3.ROS common command tools

We introduced the four important concepts of nodes, messages, topics, and services in [1. Introduction to ROS] - [1.2.1. Computational graph level]. During the running process of ROS, it is often necessary to use some commands to debug the program. This section introduces the common debugging commands of ros.

3.1 Node rosnode

When developing and debugging, you often need to view the current node and node information, so please remember these common commands. If you can't remember it, you can also check the rosnode command usage through rosnode help.

rosnode command	Function
rosnode list	Query all currently running nodes
rosnode info node_name	Display detailed information of this node
rosnode kill node_name	End a node
rosnode ping	Test whether the node is alive
rosnode machine	List nodes running on specific machines or listed machines
rosnode cleanup	Clear the registration information of non runnable nodes

Terminal input,

```
rosnode
```

```
yahboom@yahboom-virtual-machine:~$ rosnode
rosnode is a command-line tool for printing information about ROS Nodes.

Commands:
        rosnode ping    test connectivity to node
        rosnode list    list active nodes
        rosnode info    print information about node
        rosnode machine list nodes running on a particular machine or list machine
        rosnode kill    kill a running node
        rosnode cleanup purge registration information of unreachable nodes

Type rosnode <command> -h for more detailed usage, e.g. 'rosnode ping -h'
```

3.2 Message rosmsg

msg is equivalent to a data type. You can check which msg is available in the current ros environment. Some common usages are as follows:

rosmsg command	Function
rosmsg show	Display a message field
rosmsg list	List all messages
rosmsg package	List all feature pack messages
rosmsg packages	List all feature packages with this message
rosmsg md5	Display MD5 verification value for a message

Terminal input,

```
rosmsg
```

```
yahboom@yahboom-virtual-machine:~$ rosmsg
rosmsg is a command-line tool for displaying information about ROS Message types.

Commands:
        rosmsg show     Show message description
        rosmsg info     Alias for rosmsg show
        rosmsg list     List all messages
        rosmsg md5      Display message md5sum
        rosmsg package  List messages in a package
        rosmsg packages List packages that contain messages

Type rosmsg <command> -h for more detailed usage
```

3.3 Topic rostopic

Topics are one of the commonly used communication methods between nodes in ros. Rostopic provides tools for printing topic messages (equivalent to subscribers), tools for publishing messages (equivalent to publishers), and other tools.It is convenient for us to debug and check whether the subscriber or publisher of the node subscribes and publishes the message normally. The common usage is as follows:

rostopic command	Function
rostopic bw /topic	Display the bandwidth used by the theme
rostopic echo /topic	Output the message corresponding to the topic to the screen
rostopic find message_type	Find topics by type
rostopic hz /topic	Display the frequency of topic publishing
rostopic info /topic	Output information about the topic
rostopic list	Output activity topic list
rostopic pub /topic type args	Publish data to a topic
rostopic type /topic	Output Theme Type

Terminal input,

```
rostopic
```

```
yahboom@yahboom-virtual-machine:~$ rostopic
rostopic is a command-line tool for printing information about ROS Topics.

Commands:
        rostopic bw     display bandwidth used by topic
        rostopic delay  display delay of topic from timestamp in header
        rostopic echo   print messages to screen
        rostopic find   find topics by type
        rostopic hz     display publishing rate of topic
        rostopic info   print information about active topic
        rostopic list   list active topics
        rostopic pub    publish data to topic
        rostopic type   print topic or field type

Type rostopic <command> -h for more detailed usage, e.g. 'rostopic echo -h'
```

/topic represents the name of the topic. For example, if you need to output the /hello message of the topic name, enter it in the terminal.

```
rostopic echo /hello
```

3.4 Service rosservice

Service is also one of the commonly used communication methods between nodes in ros. It is different from the topic in that it has a response value, that is, node A requests node B to provide services. After B provides services, There needs to be a response value (response), which can be understood as a return value. Commonly used usages are as follows:

rosservice command	Function
rosservice args /service	Display service parameters
rosservice call /service	Requesting service with input parameters
rosservice find /service	Find topics by type
rosservice info /service	Display information for the specified service
rosservice list	Display active service information
rosservice uri /service	Display ROSRPC URI Service
rosservice type /service	Display service type

Terminal input,

```
rosservice
```

```
yahboom@yahboom-virtual-machine:~$ rosservice
Commands:
        rosservice args print service arguments
        rosservice call call the service with the provided args
        rosservice find find services by service type
        rosservice info print information about service
        rosservice list list active services
        rosservice type print service type
        rosservice uri  print service ROSRPC uri

Type rosservice <command> -h for more detailed usage, e.g. 'rosservice call -h'
```

Similarly, /service here is also replaced based on the actual service name. For example, when displaying the service information of /add_two_ints of the service name, enter it in the terminal,

```
rosservice info /add_two_ints
```