

## **Simulation and Modelling**

**CSE3102**

### **Lab Submission – 3**

#### **Laboratory 3 - ROS Turtle Sim**

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#### **Instructions:**

turtlesim

Step 1:

Always start the roscore

\$ roscore

Step 2:

Open a Terminal

To open turtlesim, give the following command.

\$ rosrun turtlesim turtlesim\_node

Open another Terminal

\$ rosrun turtlesim turtle\_teleop\_key

Copy the file from my machine

\$ scp lab21@172.16.10.7:circular\_movement.py .

password: fine

Copy the above python file to the folder where you already created (example: pradeep\_ws/src/ros\_tutorial1/script/)

Open first Terminal and run the command

\$ rosrun turtlesim turtlesim\_node

Open Second Terminal, go to your workspace

\$ cd pradeep\_ws/

\$ source ./devel/setup.bash

```
$ rosrunc ros_tutorial1 circular_movement.py
```

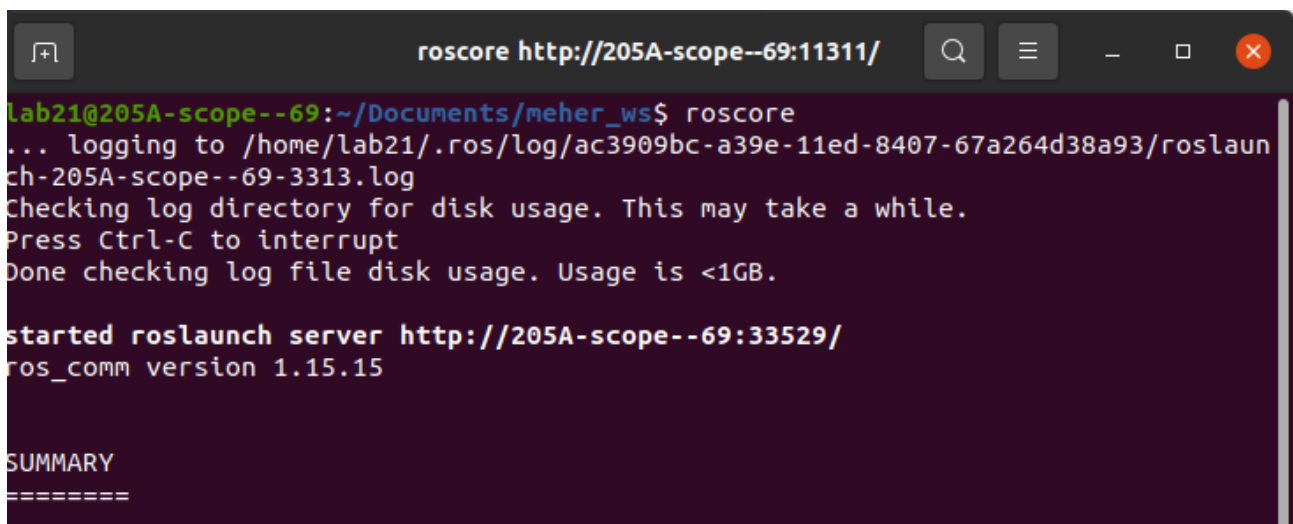
### **circular\_movement.py**

```
#!/usr/bin/env python3
# license removed for brevity
import rospy
from geometry_msgs.msg import Twist

def circular_movement_node():
    pub = rospy.Publisher('/turtle1/cmd_vel', Twist, queue_size=10)
    rospy.init_node('tbsim_driver', anonymous=True)
    rate = rospy.Rate(1)
    while not rospy.is_shutdown():
        robot_velocity = Twist()
        robot_velocity.linear.x = 2.0
        robot_velocity.angular.z = 0.8
        pub.publish(robot_velocity)
        rate.sleep()

if __name__ == '__main__':
    try:
        circular_movement_node()
    except rospy.ROSInterruptException:
        pass
```

