

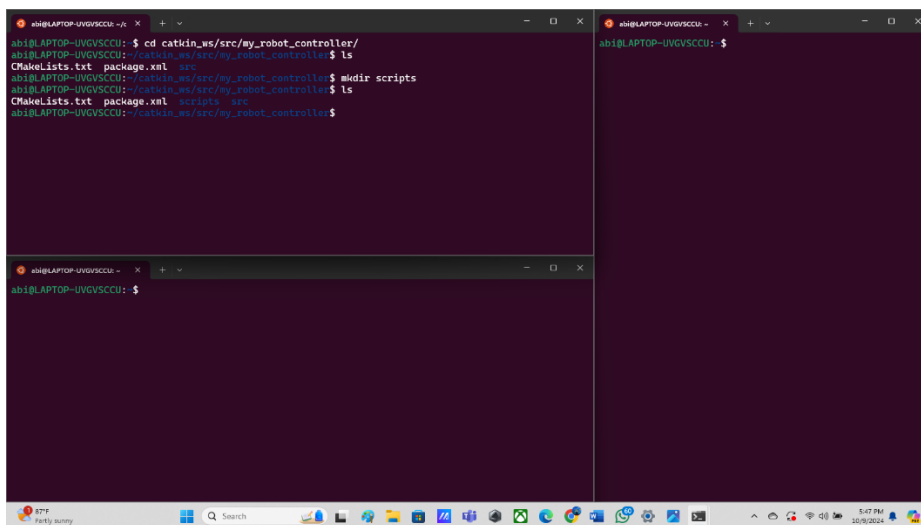
## Langkah-Langkah ROS Tutorial 5 (ROS1)

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NIM : 1103213148

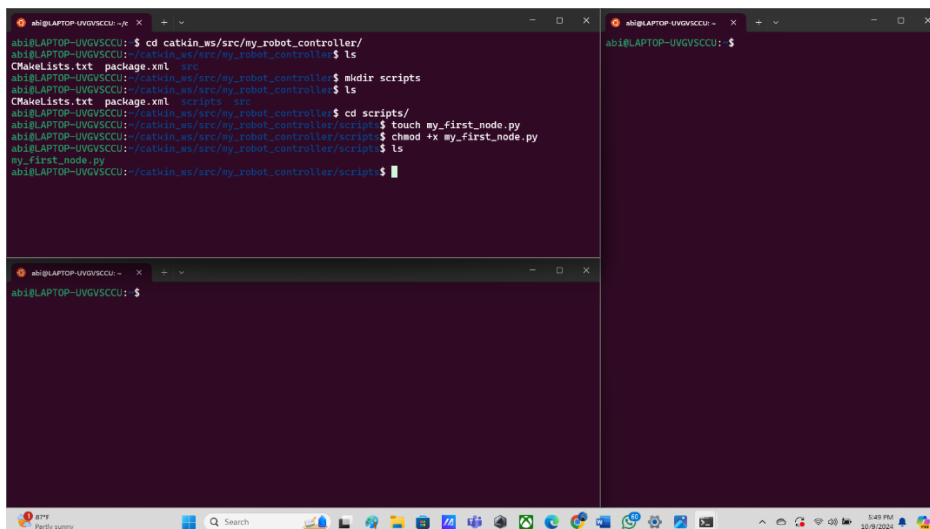
Kelas : TK-45-G09

1. **cd catkin\_ws/src/my\_robot\_controller** untuk masuk ke direktori package, lalu **ls** untuk melihat isi direktori, **mkdir scripts** untuk membuat folder scripts



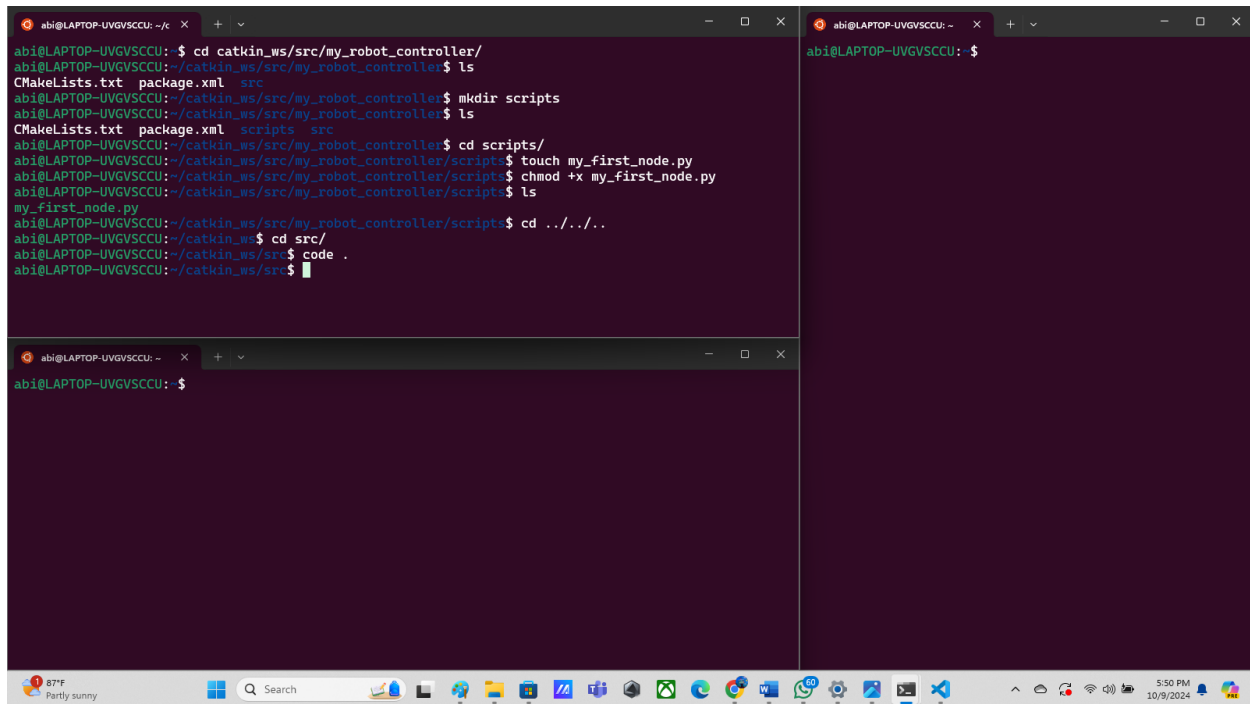
```
abi@LAPTOP-UVGVSCCU: ~$ cd catkin_ws/src/my_robot_controller/
abi@LAPTOP-UVGVSCCU: ~/catkin_ws/src/my_robot_controller$ ls
CMakeLists.txt  package.xml  src
abi@LAPTOP-UVGVSCCU: ~/catkin_ws/src/my_robot_controller$ mkdir scripts
abi@LAPTOP-UVGVSCCU: ~/catkin_ws/src/my_robot_controller$ ls
CMakeLists.txt  package.xml  scripts  src
abi@LAPTOP-UVGVSCCU: ~/catkin_ws/src/my_robot_controller$
```

2. **ls** untuk cek folder, **cd scripts/** untuk masuk ke folder scripts, **touch my\_first\_node.py** untuk membuat file, **chmod +x my\_first\_node.py** untuk izin eksekusi, dan **ls** untuk melihat isi folder lagi



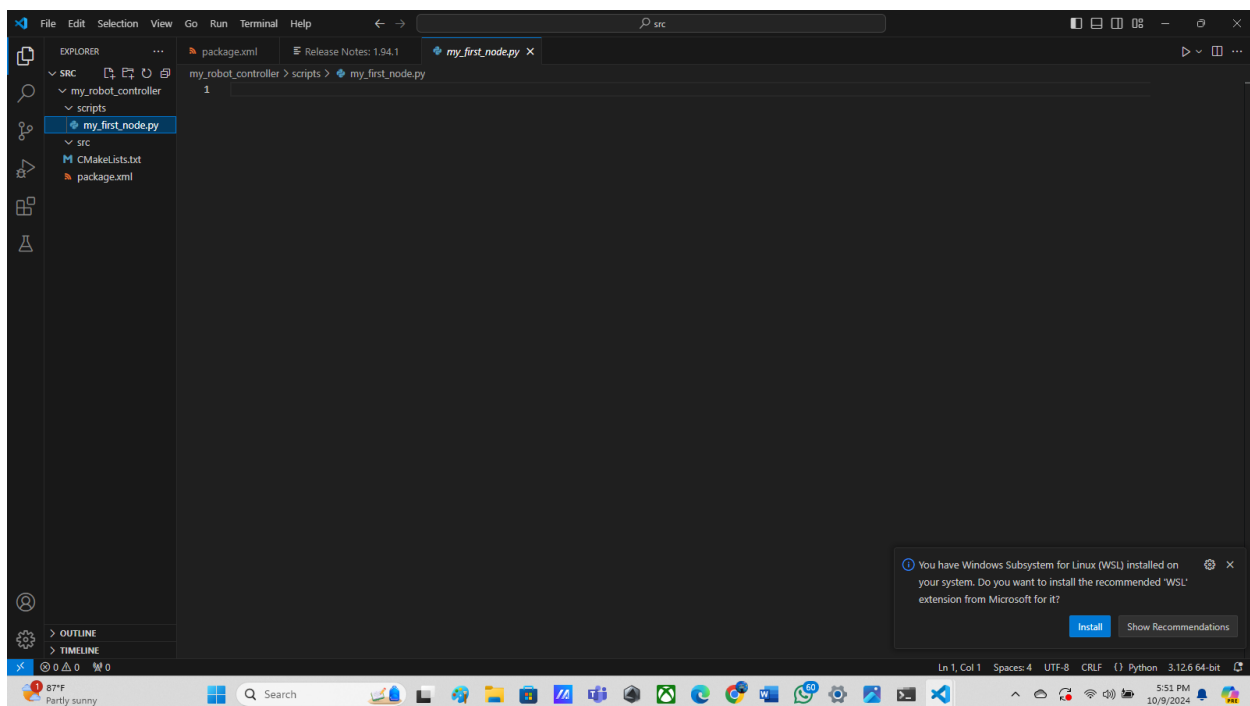
```
abi@LAPTOP-UVGVSCCU: ~$ cd catkin_ws/src/my_robot_controller/
abi@LAPTOP-UVGVSCCU: ~/catkin_ws/src/my_robot_controller$ ls
CMakeLists.txt  package.xml  src
abi@LAPTOP-UVGVSCCU: ~/catkin_ws/src/my_robot_controller$ mkdir scripts
abi@LAPTOP-UVGVSCCU: ~/catkin_ws/src/my_robot_controller$ ls
CMakeLists.txt  package.xml  scripts  src
abi@LAPTOP-UVGVSCCU: ~/catkin_ws/src/my_robot_controller$ cd scripts/
abi@LAPTOP-UVGVSCCU: ~/catkin_ws/src/my_robot_controller/scripts$ touch my_first_node.py
abi@LAPTOP-UVGVSCCU: ~/catkin_ws/src/my_robot_controller/scripts$ chmod +x my_first_node.py
abi@LAPTOP-UVGVSCCU: ~/catkin_ws/src/my_robot_controller/scripts$ ls
my_first_node.py
abi@LAPTOP-UVGVSCCU: ~/catkin_ws/src/my_robot_controller/scripts$
```

