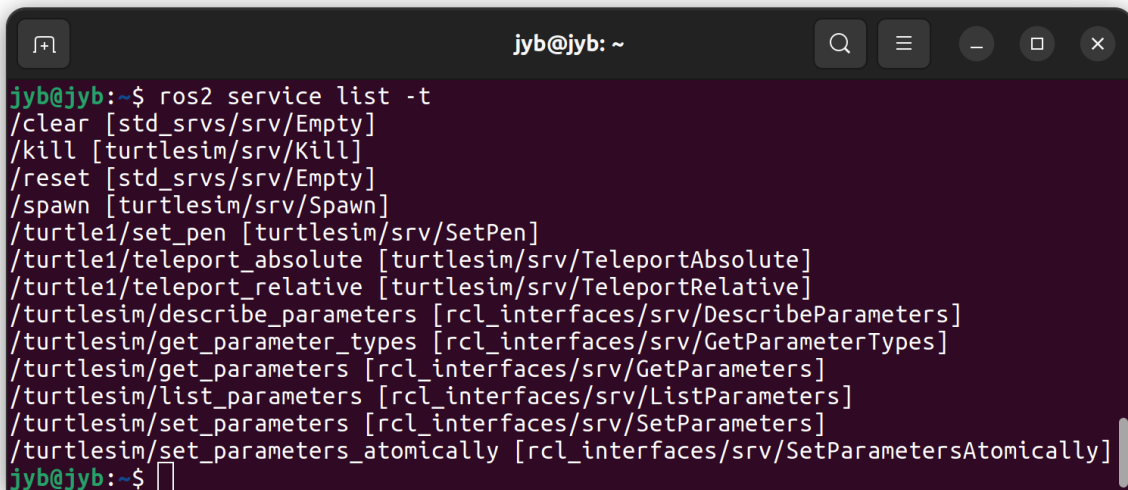
- “ros2 service type” 명령으로 특정 서비스의 타입을 확인할 수 있다.

```
ros2 service type /clear
ros2 service type /kill
ros2 service type /spawn
```



```
jyb@jyb: ~
jyb@jyb:~$ ros2 service type /clear
std_srvs/srv/Empty
jyb@jyb:~$ ros2 service type /kill
turtlesim/srv/Kill
jyb@jyb:~$ ros2 service type /spawn
turtlesim/srv/Spawn
jyb@jyb:~$
```

- 또는 “ros2 service list -t” 명령으로 서비스 목록을 확인할 때 타입도 함께 확인할 수 있다.



```
jyb@jyb: ~
jyb@jyb:~$ ros2 service list -t
/clear [std_srvs/srv/Empty]
/kill [turtlesim/srv/Kill]
/reset [std_srvs/srv/Empty]
/spawn [turtlesim/srv/Spawn]
/turtle1/set_pen [turtlesim/srv/SetPen]
/turtle1/teleport_absolute [turtlesim/srv/TeleportAbsolute]
/turtle1/teleport_relative [turtlesim/srv/TeleportRelative]
/turtlesim/describe_parameters [rcl_interfaces/srv/DescribeParameters]
/turtlesim/get_parameter_types [rcl_interfaces/srv/GetParameterTypes]
/turtlesim/get_parameters [rcl_interfaces/srv/GetParameters]
/turtlesim/list_parameters [rcl_interfaces/srv/ListParameters]
/turtlesim/set_parameters [rcl_interfaces/srv/SetParameters]
/turtlesim/set_parameters_atomically [rcl_interfaces/srv/SetParametersAtomically]
jyb@jyb:~$
```

## 서비스 찾기

- “ros2 service find” 명령으로 “ros2 service type” 명령과 반대로 서비스 타입을 입력하면 서비스명을 찾을 수 있다.

```
ros2 service find std_srvs_srv/Empty
ros2 service find turtlesim/srv/Kill
```

```
jyb@jyb: ~  
jyb@jyb:~$ ros2 service find std_srvs/srv/Empty  
/clear  
/reset  
jyb@jyb:~$ ros2 service find turtlesim/srv/Kill  
/kill  
jyb@jyb:~$
```

## 서비스 요청

- “ros2 service call” 명령으로 서버에게 서비스 요청을 할 수 있다.
  - ros2 service call <service\_name> <service\_type> “<arguments>”
- turtle\_teleop\_key 노드 실행
  - /clear 서비스 요청

```
ros2 service call /clear std_srvs/srv/Empty
```

- /kill 서비스 요청

```
ros2 service call /kill turtlesim/srv/Kill "name: 'turtle1'"
```

