

Robotics- ROS Assignment 3

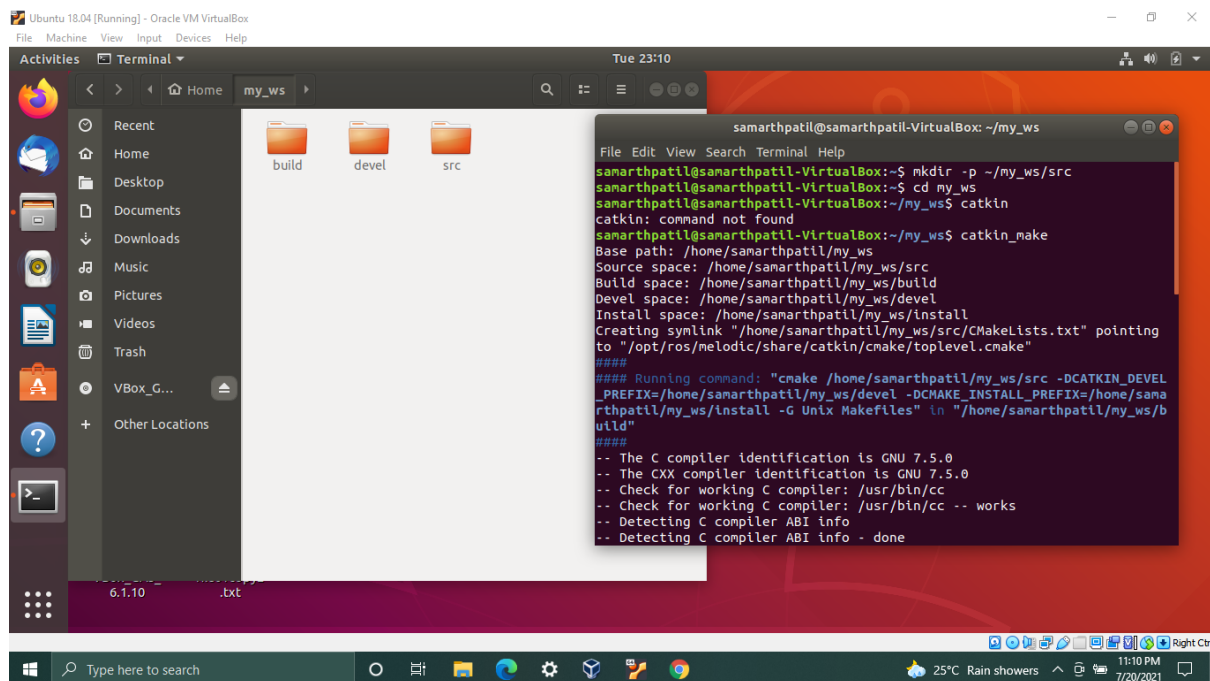
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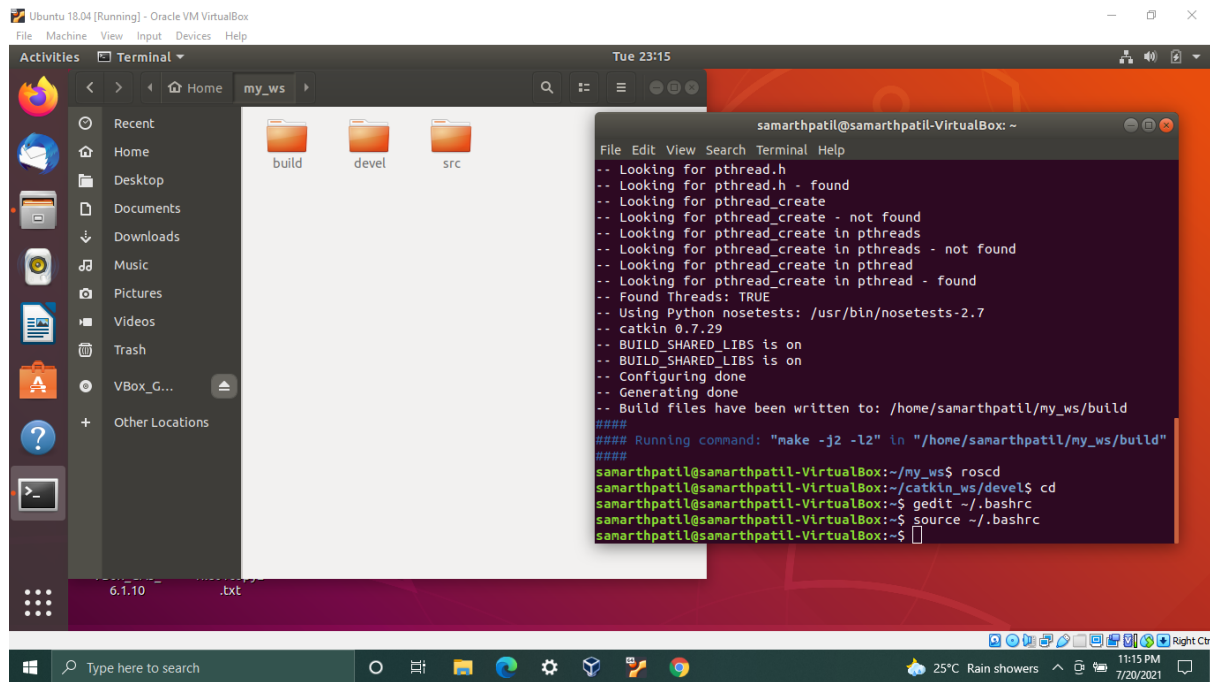
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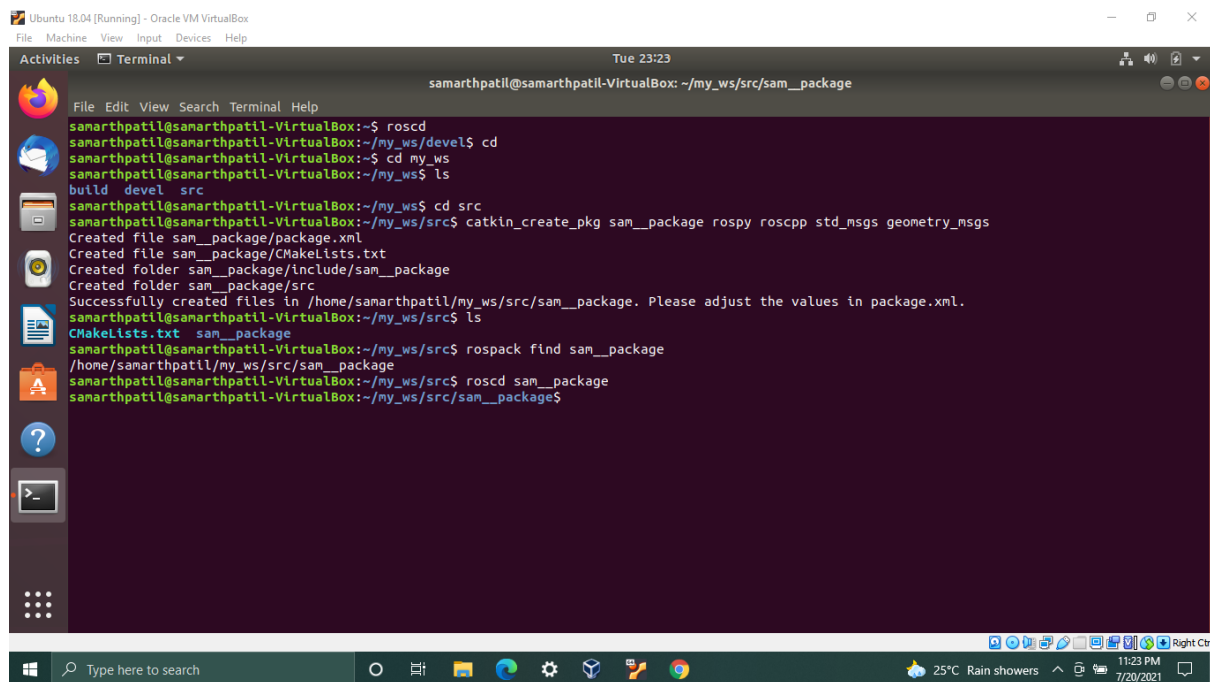
1) Creating 'my_ws' named workspace and compiling it