3. **cd ../../** untuk kembali ke folder **catkin\_ws**, **cd src/** untuk masuk ke folder **src**, lalu jalankan **code .** untuk membuka Visual Studio Code.

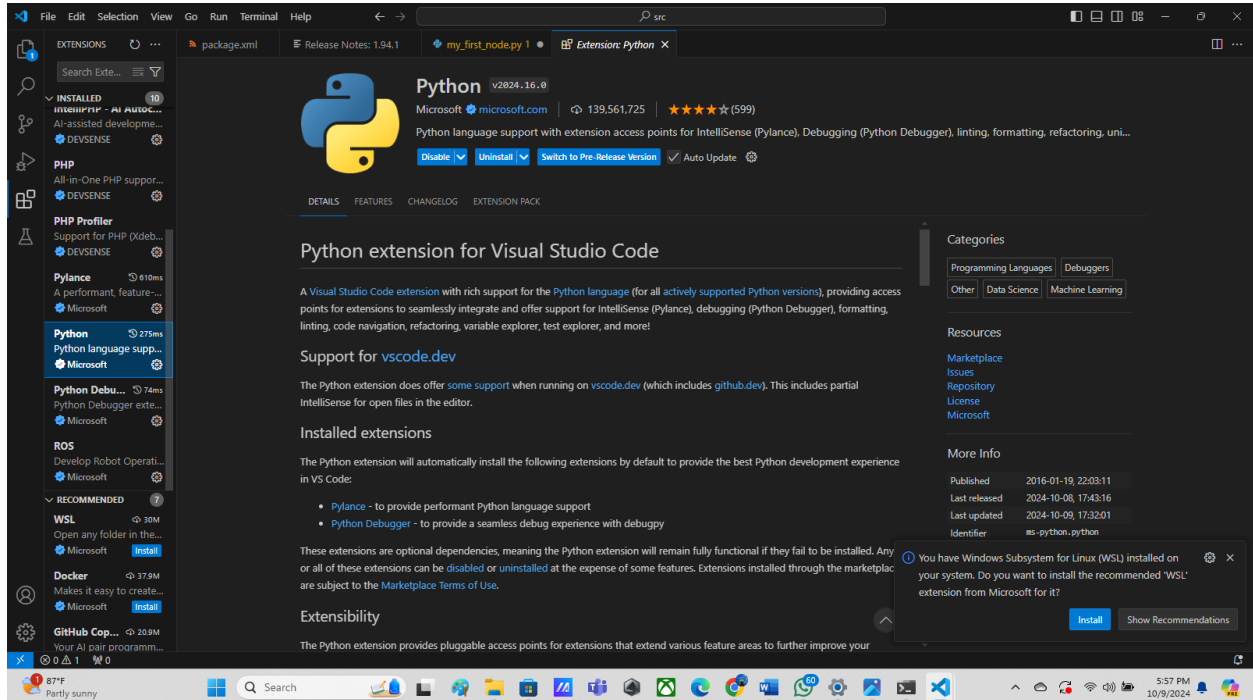


```
abi@LAPTOP-UVGVSCCU: ~$ cd catkin_ws/src/my_robot_controller/
abi@LAPTOP-UVGVSCCU: ~/catkin_ws/src/my_robot_controller$ ls
CMakeLists.txt  package.xml  src
abi@LAPTOP-UVGVSCCU: ~/catkin_ws/src/my_robot_controller$ mkdir scripts
abi@LAPTOP-UVGVSCCU: ~/catkin_ws/src/my_robot_controller$ ls
CMakeLists.txt  package.xml  scripts  src
abi@LAPTOP-UVGVSCCU: ~/catkin_ws/src/my_robot_controller$ cd scripts/
abi@LAPTOP-UVGVSCCU: ~/catkin_ws/src/my_robot_controller/scripts$ touch my_first_node.py
abi@LAPTOP-UVGVSCCU: ~/catkin_ws/src/my_robot_controller/scripts$ chmod +x my_first_node.py
abi@LAPTOP-UVGVSCCU: ~/catkin_ws/src/my_robot_controller/scripts$ ls
my_first_node.py
abi@LAPTOP-UVGVSCCU: ~/catkin_ws/src/my_robot_controller/scripts$ cd ../../..
abi@LAPTOP-UVGVSCCU: ~/catkin_ws$ cd src/
abi@LAPTOP-UVGVSCCU: ~/catkin_ws/src$ code .
abi@LAPTOP-UVGVSCCU: ~/catkin_ws/src$
```

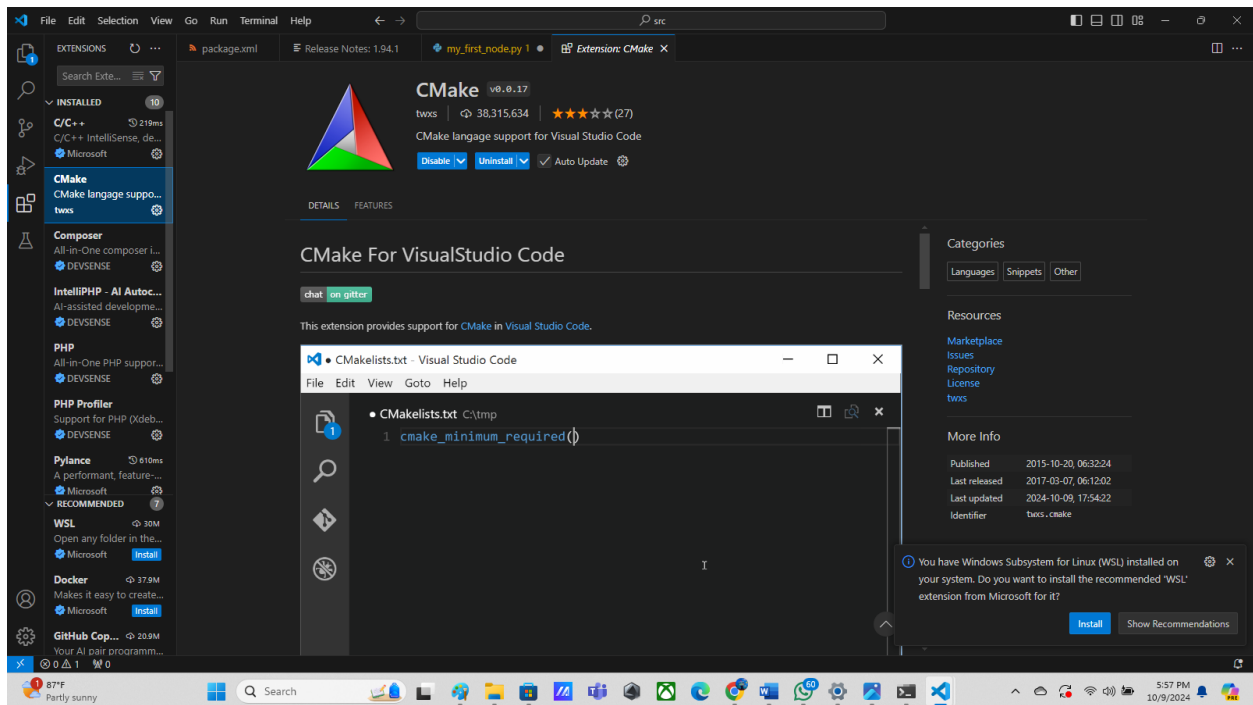
4. Visual Studio Code akan terbuka.



