7.Scene design

1.Robotic arm rviz simulation motion

- **Virtual machine simulation starts**

Start MoveIT (virtual machine side)

```
roslaunch dofbot_config demo.launch
```
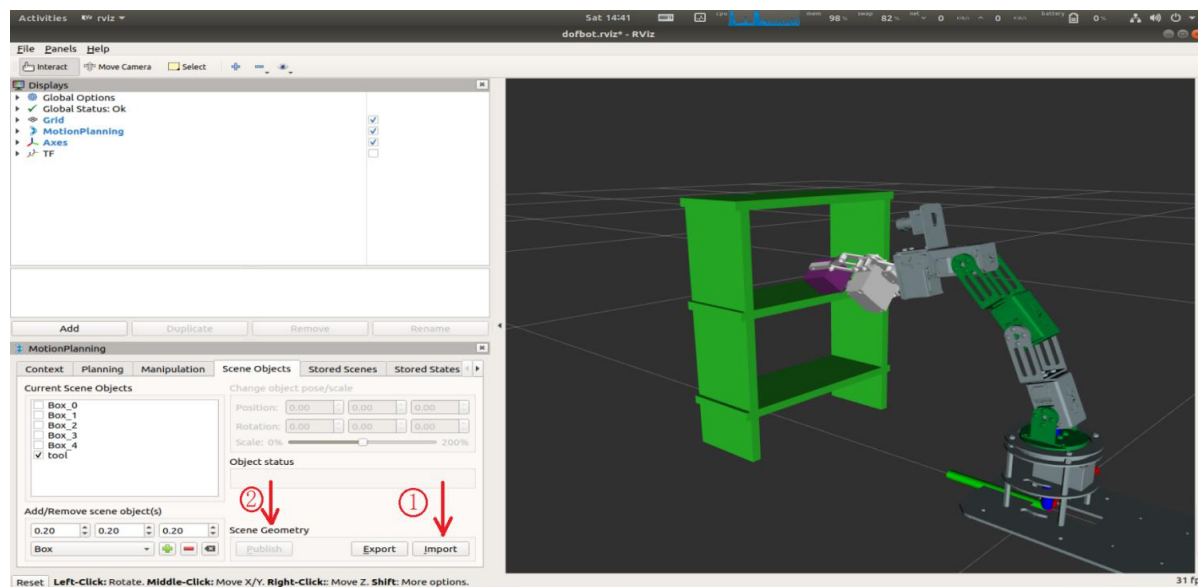
Start scene design node

```
cd dofbot_ws/
source devel/setup.bash
rosrun dofbot_moveit 04_Set_Scene.py      # python file
```

Close case: [ctrl+c] to close. If it cannot be closed, execute [ctrl+z] again.

First import the pre-planned scene.

The import method is as shown in the figure: The first step is to click [Import] and select the scene dofbot_ws/src/dofbot_config/scene/shape.scene; the second step is to complete the previous step.

Click [Publish] to take effect.

Close case: [ctrl+c] to close. If it cannot be closed, execute [ctrl+z] again. To clear obstacles, click [x] to delete all obstacles.

Code path: dofbot_ws/src/dofbot_moveit/scripts/04_Set_Scene.py

Experimental phenomenon: The robot arm performs sorting collision detection movement in rviz as shown in the figure above.

2. Robotic arm rviz simulation motion+real machine operation

Close the previous process, and open another terminal and enter the following command (the effect of this program is to simulate real machine motion in rviz)

```
rosrun dofbot_moveit 4.py # python file
```

Close case: 【 ctrl+c 】 Close, cannot close, then execute 【 ctrl+z 】.

Key part program code description:

```
#Subscribe to the angles of each joint published by Movelt
subscriber = rospy.Subscriber("/joint_states", JointState, topic)
#The subscribed angle is calculated and transmitted to the Python driver library
for i in range(6):
        joints[i] = (msg.position[i] * RA2DE) + 90
        if(i == 5):
            joints[i] = (msg.position[i] * 116) + 180
#Call driver function
sbus.Arm_serial_servo_write6_array(joints, 100)
```

Code path: dofbot_ws/src/dofbot_moveit/scripts/4.py

Experimental phenomenon: The real machine robotic arm will move along with the model in rviz.