2) Using gedit changing its path



3) Checking its path and creating a package named 'sam__package' and adding dependencies to it and checking it path again



4) Compiling the workspace again by using 'catkin_make'

```
samarthpatil@samarthpatil-VirtualBox: ~/my_ws
samarthpatil@samarthpatil-VirtualBox:~$ roscd
samarthpatil@samarthpatil-VirtualBox:~/my_ws/devel$ cd
samarthpatil@samarthpatil-VirtualBox:~/my_ws$ ls
build devel src
samarthpatil@samarthpatil-VirtualBox:~/my_ws$ cd src
samarthpatil@samarthpatil-VirtualBox:~/my_ws/src$ catkin_create_pkg sam_package rospy roscpp std_msgs geometry_msgs
Created file sam_package/package.xml
Created file sam_package/CMakeLists.txt
Created folder sam_package/include/sam_package
Created folder sam_package/src
Successfully created files in /home/samarthpatil/my_ws/src/sam_package. Please adjust the values in package.xml.
samarthpatil@samarthpatil-VirtualBox:~/my_ws/src$ ls
CMakeLists.txt sam_package
samarthpatil@samarthpatil-VirtualBox:~/my_ws/src$ rospack find sam_package
/home/samarthpatil/my_ws/src/sam_package
samarthpatil@samarthpatil-VirtualBox:~/my_ws/src$ roscd sam_package
samarthpatil@samarthpatil-VirtualBox:~/my_ws/src/sam_package$ ls
CMakeLists.txt include package.xml src
samarthpatil@samarthpatil-VirtualBox:~/my_ws/src/sam_package$ cd ../../
samarthpatil@samarthpatil-VirtualBox:~/my_ws$ catkin_make
Base path: /home/samarthpatil/my_ws
Source space: /home/samarthpatil/my_ws/src
Build space: /home/samarthpatil/my_ws/build
Devel space: /home/samarthpatil/my_ws/devel
Install space: /home/samarthpatil/my_ws/install
####
#### Running command: "cmake /home/samarthpatil/my_ws/src -DCATKIN_DEVEL_PREFIX=/home/samarthpatil/my_ws/devel -DCMAKE_INSTALL_PREFIX=/home/samarthpatil/my_ws/install -G Unix MakeFiles" in "/home/samarthpatil/my_ws/build"
####
-- Using CATKIN_DEVEL_PREFIX: /home/samarthpatil/my_ws/devel
-- Using CMAKE_PREFIX_PATH: /home/samarthpatil/my_ws/devel;/home/samarthpatil/catkin_ws/devel;/opt/ros/melodic
```

5) Creating 3 ros nodes using python which are active until we interrupt
Those are 'node_loop_one', 'node_loop_two', 'node_loop_three'

```
samarthpatil@samarthpatil-VirtualBox:~/my_ws/src/sam_package/src
-- catkin 0.7.29
-- BUILD_SHARED_LIBS is on
-- BUILD_SHARED_LIBS is on
-- traversing 1 packages in topological order:
--   - sam_package
-- *** processing catkin package: 'sam_package'
-- ==> add_subdirectory(sam_package)
-- Configuring done
-- Generating done
-- Build files have been written to: /home/samarthpatil/my_ws/build
####
#### Running command: "make -j2 -l2" in "/home/samarthpatil/my_ws/build"
####
samarthpatil@samarthpatil-VirtualBox:~/my_ws$ cd src/sam_package/src
samarthpatil@samarthpatil-VirtualBox:~/my_ws/src/sam_package/src$ touch node_loop_one.py
samarthpatil@samarthpatil-VirtualBox:~/my_ws/src/sam_package/src$ gedit node_loop_one.py
samarthpatil@samarthpatil-VirtualBox:~/my_ws/src/sam_package/src$ touch node_loop_two.py
samarthpatil@samarthpatil-VirtualBox:~/my_ws/src/sam_package/src$ gedit node_loop_two.py
samarthpatil@samarthpatil-VirtualBox:~/my_ws/src/sam_package/src$ touch node_loop_three.py
samarthpatil@samarthpatil-VirtualBox:~/my_ws/src/sam_package/src$ gedit node_loop_three.py
samarthpatil@samarthpatil-VirtualBox:~/my_ws/src/sam_package/src$ ls
node_loop_one.py node_loop_two.py
samarthpatil@samarthpatil-VirtualBox:~/my_ws/src/sam_package/src$ touch node_loop_three.py
samarthpatil@samarthpatil-VirtualBox:~/my_ws/src/sam_package/src$ gedit node_loop_three.py
samarthpatil@samarthpatil-VirtualBox:~/my_ws/src/sam_package/src$ ls
node_loop_one.py node_loop_three.py node_loop_two.py
samarthpatil@samarthpatil-VirtualBox:~/my_ws/src/sam_package/src$ chmod +x node_loop_one.py node_loop_two.py node_loop_three.py
samarthpatil@samarthpatil-VirtualBox:~/my_ws/src/sam_package/src$ ls
node_loop_one.py node_loop_three.py node_loop_two.py
samarthpatil@samarthpatil-VirtualBox:~/my_ws/src/sam_package/src$ gedit node_loop_three.py
```

```
#!/usr/bin/env python
import rospy

rospy.init_node("loop_node")

rate = rospy.Rate(2)

while not rospy.is_shutdown():
    print("my node loop 3 is active")
    rate.sleep()
```