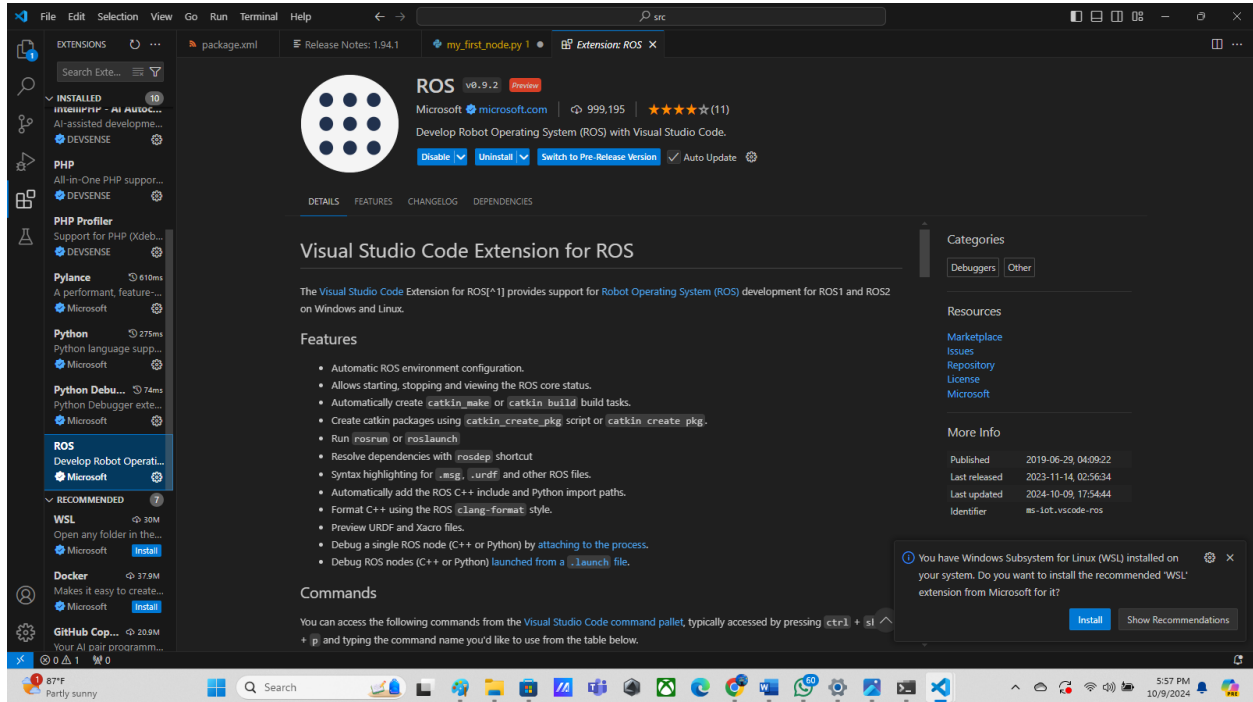
## 5. Install extension **Python** agar VS Code bisa membaca kode Python



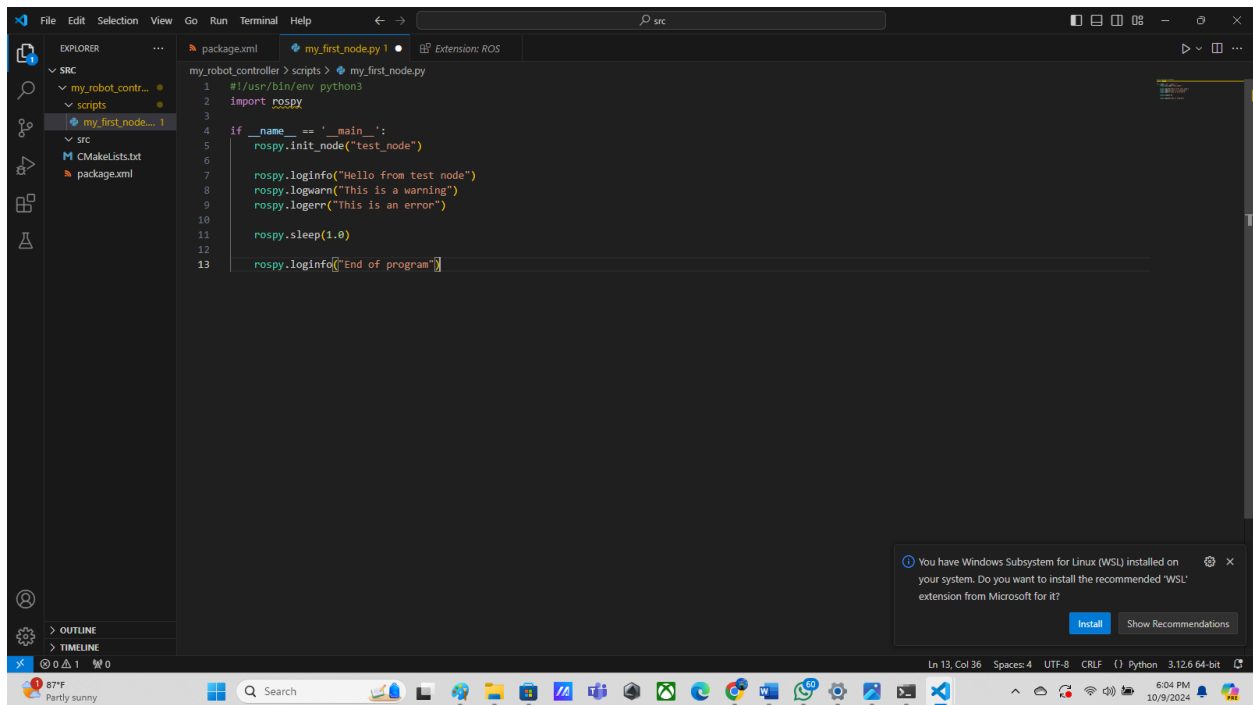
## 6. Install extension **Cmake** untuk membantu penulisan file build.



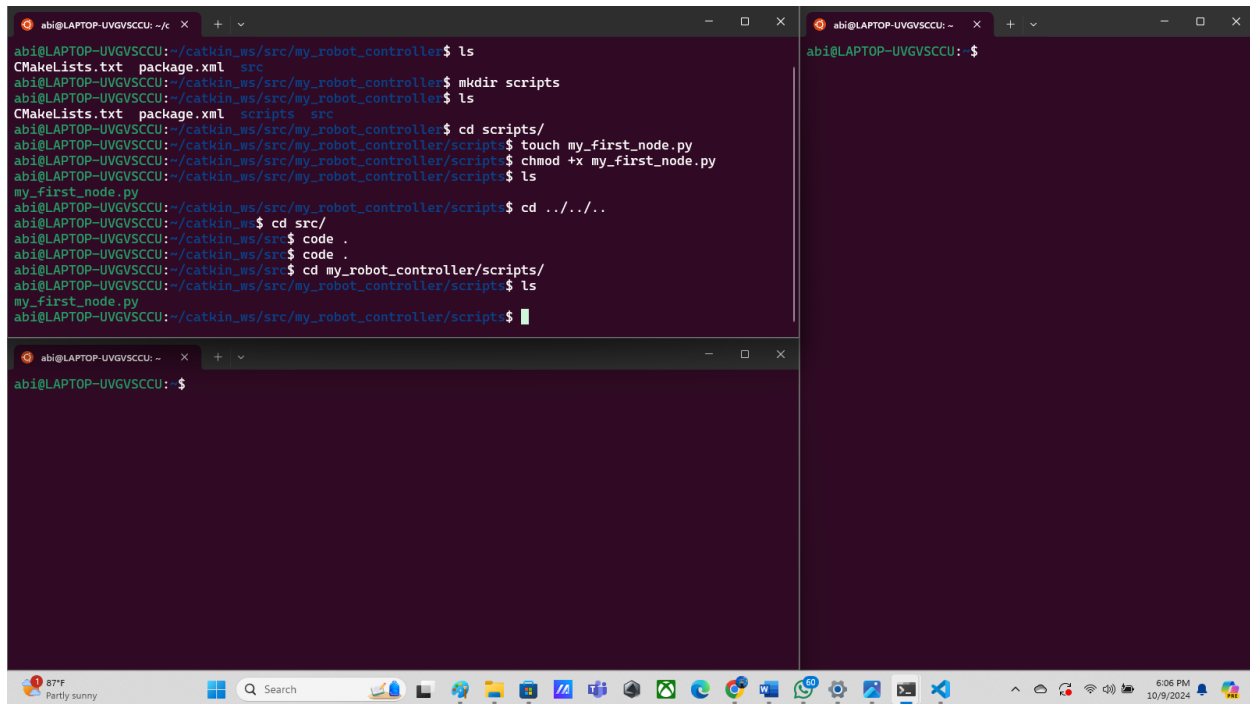
## 7. Install extension **ROS** untuk integrasi workspace ROS