### **Screenshots of terminals for circular movement**

A screenshot of a terminal window with a dark background. The window title is "roscore http://205A-scope--69:11311/". The terminal shows the output of the "roscore" command. It starts with "lab21@205A-scope--69:~/Documents/meher\_ws\$ roscore". The output includes: "... logging to /home/lab21/.ros/log/ac3909bc-a39e-11ed-8407-67a264d38a93/roslaunch-205A-scope--69-3313.log", "Checking log directory for disk usage. This may take a while.", "Press Ctrl-C to interrupt", "Done checking log file disk usage. Usage is <1GB.", "started roslaunch server http://205A-scope--69:33529/", and "ros\_comm version 1.15.15". At the bottom, it says "SUMMARY" followed by a line of equals signs "=====".

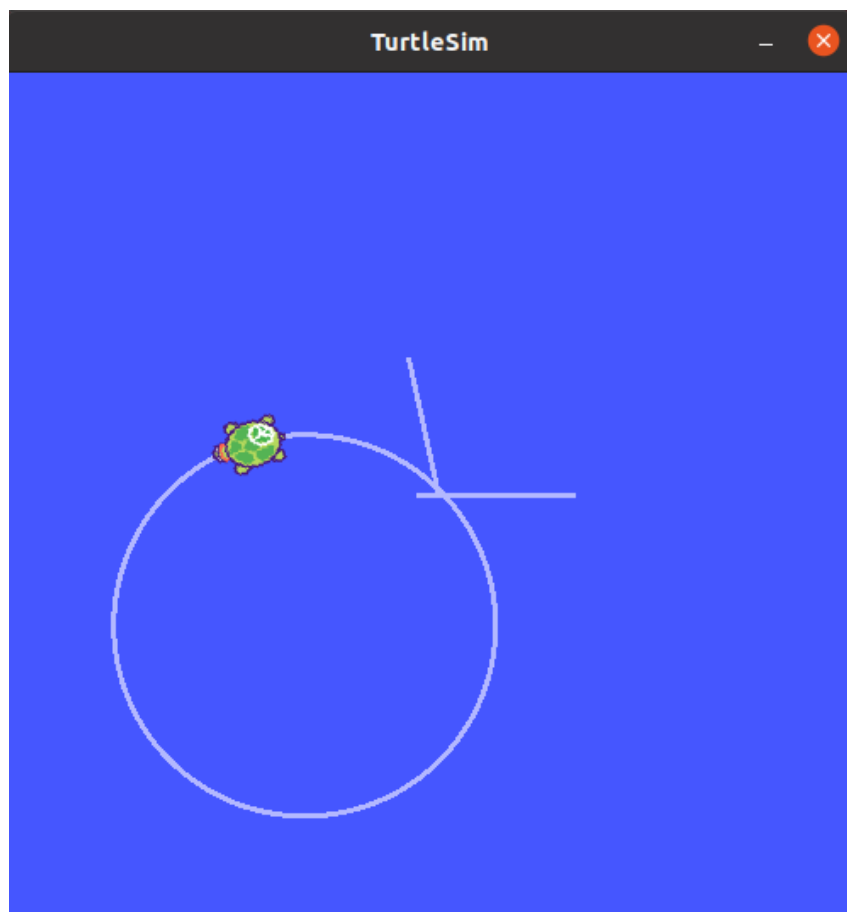
```
lab21@205A-scope--69:~/Documents/meher_ws$ roscore
... logging to /home/lab21/.ros/log/ac3909bc-a39e-11ed-8407-67a264d38a93/roslaunch-205A-scope--69-3313.log
Checking log directory for disk usage. This may take a while.
Press Ctrl-C to interrupt
Done checking log file disk usage. Usage is <1GB.

started roslaunch server http://205A-scope--69:33529/
ros_comm version 1.15.15

SUMMARY
=====
```

```
lab21@205A-scope--69: ~/Documents/meher_ws
lab21@205A-scope--69:~/Documents/meher_ws$ scp lab21@172.16.10.7:circular_movement.py .
lab21@172.16.10.7's password:
circular_movement.py 100% 600 513.6KB/s 00:00
lab21@205A-scope--69:~/Documents/meher_ws$ rosrn turtlesim turtlesim_node
[ INFO] [1675414044.364103571]: Starting turtlesim with node name /turtlesim
[ INFO] [1675414044.367419575]: Spawning turtle [turtle1] at x=[5.544445], y=[5.544445], theta=[0.000000]
```

```
lab21@205A-scope--69: ~/Documents/meher_ws
lab21@205A-scope--69:~/Documents/meher_ws/src/ros_tutorial1/script$ rosrn turtlesim turtle_teleop_key
Reading from keyboard
-----
Use arrow keys to move the turtle. 'q' to quit.
lab21@205A-scope--69:~/Documents/meher_ws/src/ros_tutorial1/script$ cd ..
lab21@205A-scope--69:~/Documents/meher_ws/src/ros_tutorial1$ cd ..
lab21@205A-scope--69:~/Documents/meher_ws/src$ cd..
cd..: command not found
lab21@205A-scope--69:~/Documents/meher_ws/src$ cd..
cd..: command not found
lab21@205A-scope--69:~/Documents/meher_ws/src$ cd ..
lab21@205A-scope--69:~/Documents/meher_ws$ source ./devel/setup.bash
lab21@205A-scope--69:~/Documents/meher_ws$ rosrn ros_tutorial1 circular_movement.py
```