6) Changing node permission to executable and again compiling whole workspace

The screenshot shows a Windows desktop with a terminal window titled "Terminal". The terminal is running a series of commands to set up a catkin workspace named "my_ws". The commands and their outputs are as follows:

```
samarthpatil@samarthpatil-VirtualBox: ~/my_ws
touch node_loop_one.py
gedit node_loop_one.py
touch node_loop_two.py
gedit node_loop_two.py
gedit node_loop_three.py
ls
node_loop_one.py node_loop_two.py
touch node_loop_three.py
gedit node_loop_three.py
ls
node_loop_one.py node_loop_three.py node_loop_two.py
chmod +x node_loop_one.py node_loop_two.py node_loop_three.py
node_loop_one.py node_loop_three.py node_loop_two.py
gedit node_loop_three.py
cd ../..
catkin_make
Base path: /home/samarthpatil/my_ws
Source space: /home/samarthpatil/my_ws/src
Build space: /home/samarthpatil/my_ws/build
Devel space: /home/samarthpatil/my_ws/devel
Install space: /home/samarthpatil/my_ws/install
####
#### Running command: "make cmake_check_build_system" in "/home/samarthpatil/my_ws/build"
####
####
#### Running command: "make -j2 -l2" in "/home/samarthpatil/my_ws/build"
####
samarthpatil@samarthpatil-VirtualBox: ~/my_ws$
```

The terminal window is part of a virtual machine environment, as indicated by the title bar "Ubuntu 18.04 [Running] - Oracle VM VirtualBox". The desktop background is a dark blue Ubuntu logo. The taskbar at the bottom shows various application icons and the system clock indicating 11:43 PM on 7/20/2021.

Ubuntu 18.04 [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

Activities Terminal

Tue 23:47

samarthpatil@samarthpatil-VirtualBox: ~/my_ws

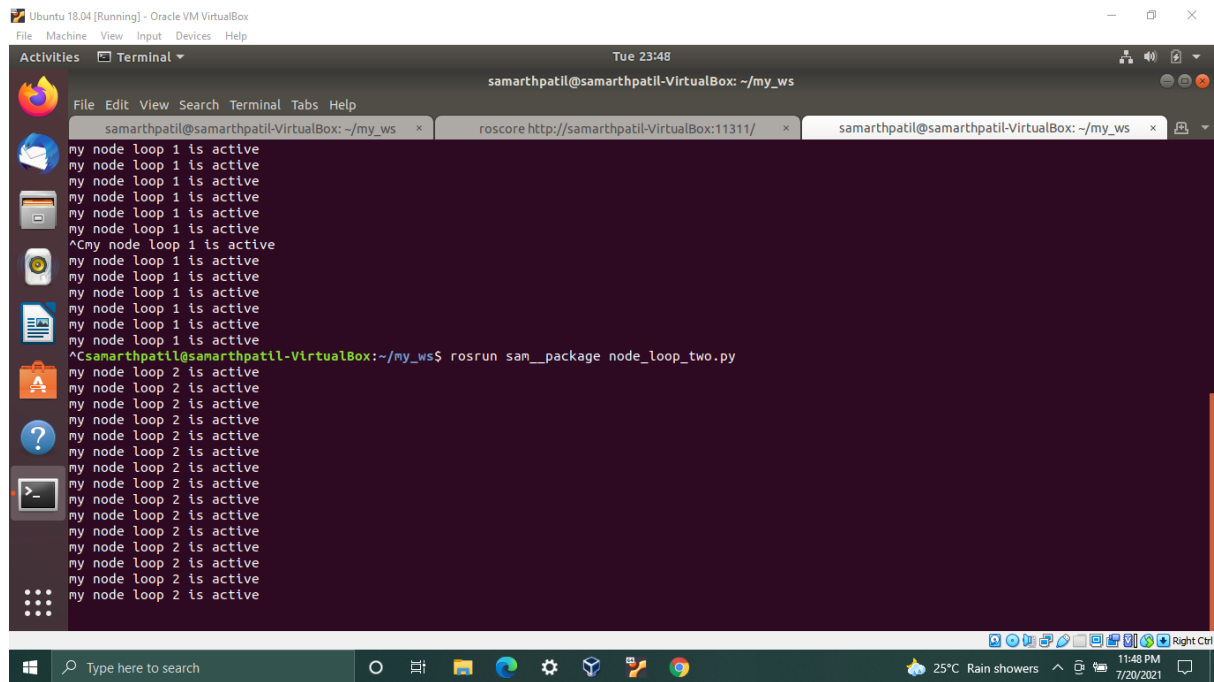
File Edit View Search Terminal Tabs Help

samarthpatil@samarthpatil-VirtualBox: ~/my_ws * roscore http://samarthpatil-VirtualBox:11311/ * samarthpatil@samarthpatil-VirtualBox: ~/my_ws *

samarthpatil@samarthpatil-VirtualBox: ~/my_ws\$ rosrun sam_package node_loop_one.py