## 8. Tulis kode berikut di file **my\_first\_node.py**

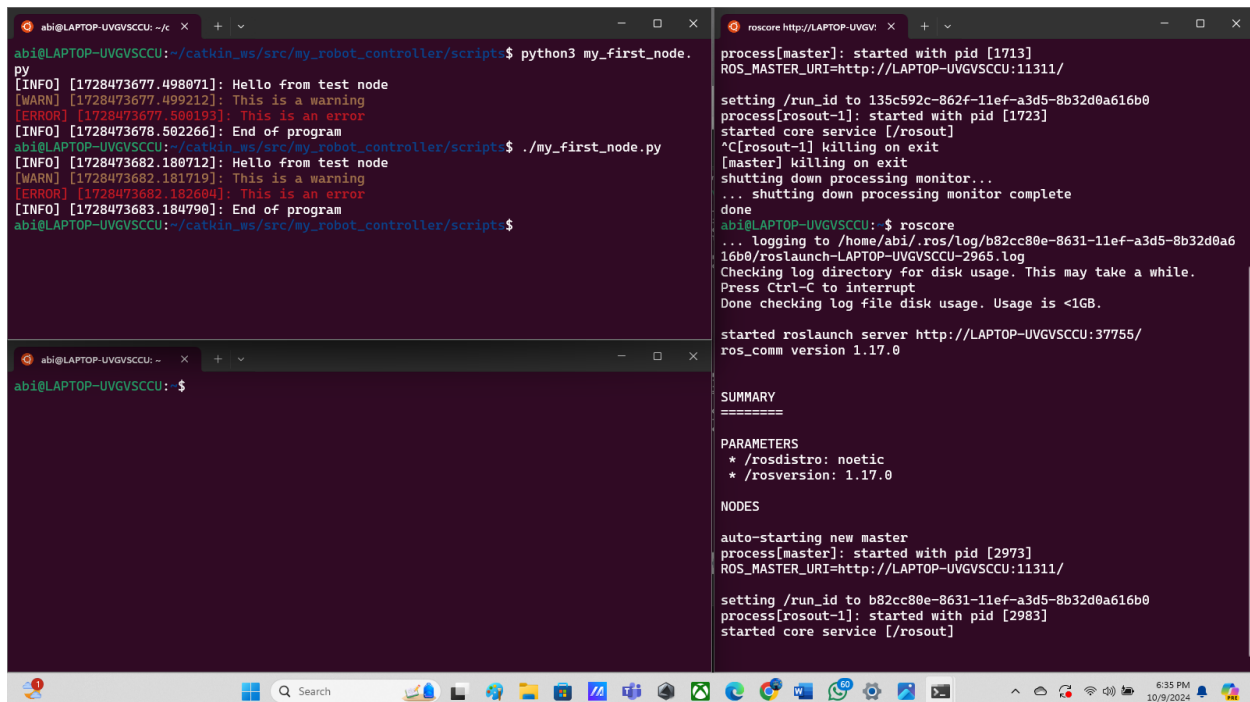


9. `cd my_robot_controller/scripts/` untuk masuk ke folder scripts, lalu `ls` untuk menampilkan isi folder scripts.



```
abi@LAPTOP-UVGVSCCU:~/catkin_ws/src/my_robot_controller$ ls
CMakeLists.txt  package.xml  src
abi@LAPTOP-UVGVSCCU:~/catkin_ws/src/my_robot_controller$ mkdir scripts
abi@LAPTOP-UVGVSCCU:~/catkin_ws/src/my_robot_controller$ ls
CMakeLists.txt  package.xml  scripts  src
abi@LAPTOP-UVGVSCCU:~/catkin_ws/src/my_robot_controller$ cd scripts/
abi@LAPTOP-UVGVSCCU:~/catkin_ws/src/my_robot_controller/scripts$ touch my_first_node.py
abi@LAPTOP-UVGVSCCU:~/catkin_ws/src/my_robot_controller/scripts$ chmod +x my_first_node.py
abi@LAPTOP-UVGVSCCU:~/catkin_ws/src/my_robot_controller/scripts$ ls
my_first_node.py
abi@LAPTOP-UVGVSCCU:~/catkin_ws/src/my_robot_controller/scripts$ cd ../../..
abi@LAPTOP-UVGVSCCU:~/catkin_ws$ cd src/
abi@LAPTOP-UVGVSCCU:~/catkin_ws/src$ code .
abi@LAPTOP-UVGVSCCU:~/catkin_ws/src$ code .
abi@LAPTOP-UVGVSCCU:~/catkin_ws/src$ cd my_robot_controller/scripts/
abi@LAPTOP-UVGVSCCU:~/catkin_ws/src/my_robot_controller/scripts$ ls
my_first_node.py
abi@LAPTOP-UVGVSCCU:~/catkin_ws/src/my_robot_controller/scripts$
```

10. Jalankan `roscore` untuk mengaktifkan ROS master, lalu jalankan `python3 my_first_node.py` untuk menjalankan node.



```
abi@LAPTOP-UVGVSCCU:~/catkin_ws/src/my_robot_controller/scripts$ python3 my_first_node.py
[INFO] [1728473677.498071]: Hello from test node
[WARN] [1728473677.499212]: This is a warning
[ERROR] [1728473677.500192]: This is an error
[INFO] [1728473678.502266]: End of program
abi@LAPTOP-UVGVSCCU:~/catkin_ws/src/my_robot_controller/scripts$ ./my_first_node.py
[INFO] [1728473682.180712]: Hello from test node
[WARN] [1728473682.181719]: This is a warning
[ERROR] [1728473682.182604]: This is an error
[INFO] [1728473683.184790]: End of program
abi@LAPTOP-UVGVSCCU:~/catkin_ws/src/my_robot_controller/scripts$
```

```
process[master]: started with pid [1713]
ROS_MASTER_URI=http://LAPTOP-UVGVSCCU:11311/

setting /run_id to 135c592c-862f-11ef-a3d5-8b32d0a616b0
process[rosout-1]: started with pid [1723]
started core service [/rosout]
*[rosout-1] killing on exit
[master] killing on exit
shutting down processing monitor...
... shutting down processing monitor complete
done
abi@LAPTOP-UVGVSCCU:~$ roscore
... logging to /home/abi/.ros/log/b82cc80e-8631-11ef-a3d5-8b32d0a616b0/roslaunch-LAPTOP-UVGVSCCU-2965.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://LAPTOP-UVGVSCCU:37755/
ros_comm version 1.17.0

SUMMARY
=====

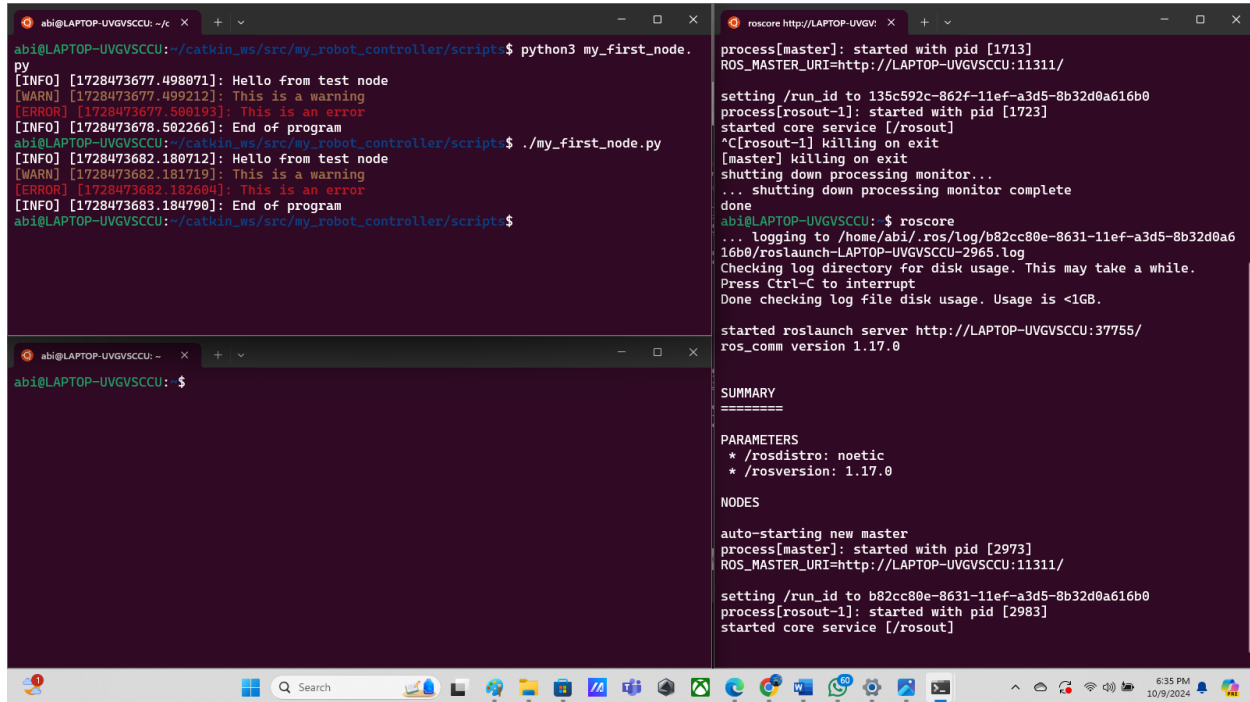
PARAMETERS
 * /roscdistro: noetic
 * /rosversion: 1.17.0

NODES

auto-starting new master
process[master]: started with pid [2973]
ROS_MASTER_URI=http://LAPTOP-UVGVSCCU:11311/

setting /run_id to b82cc80e-8631-11ef-a3d5-8b32d0a616b0
process[rosout-1]: started with pid [2983]
started core service [/rosout]
```