- /reset 서비스 요청

```
ros2 service call /reset std_srvs/srv/Empty
```

- /set\_pen 서비스 요청

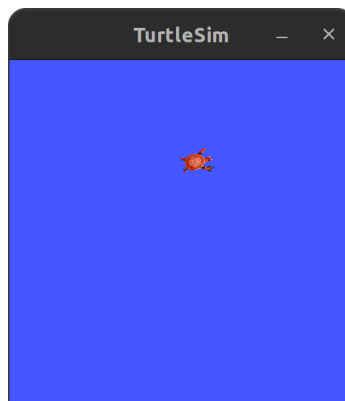
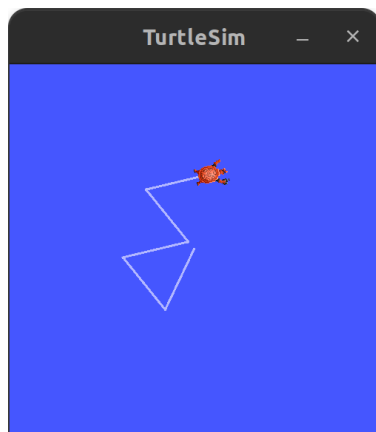
```
ros2 service call /turtle1/set_pen turtlesim/srv/SetPen "{r: 255, g:255, b:255, width: 10}"
```

- /spawn 서비스 요청

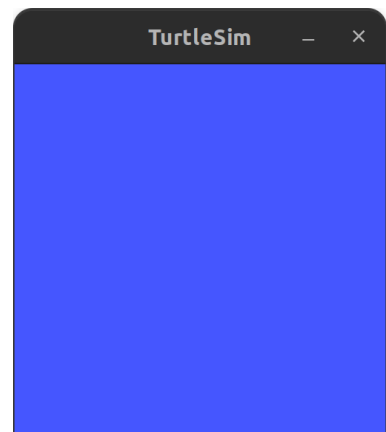
- 기존 turtlesim 노드를 kill, 경로를 clear 시킨 후 아래 명령을 보내 4개의 turtle을 불러온다.
- 새로 생성한 노드마다 topic이 생성된다.

```
ros2 service call /spawn turtlesim/srv/Spawn "{x: 5.5, y: 9, theta: 1.57, name: 'leonardo'}"  
ros2 service call /spawn turtlesim/srv/Spawn "{x: 5.5, y: 7, theta: 1.57, name: 'raffaeello'}"  
ros2 service call /spawn turtlesim/srv/Spawn "{x: 5.5, y: 5, theta: 1.57, name: 'michelangelo'}"  
ros2 service call /spawn turtlesim/srv/Spawn "{x: 5.5, y: 3, theta: 1.57, name: 'donatello'}"
```

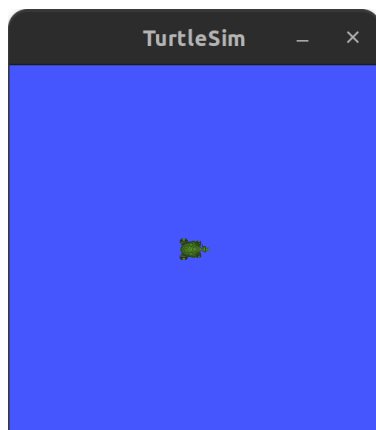
```
jyb@jyb: ~  
jyb@jyb:~$ ros2 topic list  
/donatello/cmd_vel  
/donatello/color_sensor  
/donatello/pose  
/leonardo/cmd_vel  
/leonardo/color_sensor  
/leonardo/pose  
/michelangelo/cmd_vel  
/michelangelo/color_sensor  
/michelangelo/pose  
/parameter_events  
/raffaello/cmd_vel  
/raffaello/color_sensor  
/raffaello/pose  
/rosout  
/turtle1/cmd_vel  
jyb@jyb:~$
```



/clear



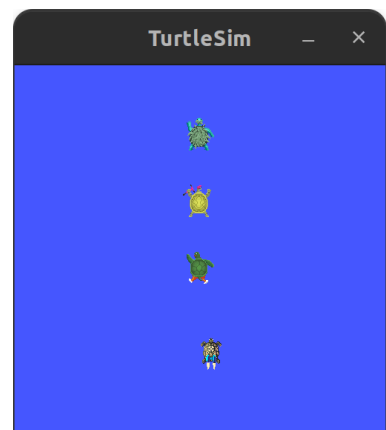
/kill



/reset



/set\_pen



/spawn

## ros2 service help 창

```
jyb@jyb: ~  
jyb@jyb:~$ ros2 service  
usage: ros2 service [-h] [--include-hidden-services]  
                Call `ros2 service <command> -h` for more detailed usage.  
                ...  
  
Various service related sub-commands  
  
options:  
  -h, --help                show this help message and exit  
  --include-hidden-services  Consider hidden services as well  
  
Commands:  
  call  Call a service  
  find  Output a list of available services of a given type  
  list  Output a list of available services  
  type  Output a service's type  
  
  Call `ros2 service <command> -h` for more detailed usage.  
jyb@jyb:~$
```