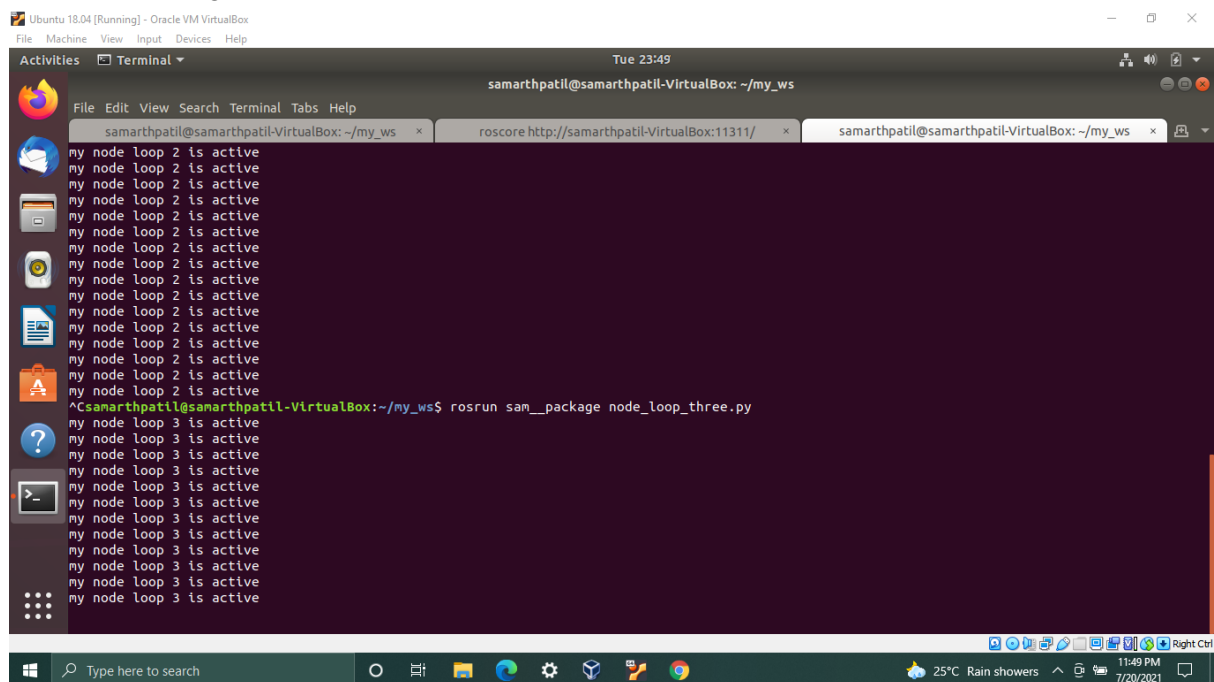
```
my node loop 1 is active
my node loop 1 is active
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my node loop 1 is active
my node loop 1 is active
```

Windows taskbar: Type here to search, 25°C Rain showers, 11:47 PM, 7/20/2021



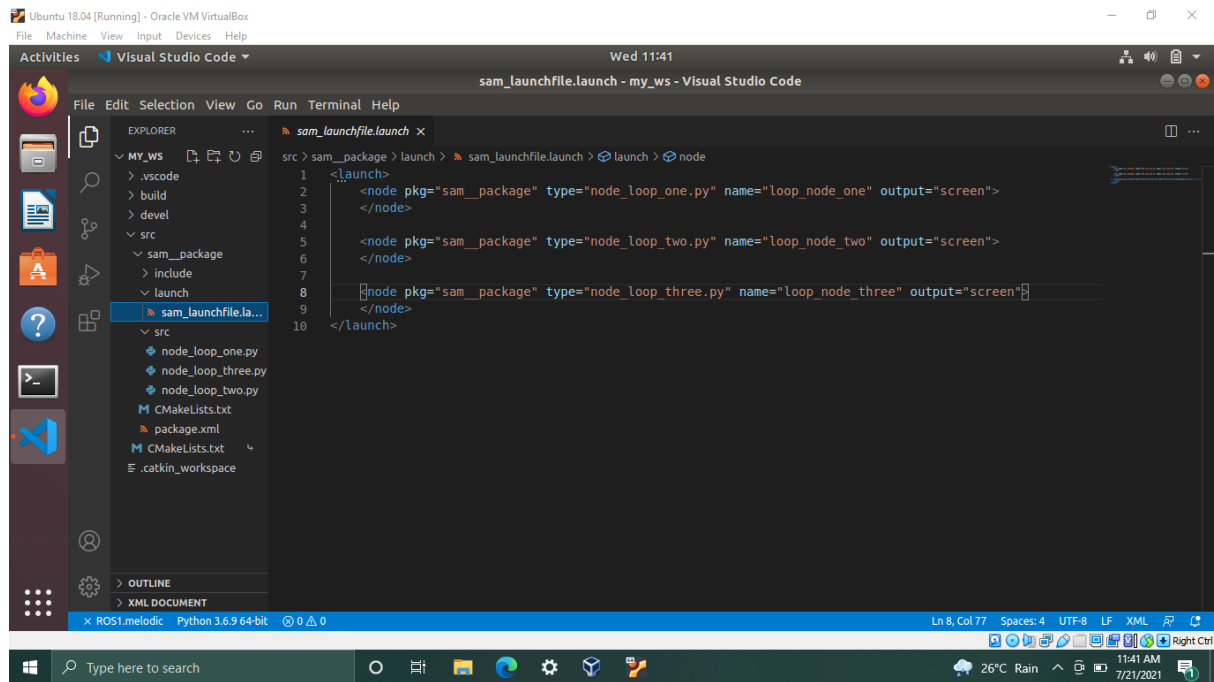
```
my node loop 1 is active
my node loop 1 is active
my node loop 1 is active
my node loop 1 is active
my node loop 1 is active
my node loop 1 is active
my node loop 1 is active
^Cmy node loop 1 is active
my node loop 1 is active
my node loop 1 is active
my node loop 1 is active
my node loop 1 is active
my node loop 1 is active
my node loop 1 is active
^Csamarthpatil@samarthpatil-VirtualBox:~/my_ws$ rosrn sam_package node_loop_two.py
my node loop 2 is active
my node loop 2 is active
my node loop 2 is active
my node loop 2 is active
my node loop 2 is active
my node loop 2 is active
my node loop 2 is active
my node loop 2 is active
my node loop 2 is active
my node loop 2 is active
my node loop 2 is active
my node loop 2 is active
my node loop 2 is active
my node loop 2 is active
my node loop 2 is active
```

9) Checking 'node_loop_three'