11. Jalankan `./my_first_node.py` untuk eksekusi langsung.



```
abi@LAPTOP-UVGVSCCU: ~/catkin_ws/src/my_robot_controller/scripts$ python3 my_first_node.py
[INFO] [1728473677.498071]: Hello from test node
[WARN] [1728473677.499212]: This is a warning
[ERROR] [1728473677.500193]: This is an error
[INFO] [1728473678.502266]: End of program
abi@LAPTOP-UVGVSCCU:~/catkin_ws/src/my_robot_controller/scripts$ ./my_first_node.py
[INFO] [1728473682.180712]: Hello from test node
[WARN] [1728473682.181719]: This is a warning
[ERROR] [1728473682.182604]: This is an error
[INFO] [1728473683.184790]: End of program
abi@LAPTOP-UVGVSCCU:~/catkin_ws/src/my_robot_controller/scripts$

abi@LAPTOP-UVGVSCCU: $
abi@LAPTOP-UVGVSCCU: $
```

```
roscore http://LAPTOP-UVGVSCCU:
process[master]: started with pid [1713]
ROS_MASTER_URI=http://LAPTOP-UVGVSCCU:11311/

setting /run_id to 135c592c-862f-11ef-a3d5-8b32d0a616b0
process[rosout-1]: started with pid [1723]
started core service [/rosout]
^C[rosout-1] killing on exit
[master] killing on exit
shutting down processing monitor...
... shutting down processing monitor complete
done
abi@LAPTOP-UVGVSCCU: $ roscore
... logging to /home/abi/.ros/log/b82cc80e-8631-11ef-a3d5-8b32d0a616b0/roslaunch-LAPTOP-UVGVSCCU-2965.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://LAPTOP-UVGVSCCU:37755/
ros_comm version 1.17.0

SUMMARY
=====

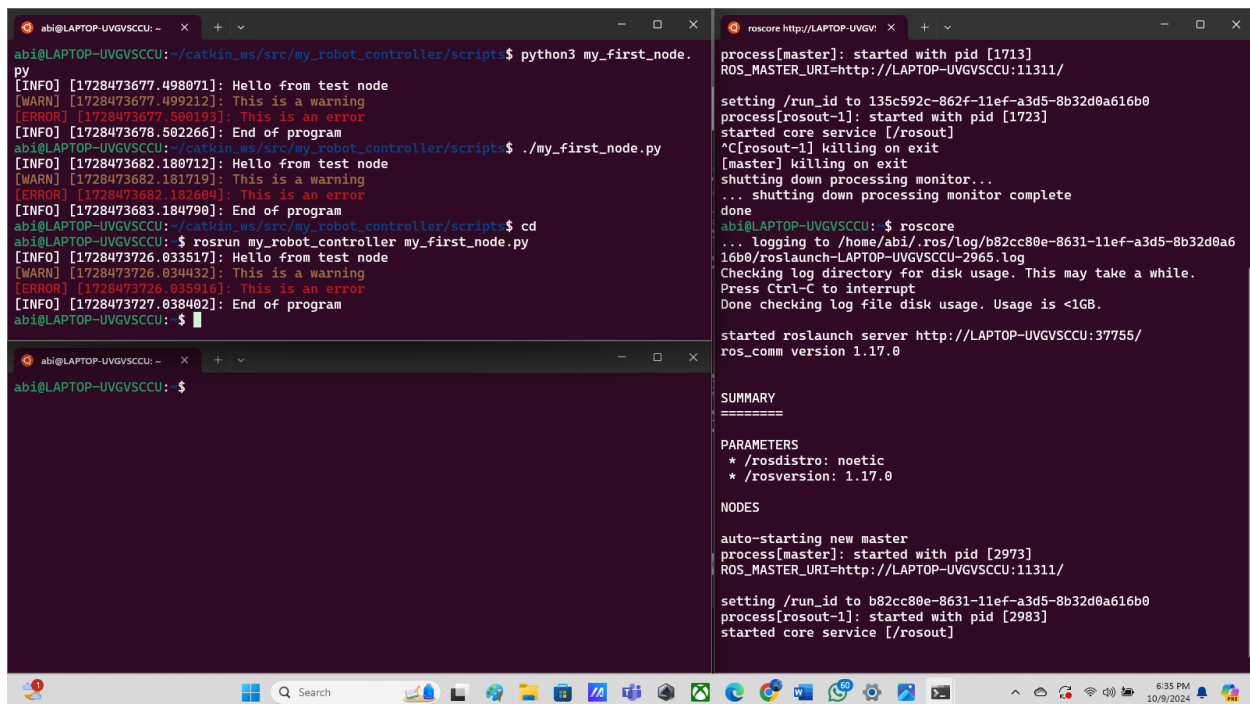
PARAMETERS
* /rostdistro: noetic
* /rosversion: 1.17.0

NODES

auto-starting new master
process[master]: started with pid [2973]
ROS_MASTER_URI=http://LAPTOP-UVGVSCCU:11311/

setting /run_id to b82cc80e-8631-11ef-a3d5-8b32d0a616b0
process[rosout-1]: started with pid [2983]
started core service [/rosout]
```

12. `cd ~` untuk kembali ke home, `roslaunch my_robot_controller my_first_node.py` untuk jalankan node



```
abi@LAPTOP-UVGVSCCU: ~/catkin_ws/src/my_robot_controller/scripts$ python3 my_first_node.py
[INFO] [1728473677.498071]: Hello from test node
[WARN] [1728473677.499212]: This is a warning
[ERROR] [1728473677.500193]: This is an error
[INFO] [1728473678.502266]: End of program
abi@LAPTOP-UVGVSCCU:~/catkin_ws/src/my_robot_controller/scripts$ ./my_first_node.py
[INFO] [1728473682.180712]: Hello from test node
[WARN] [1728473682.181719]: This is a warning
[ERROR] [1728473682.182604]: This is an error
[INFO] [1728473683.184790]: End of program
abi@LAPTOP-UVGVSCCU:~/catkin_ws/src/my_robot_controller/scripts$ cd
abi@LAPTOP-UVGVSCCU: $ roslaunch my_robot_controller my_first_node.py
[INFO] [1728473726.033517]: Hello from test node
[WARN] [1728473726.034432]: This is a warning
[ERROR] [1728473726.035916]: This is an error
[INFO] [1728473727.038402]: End of program
abi@LAPTOP-UVGVSCCU: $

abi@LAPTOP-UVGVSCCU: $
```

```
roscore http://LAPTOP-UVGVSCCU:
process[master]: started with pid [1713]
ROS_MASTER_URI=http://LAPTOP-UVGVSCCU:11311/

setting /run_id to 135c592c-862f-11ef-a3d5-8b32d0a616b0
process[rosout-1]: started with pid [1723]
started core service [/rosout]
^C[rosout-1] killing on exit
[master] killing on exit
shutting down processing monitor...
... shutting down processing monitor complete
done
abi@LAPTOP-UVGVSCCU: $ roscore
... logging to /home/abi/.ros/log/b82cc80e-8631-11ef-a3d5-8b32d0a616b0/roslaunch-LAPTOP-UVGVSCCU-2965.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://LAPTOP-UVGVSCCU:37755/
ros_comm version 1.17.0

SUMMARY
=====

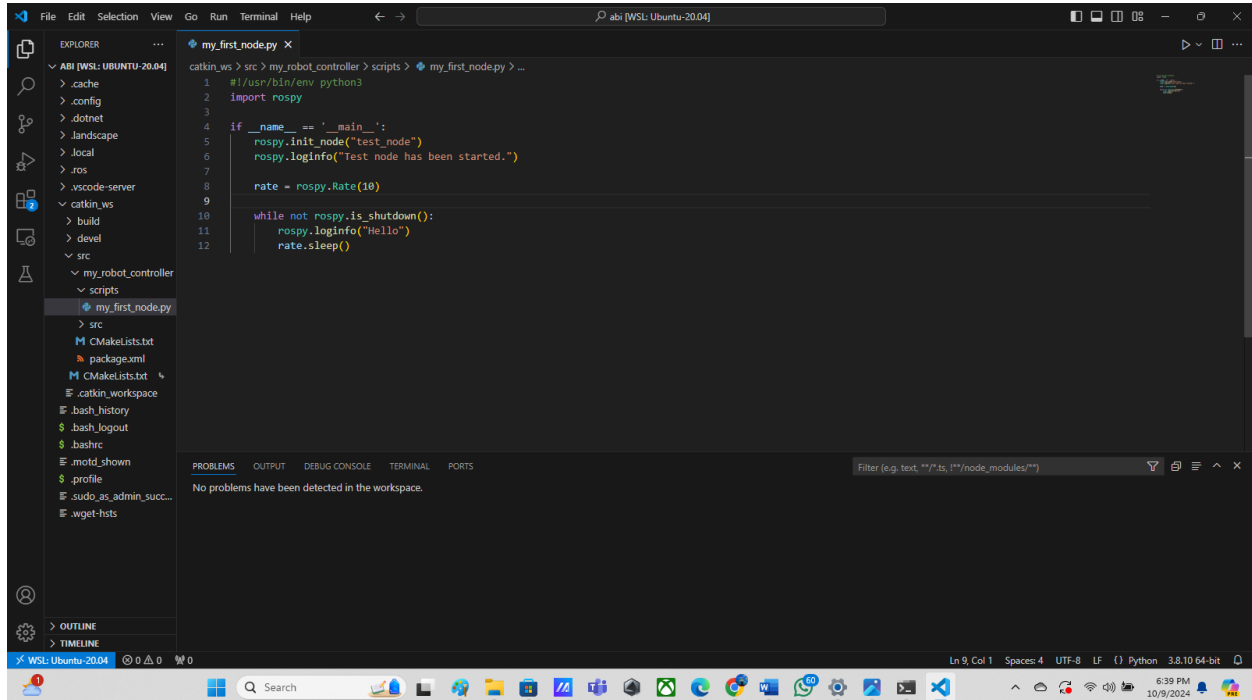
PARAMETERS
* /rostdistro: noetic
* /rosversion: 1.17.0

NODES

auto-starting new master
process[master]: started with pid [2973]
ROS_MASTER_URI=http://LAPTOP-UVGVSCCU:11311/

setting /run_id to b82cc80e-8631-11ef-a3d5-8b32d0a616b0
process[rosout-1]: started with pid [2983]
started core service [/rosout]
```

