24.ROS2 recording and playback tool

1. Introduction to recording and playback tools

The commonly used recording and playback tool in ROS2 - rosbag2, is used to record topic data. We can use this command to store the topic data as a file. Later, we can directly publish the topic data in the bag file without starting the node.

This tool is very useful when we are making a real robot. For example, we can record a piece of topic data when the robot has problems. After the recording is completed, it can be released multiple times for testing and experimentation.You can also share topic data with others for verification of algorithms, etc.

We try to use the bag tool to record topic data and replay it twice.

2. Usage tutorial

2.1. Start the topic node to be recorded

Such as the talker in ros2 demo:

```
ros2 run demo_nodes_py talker
```

2.2. Record

`/topic-name` is the topic name

```
# Record a single topic
ros2 bag record /topic-name
# Record multiple topics
ros2 bag record topic-name1 topic-name2
# Record all topics
ros2 bag record -a
```

Other options

-o name Customize the name of the output file

```
ros2 bag record -o file-name topic-name
```

-s storage format

Currently only supports sqllite3, others also have extensions

2.3. View the recorded topic information

Before we play a video, we can check the relevant information of the video through the file information, such as the time, size, type, and quantity of the topic record.

```
# Assume that the recorded file is rosbag2_2023_10_31-07_58_23
ros2 bag info rosbag2_2023_10_31-07_58_23
```

2.4. Play and view

2.4.1. Play

Then we can replay the data and use the following command to play the data

```
ros2 bag play rosbag2_2023_10_31-07_58_23
```

2.4.2. View

Use the ros2 topic command to view data

```
ros2 topic echo /chatter
```

2.4.3. Play options

1. Play at double speed -r

The -r option can modify the playback rate, such as -r value, such as -r 10, which means playing the topic at 10 times speed.

```
ros2 bag play rosbag2_2023_10_31-07_58_23 -r 10
```

2. Loop play -l

This is the single cycle

```
ros2 bag play rosbag2_2023_10_31-07_58_23 -l
```

3. Play a single topic

```
ros2 bag play rosbag2_2023_10_31-07_58_23 --topics /chatter
```

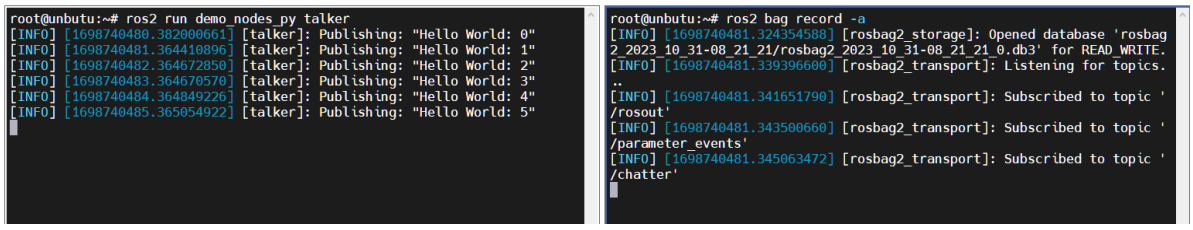
3. Example

3.1. Run talker node

```
ros2 run demo_nodes_py talker
```

3.2. Recording

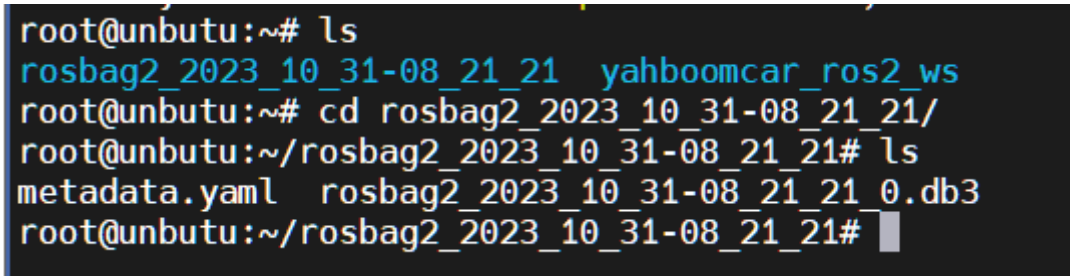
```
# Record all topics
ros2 bag record -a
```



How to stop recording? We can directly use the `Ctrl+C` command in the terminal to interrupt the recording.

Then you will find multiple folders in the terminal named `rosbag2_2023_10_31-08_21_21`

Open the folder and you can see the contents

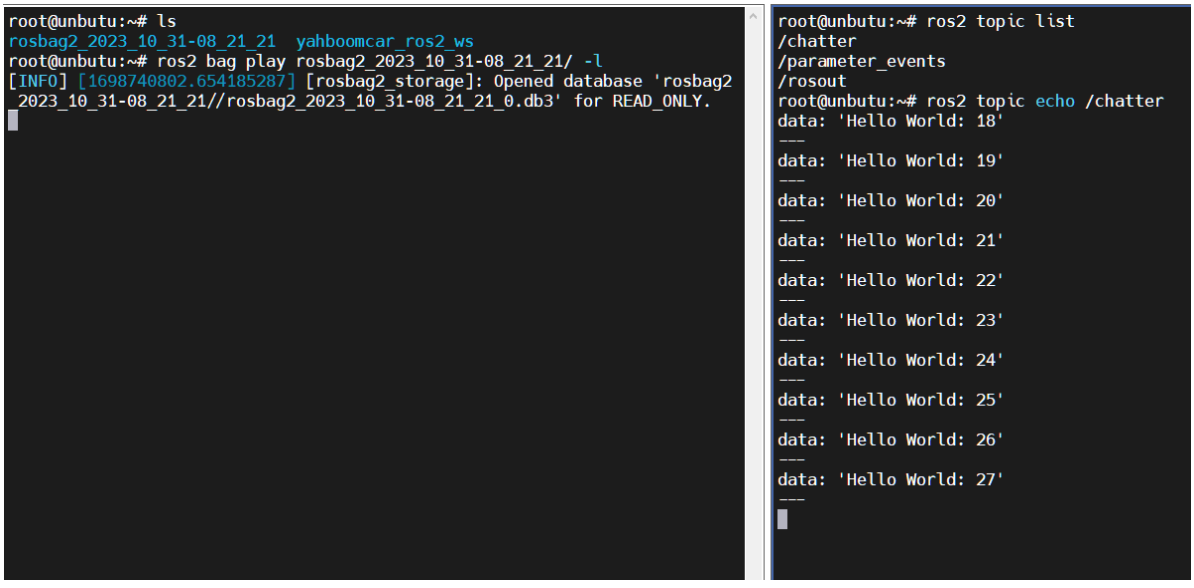


This completes the recording.

3.3. Play and view

Here we play it in a loop

```
ros2 bag play rosbag2_2023_10_31-07_58_23 -l
```

Open another terminal to view the topic:

```
ros2 topic echo /chatter
```