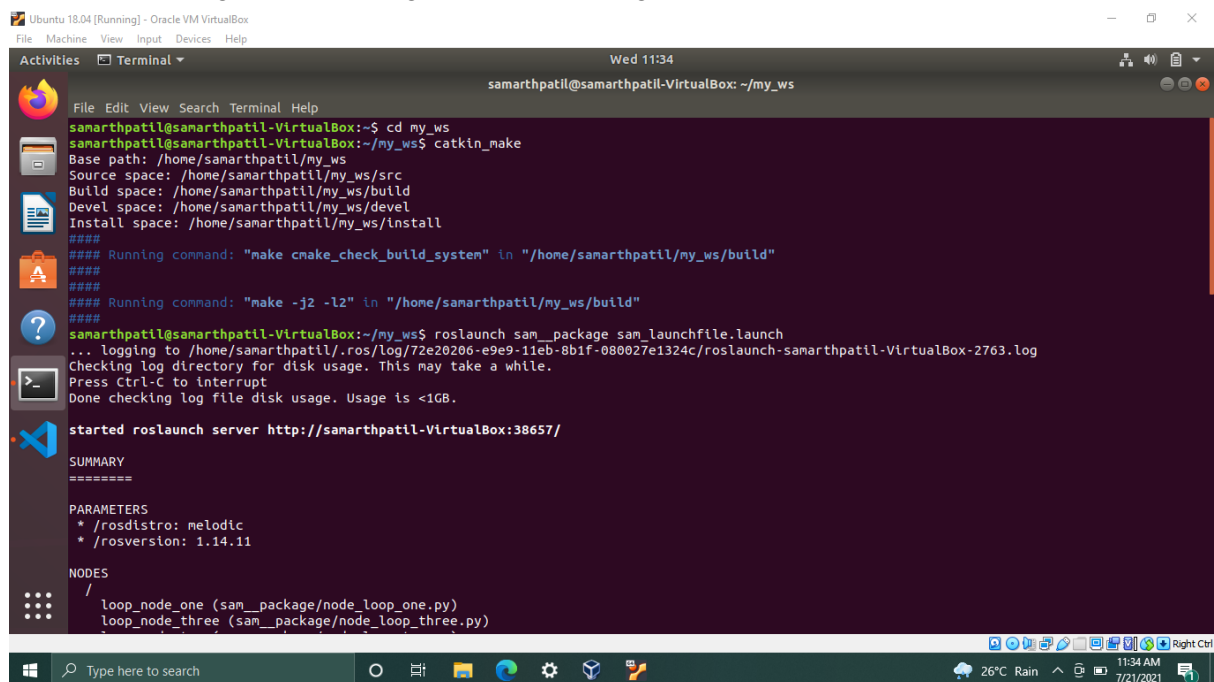


```
my node loop 2 is active
my node loop 2 is active
my node loop 2 is active
my node loop 2 is active
my node loop 2 is active
my node loop 2 is active
my node loop 2 is active
my node loop 2 is active
my node loop 2 is active
my node loop 2 is active
my node loop 2 is active
my node loop 2 is active
my node loop 2 is active
my node loop 2 is active
my node loop 2 is active
^Csamarthpatil@samarthpatil-VirtualBox:~/my_ws$ rosrn sam_package node_loop_three.py
my node loop 3 is active
my node loop 3 is active
my node loop 3 is active
my node loop 3 is active
my node loop 3 is active
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my node loop 3 is active
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my node loop 3 is active
```

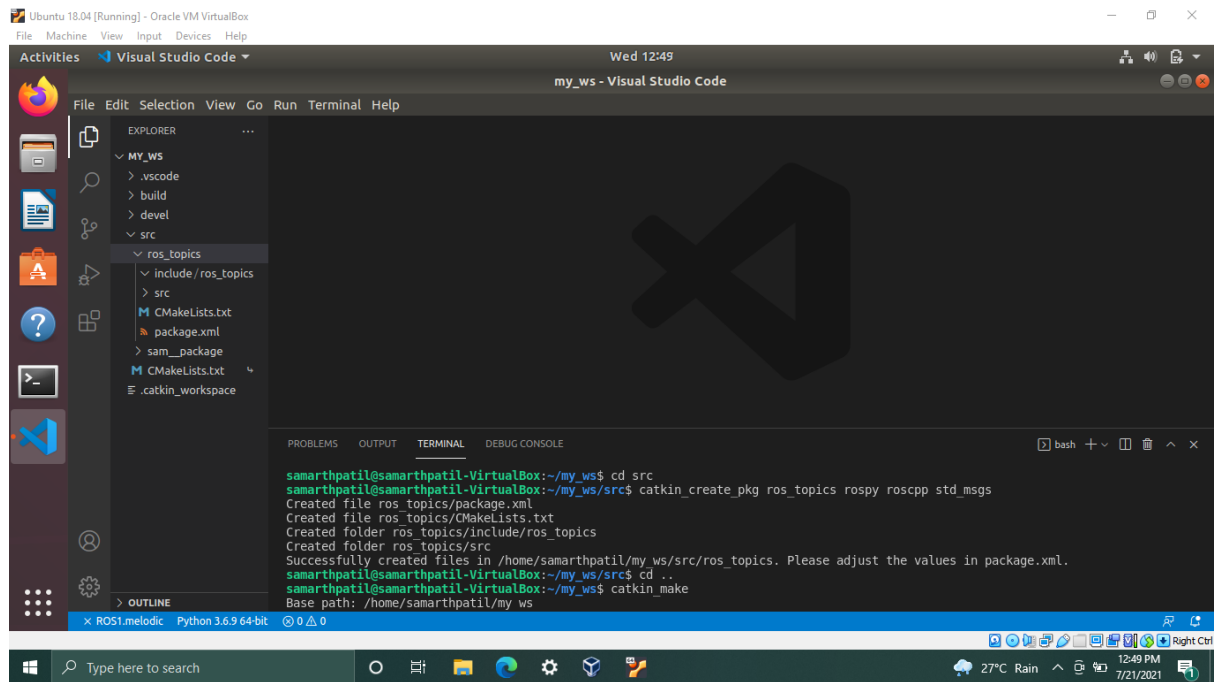
10) Creating launch folder and inside that launch file named 'sam_launchfile.launch'