13. Jalankan lagi **code .** untuk mengedit kode **my\_first\_node.py** sebagai berikut lalu simpan

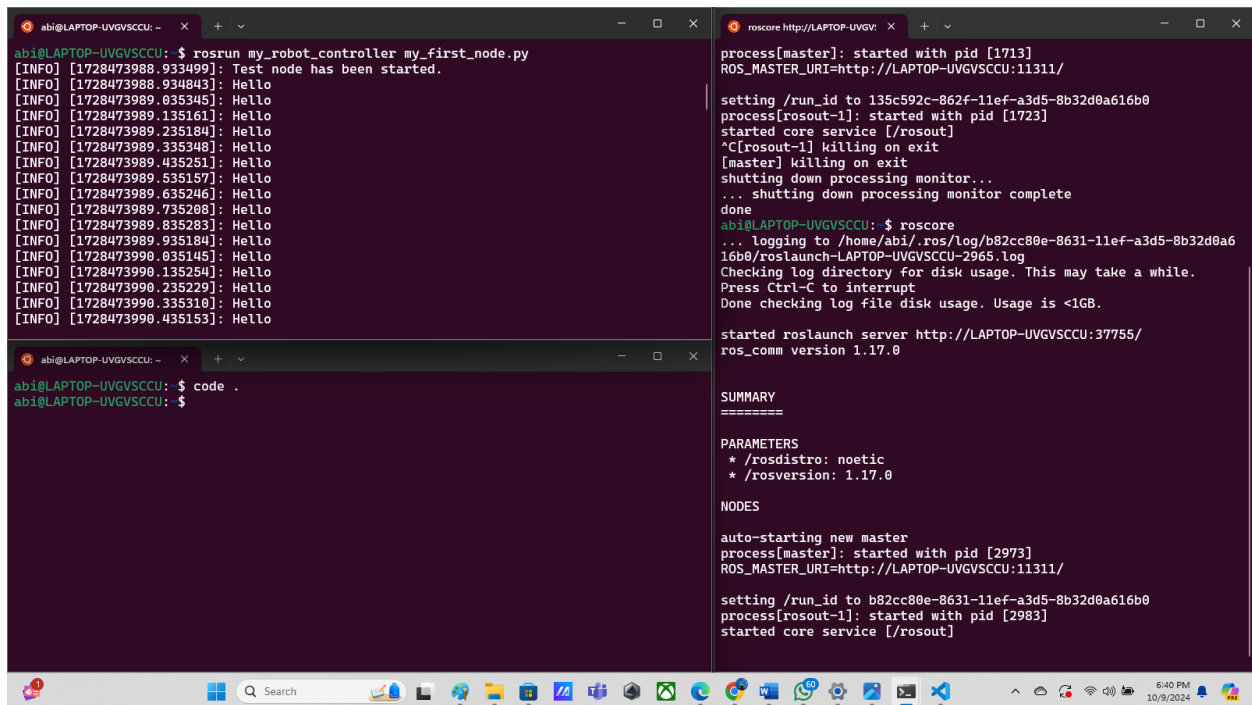


The screenshot shows the Visual Studio Code (VS Code) editor interface. The Explorer pane on the left shows the file structure of a workspace named 'abi [WSL: Ubuntu-20.04]'. The file 'my\_first\_node.py' is selected under the 'scripts' directory of 'my\_robot\_controller'. The main editor window displays the code for 'my\_first\_node.py'. The code is as follows:

```
1 #!/usr/bin/env python3
2 import rospy
3
4 if __name__ == '__main__':
5     rospy.init_node("test_node")
6     rospy.loginfo("Test node has been started.")
7
8     rate = rospy.Rate(10)
9
10    while not rospy.is_shutdown():
11        rospy.loginfo("Hello")
12        rate.sleep()
```

The bottom status bar indicates the file is in Python 3.8.10 64-bit. The Windows taskbar at the bottom shows the time as 6:39 PM on 10/9/2024.

14. . Jalankan lagi **roslaunch my\_robot\_controller my\_first\_node.py**



The screenshot shows two terminal windows. The left window is a terminal for 'abi@LAPTOP-UVGVSCCU' showing the command 'roslaunch my\_robot\_controller my\_first\_node.py' being executed. The output shows a series of 'Hello' messages from the 'test\_node' at regular intervals.

```
abi@LAPTOP-UVGVSCCU: ~$ roslaunch my_robot_controller my_first_node.py
[INFO] [1728473988.933499]: Test node has been started.
[INFO] [1728473988.934843]: Hello
[INFO] [1728473989.035345]: Hello
[INFO] [1728473989.135161]: Hello
[INFO] [1728473989.235184]: Hello
[INFO] [1728473989.335348]: Hello
[INFO] [1728473989.435251]: Hello
[INFO] [1728473989.535157]: Hello
[INFO] [1728473989.635246]: Hello
[INFO] [1728473989.735288]: Hello
[INFO] [1728473989.835283]: Hello
[INFO] [1728473989.935184]: Hello
[INFO] [1728473990.035145]: Hello
[INFO] [1728473990.135254]: Hello
[INFO] [1728473990.235229]: Hello
[INFO] [1728473990.335310]: Hello
[INFO] [1728473990.435153]: Hello
```

The right window is a terminal for 'abi@LAPTOP-UVGVSCCU' showing the command 'roscore' being executed. The output shows the ROS master starting and logging to the file '/home/abi/.ros/log/b82cc80e-8631-11ef-a3d5-8b32d0a616b0/roslaunch-LAPTOP-UVGVSCCU-2965.log'. The output also shows the ROS master starting and logging to the file '/home/abi/.ros/log/b82cc80e-8631-11ef-a3d5-8b32d0a616b0/roslaunch-LAPTOP-UVGVSCCU-2965.log'.

```
abi@LAPTOP-UVGVSCCU: ~$ roscore
process[master]: started with pid [1713]
ROS_MASTER_URI=http://LAPTOP-UVGVSCCU:11311/

setting /run_id to 135c592c-862f-11ef-a3d5-8b32d0a616b0
process[rosout-1]: started with pid [1723]
started core service [/rosout]
^C[rosout-1] killing on exit
[master] killing on exit
shutting down processing monitor...
... shutting down processing monitor complete
done
abi@LAPTOP-UVGVSCCU: ~$ roscore
... logging to /home/abi/.ros/log/b82cc80e-8631-11ef-a3d5-8b32d0a616b0/roslaunch-LAPTOP-UVGVSCCU-2965.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://LAPTOP-UVGVSCCU:37755/
ros_comm version 1.17.0

SUMMARY
=====
PARAMETERS
* /roscore: noetic
* /rosversion: 1.17.0

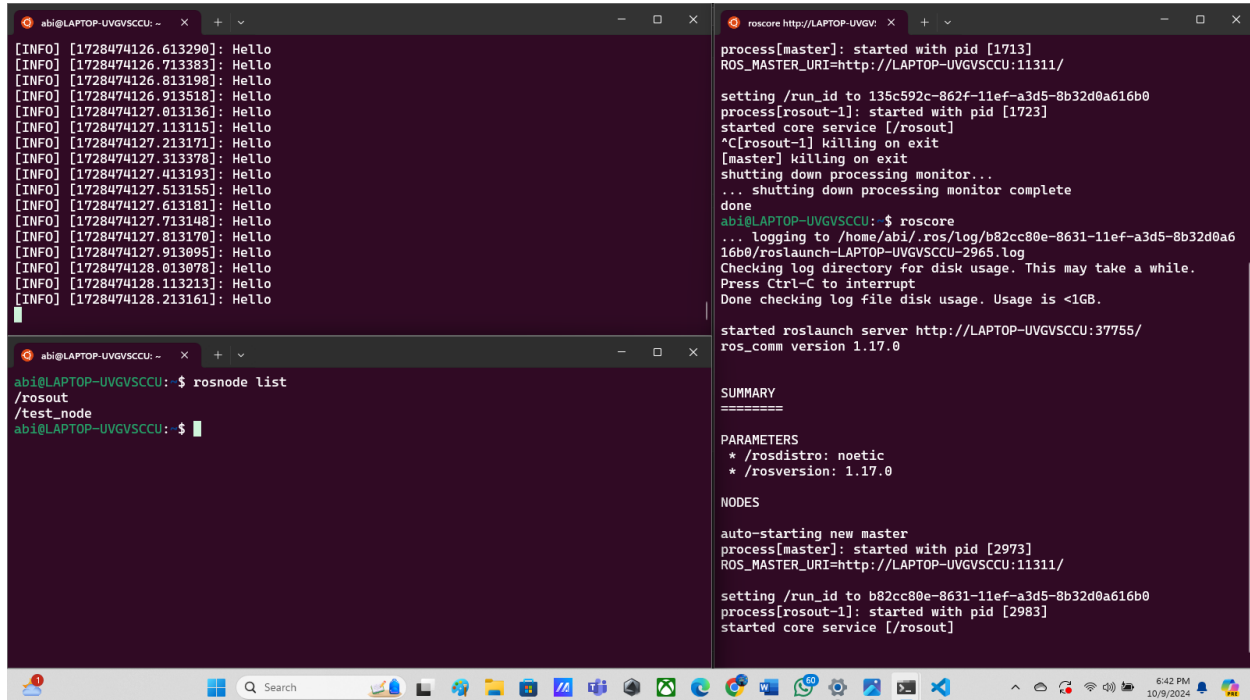
NODES

auto-starting new master
process[master]: started with pid [2973]
ROS_MASTER_URI=http://LAPTOP-UVGVSCCU:11311/

setting /run_id to b82cc80e-8631-11ef-a3d5-8b32d0a616b0
process[rosout-1]: started with pid [2983]
started core service [/rosout]
```

The Windows taskbar at the bottom shows the time as 6:40 PM on 10/9/2024.