## Screenshots of terminal for square movement

```
lab21@205A-scope--69:~/Documents/meher_ws$ rosrn turtlesim draw_square
[ INFO] [1675415328.713350429]: New goal [7.544445 5.544445, 0.000000]
[ INFO] [1675415330.649324702]: Reached goal
[ INFO] [1675415330.649454622]: New goal [7.448444 5.544445, 1.570796]
[ INFO] [1675415334.585206623]: Reached goal
[ INFO] [1675415334.585321568]: New goal [7.466837 7.544360, 1.561600]
[ INFO] [1675415336.521328217]: Reached goal
[ INFO] [1675415336.521429304]: New goal [7.465954 7.448364, 3.132396]
[ INFO] [1675415340.457195854]: Reached goal
[ INFO] [1675415340.457312189]: New goal [5.466292 7.485147, 3.123200]
[ INFO] [1675415342.393325779]: Reached goal
[ INFO] [1675415342.393426463]: New goal [5.562276 7.483382, -1.589188]
[ INFO] [1675415346.329324616]: Reached goal
[ INFO] [1675415346.329438992]: New goal [5.507105 5.484143, -1.598385]
[ INFO] [1675415348.265177651]: Reached goal
[ INFO] [1675415348.265278229]: New goal [5.509754 5.580106, -0.027589]
[ INFO] [1675415352.201200066]: Reached goal
[ INFO] [1675415352.201299898]: New goal [7.508401 5.506552, -0.036785]
[ INFO] [1675415354.137305669]: Reached goal
[ INFO] [1675415354.137405595]: New goal [7.412466 5.510083, 1.534011]
[ INFO] [1675415358.073240566]: Reached goal
[ INFO] [1675415358.073347766]: New goal [7.504396 7.507969, 1.524815]
[ INFO] [1675415360.009323992]: Reached goal
[ INFO] [1675415360.009435755]: New goal [7.499983 7.412070, 3.095611]
[ INFO] [1675415363.945192533]: Reached goal
[ INFO] [1675415363.945286789]: New goal [5.503027 7.522370, 3.086415]
[ INFO] [1675415365.881315116]: Reached goal
[ INFO] [1675415365.881413735]: New goal [5.598881 7.517076, -1.625973]
[ INFO] [1675415369.817217046]: Reached goal
```