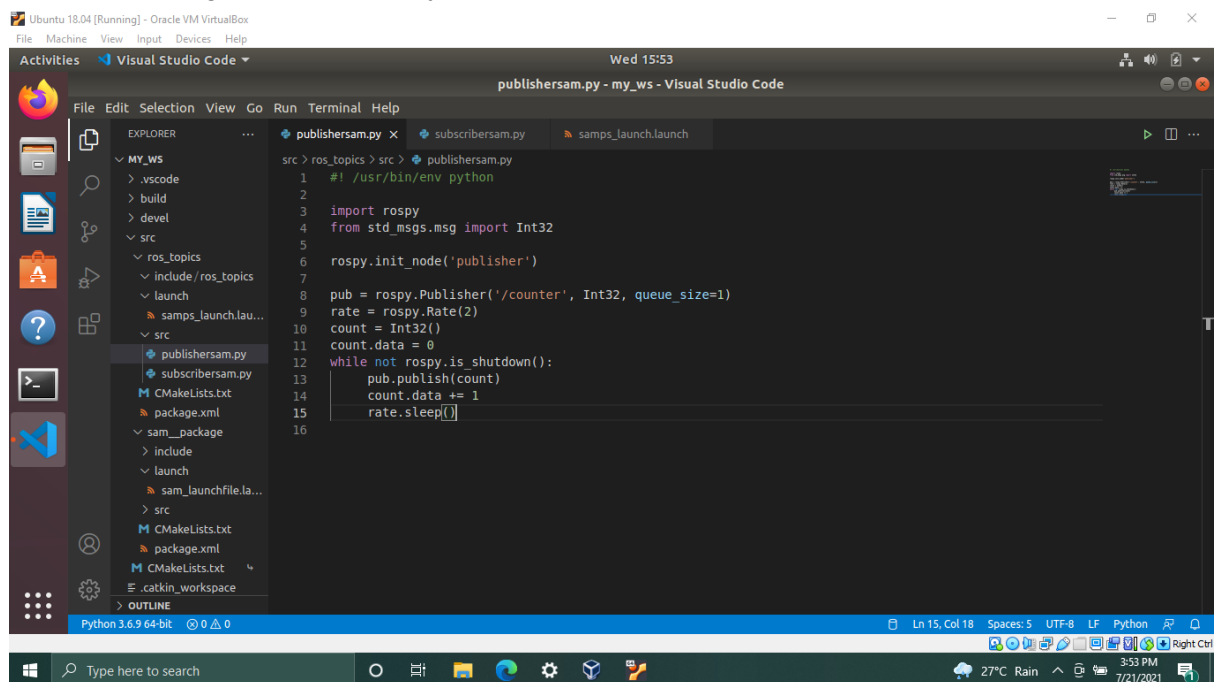
11) Compiling workspace again and launching .launch file on terminal