15. Jalankan **rostopic list** untuk melihat node yang berjalan.



The screenshot shows two terminal windows. The left window, titled 'abi@LAPTOP-UVGVSCCU: ~', displays the output of the `rostopic list` command, which lists 18 topics, all named 'Hello'. The right window, titled 'roscore http://LAPTOP-UVGVSCCU: ~', shows the output of the `roscore` command, indicating that the ROS master is running on `http://LAPTOP-UVGVSCCU:11311/` and that the `/rosout` topic is being monitored.

```
[INFO] [1728474126.613290]: Hello
[INFO] [1728474126.713383]: Hello
[INFO] [1728474126.813198]: Hello
[INFO] [1728474126.913518]: Hello
[INFO] [1728474127.013136]: Hello
[INFO] [1728474127.113115]: Hello
[INFO] [1728474127.213171]: Hello
[INFO] [1728474127.313378]: Hello
[INFO] [1728474127.413193]: Hello
[INFO] [1728474127.513155]: Hello
[INFO] [1728474127.613181]: Hello
[INFO] [1728474127.713148]: Hello
[INFO] [1728474127.813170]: Hello
[INFO] [1728474127.913095]: Hello
[INFO] [1728474128.013078]: Hello
[INFO] [1728474128.113213]: Hello
[INFO] [1728474128.213161]: Hello

abi@LAPTOP-UVGVSCCU:~$ rostopic list
/rosout
/test_node
abi@LAPTOP-UVGVSCCU:~$
```

```
process[master]: started with pid [1713]
ROS_MASTER_URI=http://LAPTOP-UVGVSCCU:11311/

setting /run_id to 135c592c-862f-11ef-a3d5-8b32d0a616b0
process[rosout-1]: started with pid [1723]
started core service [/rosout]
^C[rosout-1] killing on exit
[master] killing on exit
shutting down processing monitor...
... shutting down processing monitor complete
done
abi@LAPTOP-UVGVSCCU:~$ roscore
... logging to /home/abi/.ros/log/b82cc80e-8631-11ef-a3d5-8b32d0a616b0/roslaunch-LAPTOP-UVGVSCCU-2965.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://LAPTOP-UVGVSCCU:37755/
ros_comm version 1.17.0

SUMMARY
=====

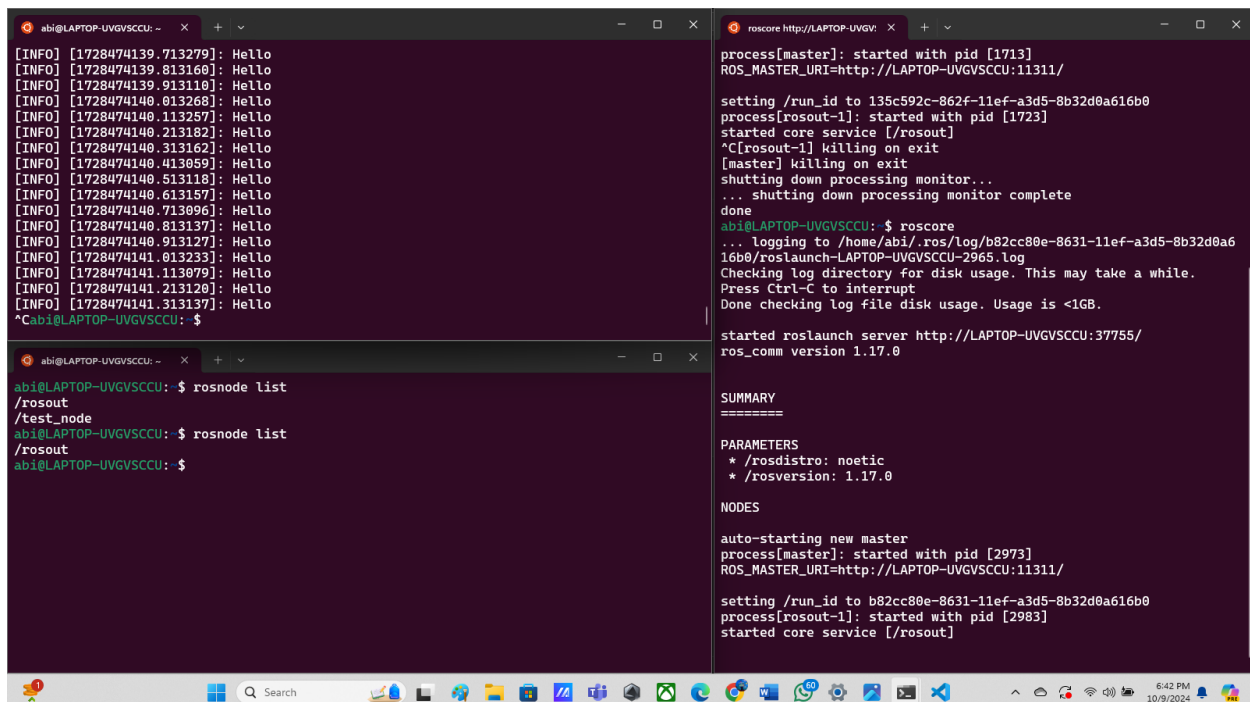
PARAMETERS
* /roscore: noetic
* /rosversion: 1.17.0

NODES

auto-starting new master
process[master]: started with pid [2973]
ROS_MASTER_URI=http://LAPTOP-UVGVSCCU:11311/

setting /run_id to b82cc80e-8631-11ef-a3d5-8b32d0a616b0
process[rosout-1]: started with pid [2983]
started core service [/rosout]
```

16. Hentikan node, lalu jalankan **rostopic list** lagi maka `/test_node` akan hilang. Ketika node dijalankan kembali, maka **rostopic list** akan menampilkan `/test_node` lagi.



The screenshot shows two terminal windows. The left window, titled 'abi@LAPTOP-UVGVSCCU: ~', displays the output of the `rostopic list` command, which lists 18 topics, all named 'Hello'. The right window, titled 'roscore http://LAPTOP-UVGVSCCU: ~', shows the output of the `roscore` command, indicating that the ROS master is running on `http://LAPTOP-UVGVSCCU:11311/` and that the `/rosout` topic is being monitored.

```
[INFO] [1728474139.713279]: Hello
[INFO] [1728474139.813160]: Hello
[INFO] [1728474139.913110]: Hello
[INFO] [1728474140.013268]: Hello
[INFO] [1728474140.113257]: Hello
[INFO] [1728474140.213182]: Hello
[INFO] [1728474140.313162]: Hello
[INFO] [1728474140.413059]: Hello
[INFO] [1728474140.513118]: Hello
[INFO] [1728474140.613157]: Hello
[INFO] [1728474140.713096]: Hello
[INFO] [1728474140.813137]: Hello
[INFO] [1728474140.913127]: Hello
[INFO] [1728474141.013233]: Hello
[INFO] [1728474141.113079]: Hello
[INFO] [1728474141.213120]: Hello
[INFO] [1728474141.313137]: Hello
^Cabi@LAPTOP-UVGVSCCU:~$

abi@LAPTOP-UVGVSCCU:~$ rostopic list
/rosout
/test_node
abi@LAPTOP-UVGVSCCU:~$ rostopic list
/rosout
abi@LAPTOP-UVGVSCCU:~$
```

```
process[master]: started with pid [1713]
ROS_MASTER_URI=http://LAPTOP-UVGVSCCU:11311/

setting /run_id to 135c592c-862f-11ef-a3d5-8b32d0a616b0
process[rosout-1]: started with pid [1723]
started core service [/rosout]
^C[rosout-1] killing on exit
[master] killing on exit
shutting down processing monitor...
... shutting down processing monitor complete
done
abi@LAPTOP-UVGVSCCU:~$ roscore
... logging to /home/abi/.ros/log/b82cc80e-8631-11ef-a3d5-8b32d0a616b0/roslaunch-LAPTOP-UVGVSCCU-2965.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://LAPTOP-UVGVSCCU:37755/
ros_comm version 1.17.0

SUMMARY
=====

PARAMETERS
* /roscore: noetic
* /rosversion: 1.17.0

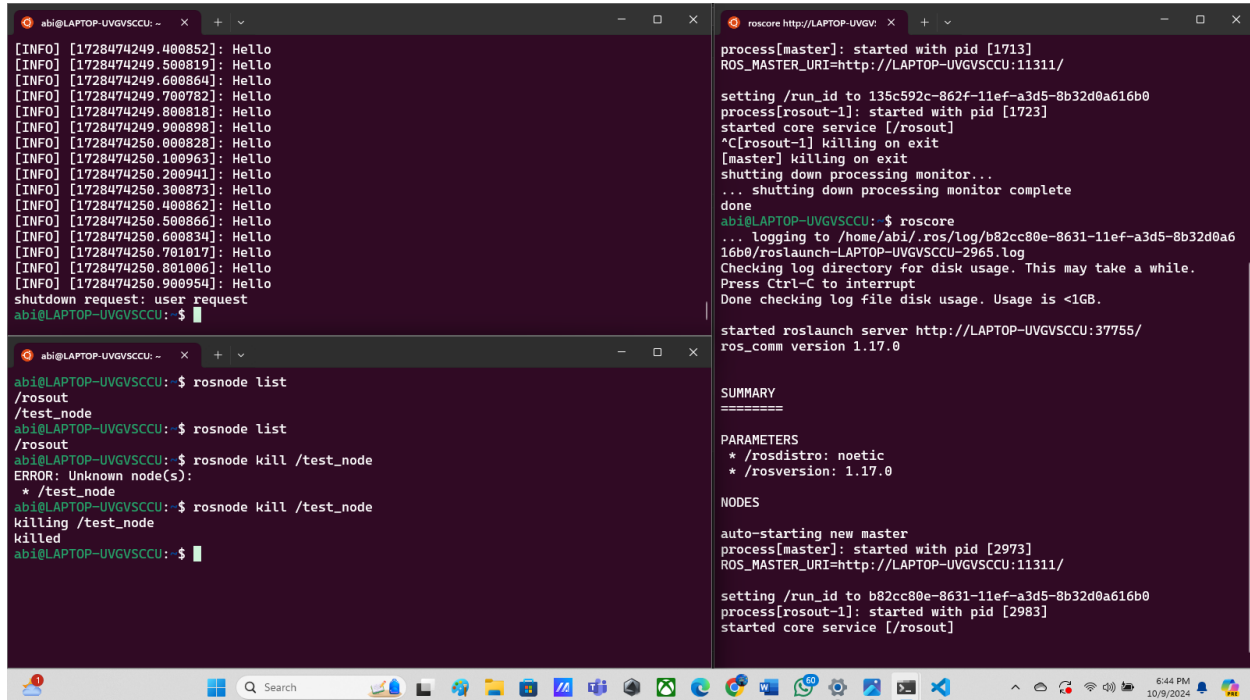
NODES

auto-starting new master
process[master]: started with pid [2973]
ROS_MASTER_URI=http://LAPTOP-UVGVSCCU:11311/

setting /run_id to b82cc80e-8631-11ef-a3d5-8b32d0a616b0
process[rosout-1]: started with pid [2983]
started core service [/rosout]
```