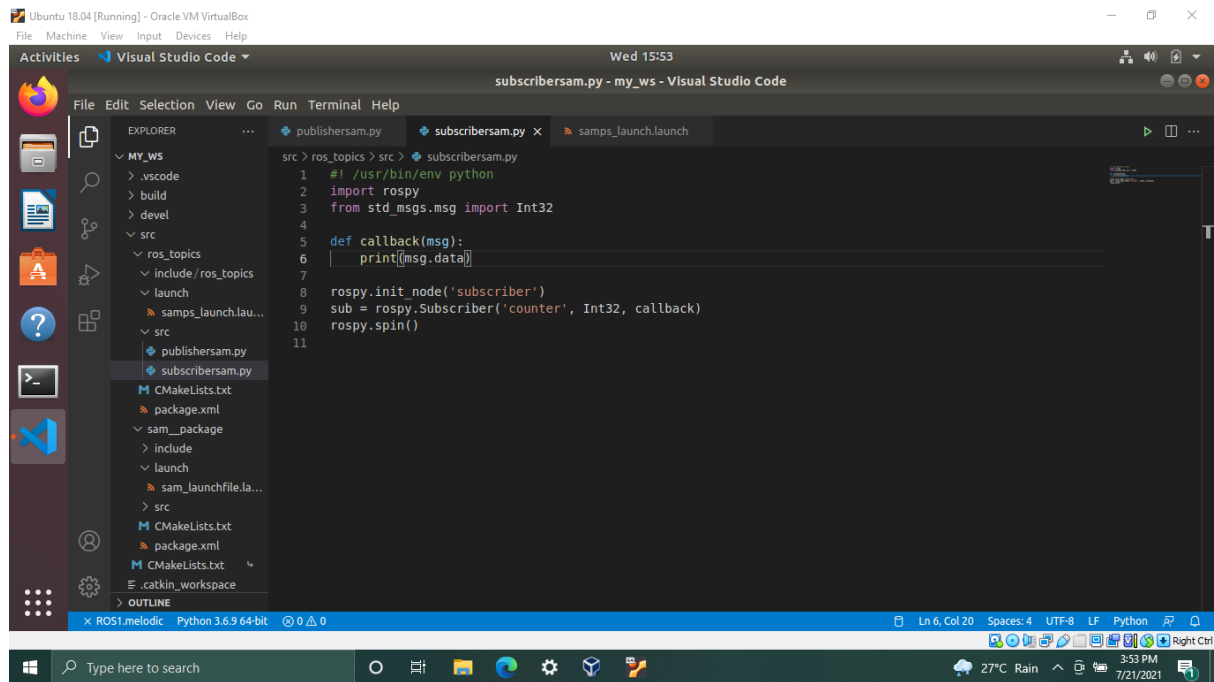
12) Output



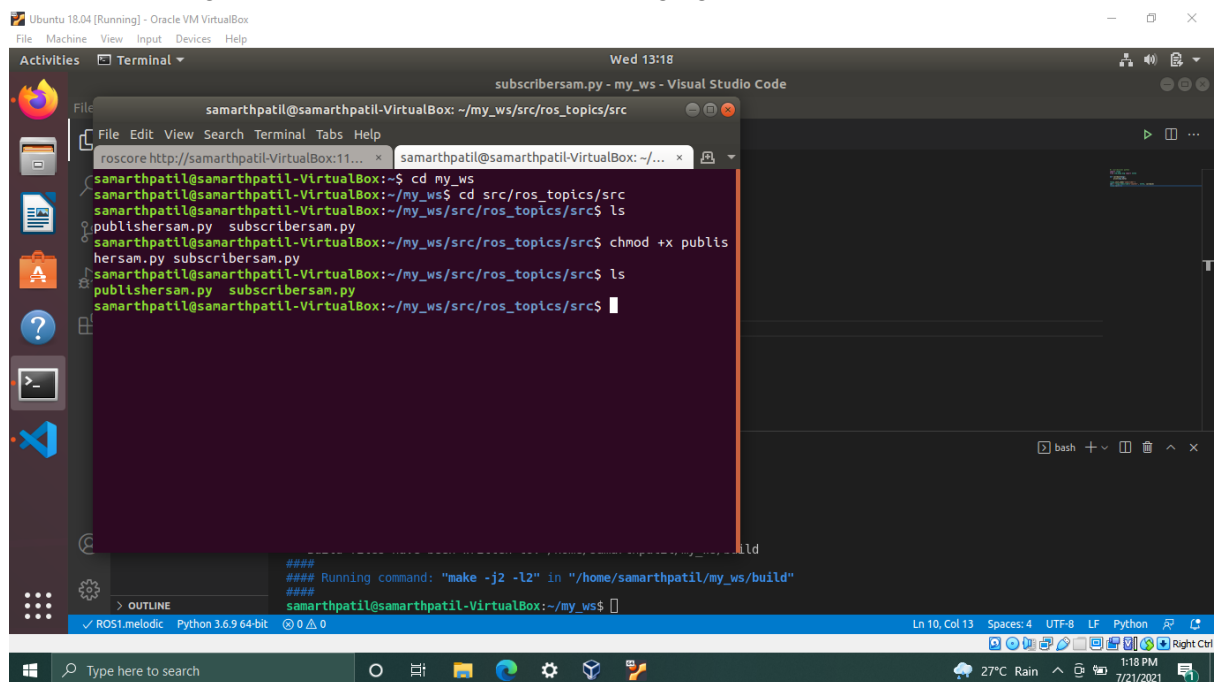
15) Creating publishersam.py node inside rostopic



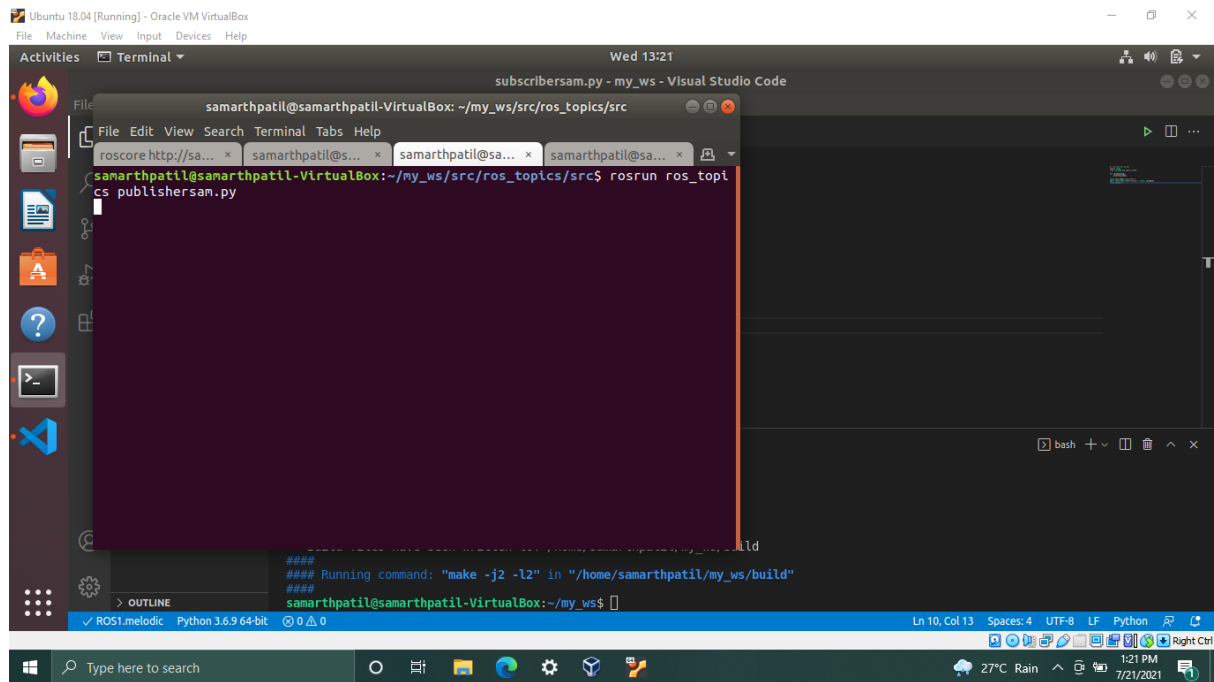
16) Creating subscribersam.py node inside rostopic



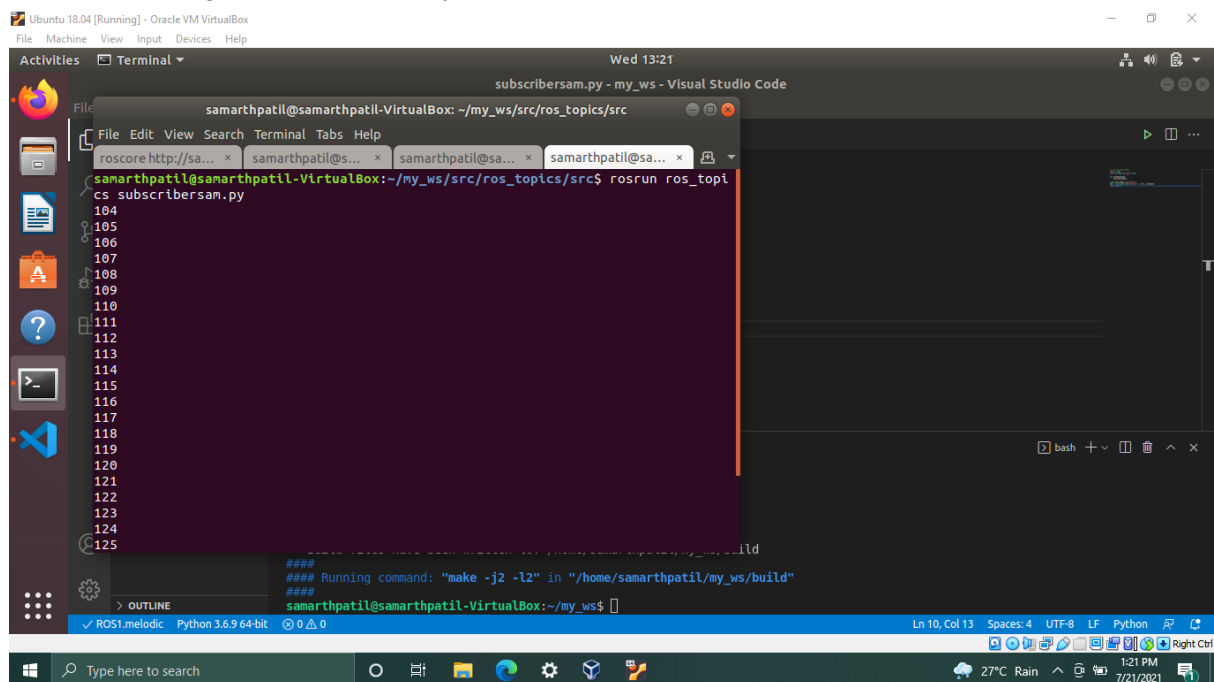
17) Running roscore command and then changing node permission to executable



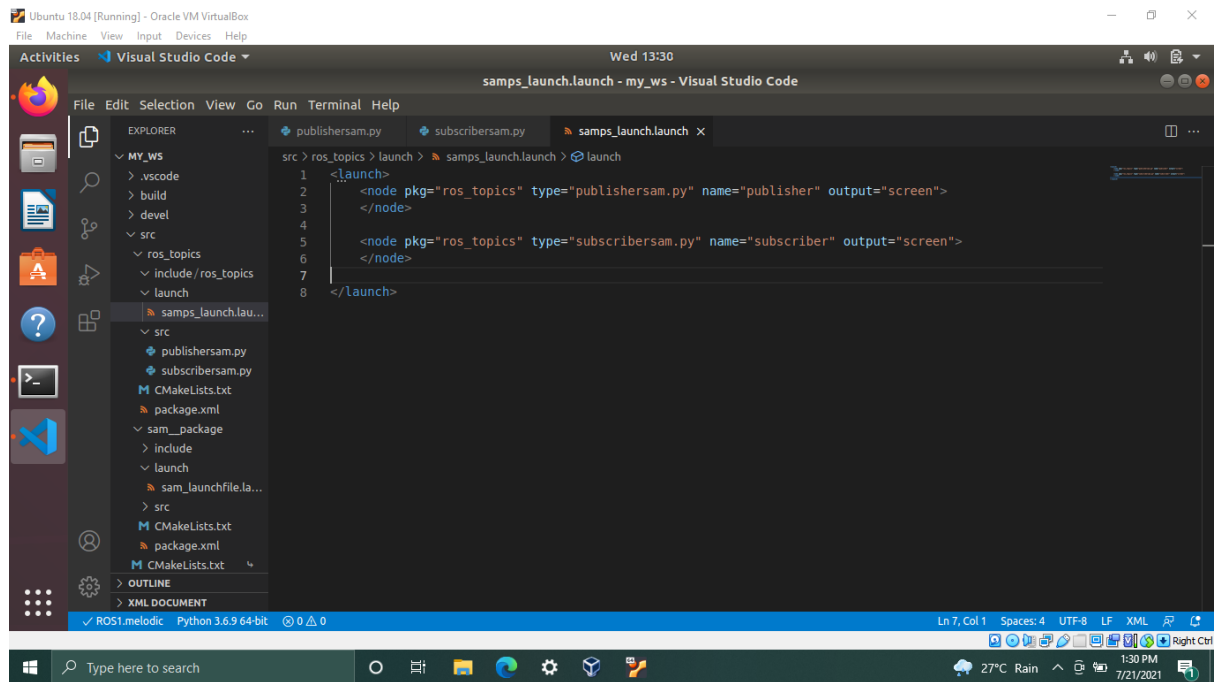
18) Running publishersam.py node



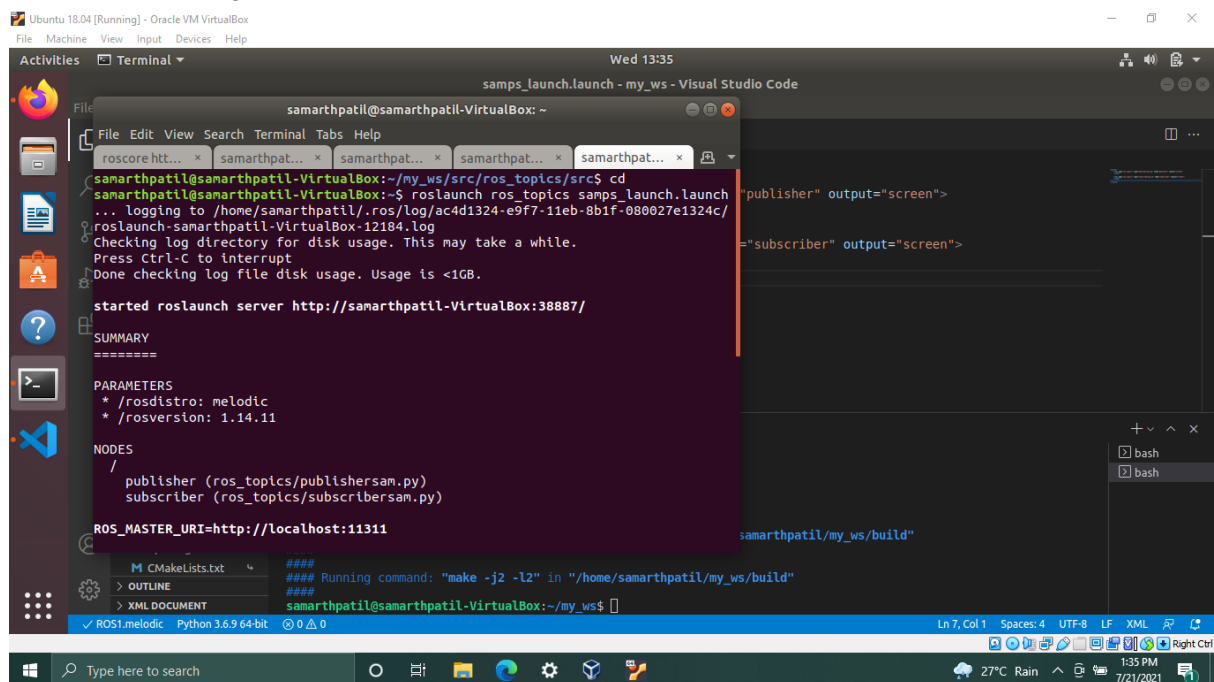
19) Running subscribersam.py node and its output



20) Creating launching folder and inside it a file to launch publisher and subscriber node that was previously created



21) Launching the .launch file of publisher and subscriber node



22) Output