## 17. `rostopic kill /test_node` untuk menghentikan node bernama `/test_node`.



```
[INFO] [1728474249.400852]: Hello
[INFO] [1728474249.500819]: Hello
[INFO] [1728474249.600864]: Hello
[INFO] [1728474249.700782]: Hello
[INFO] [1728474249.800818]: Hello
[INFO] [1728474249.900898]: Hello
[INFO] [1728474250.000828]: Hello
[INFO] [1728474250.100963]: Hello
[INFO] [1728474250.200941]: Hello
[INFO] [1728474250.300873]: Hello
[INFO] [1728474250.400862]: Hello
[INFO] [1728474250.500866]: Hello
[INFO] [1728474250.600834]: Hello
[INFO] [1728474250.701017]: Hello
[INFO] [1728474250.801006]: Hello
[INFO] [1728474250.900954]: Hello
shutdown request: user request
abi@LAPTOP-UVGVSCCU: $

abi@LAPTOP-UVGVSCCU: $ rostopic list
/rosout
/test_node
abi@LAPTOP-UVGVSCCU: $ rostopic list
/rosout
abi@LAPTOP-UVGVSCCU: $ rostopic kill /test_node
ERROR: Unknown node(s):
* /test_node
abi@LAPTOP-UVGVSCCU: $ rostopic kill /test_node
killing /test_node
killed
abi@LAPTOP-UVGVSCCU: $

process[master]: started with pid [1713]
ROS_MASTER_URI=http://LAPTOP-UVGVSCCU:11311/

setting /run_id to 135c592c-862f-11ef-a3d5-8b32d0a616b0
process[rosout-1]: started with pid [1723]
started core service [/rosout]
^C[rosout-1] killing on exit
[master] killing on exit
shutting down processing monitor...
... shutting down processing monitor complete
done
abi@LAPTOP-UVGVSCCU: $ rostopic
... logging to /home/abi/.ros/log/b82cc80e-8631-11ef-a3d5-8b32d0a616b0/roslaunch-LAPTOP-UVGVSCCU-2965.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://LAPTOP-UVGVSCCU:37755/
ros_comm version 1.17.0

SUMMARY
=====

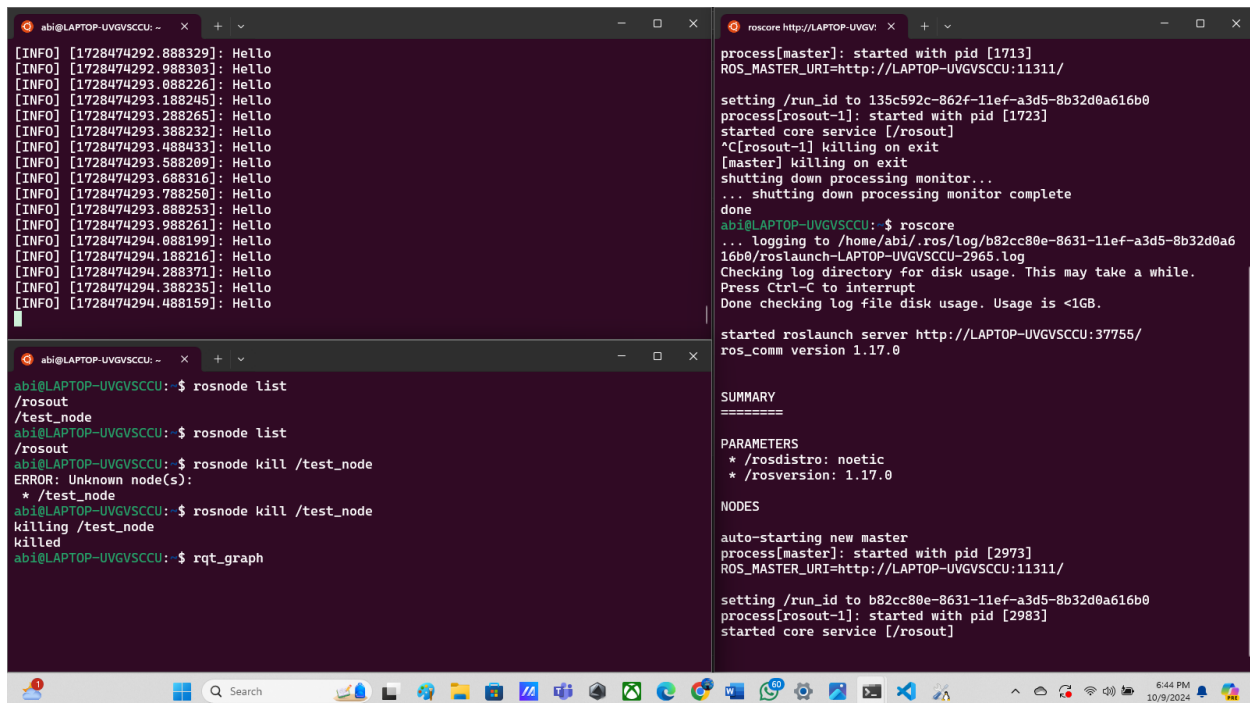
PARAMETERS
* /rostdistro: noetic
* /rosversion: 1.17.0

NODES

auto-starting new master
process[master]: started with pid [2973]
ROS_MASTER_URI=http://LAPTOP-UVGVSCCU:11311/

setting /run_id to b82cc80e-8631-11ef-a3d5-8b32d0a616b0
process[rosout-1]: started with pid [2983]
started core service [/rosout]
```

## 18. `rqt_graph` untuk menampilkan visualisasi node



```
[INFO] [1728474292.888329]: Hello
[INFO] [1728474292.988303]: Hello
[INFO] [1728474293.088226]: Hello
[INFO] [1728474293.188245]: Hello
[INFO] [1728474293.288265]: Hello
[INFO] [1728474293.388232]: Hello
[INFO] [1728474293.488433]: Hello
[INFO] [1728474293.588209]: Hello
[INFO] [1728474293.688316]: Hello
[INFO] [1728474293.788250]: Hello
[INFO] [1728474293.888253]: Hello
[INFO] [1728474293.988261]: Hello
[INFO] [1728474294.088199]: Hello
[INFO] [1728474294.188216]: Hello
[INFO] [1728474294.288371]: Hello
[INFO] [1728474294.388235]: Hello
[INFO] [1728474294.488159]: Hello

abi@LAPTOP-UVGVSCCU: $ rostopic list
/rosout
/test_node
abi@LAPTOP-UVGVSCCU: $ rostopic list
/rosout
abi@LAPTOP-UVGVSCCU: $ rostopic kill /test_node
ERROR: Unknown node(s):
* /test_node
abi@LAPTOP-UVGVSCCU: $ rostopic kill /test_node
killing /test_node
killed
abi@LAPTOP-UVGVSCCU: $ rqt_graph

process[master]: started with pid [1713]
ROS_MASTER_URI=http://LAPTOP-UVGVSCCU:11311/

setting /run_id to 135c592c-862f-11ef-a3d5-8b32d0a616b0
process[rosout-1]: started with pid [1723]
started core service [/rosout]
^C[rosout-1] killing on exit
[master] killing on exit
shutting down processing monitor...
... shutting down processing monitor complete
done
abi@LAPTOP-UVGVSCCU: $ rostopic
... logging to /home/abi/.ros/log/b82cc80e-8631-11ef-a3d5-8b32d0a616b0/roslaunch-LAPTOP-UVGVSCCU-2965.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://LAPTOP-UVGVSCCU:37755/
ros_comm version 1.17.0

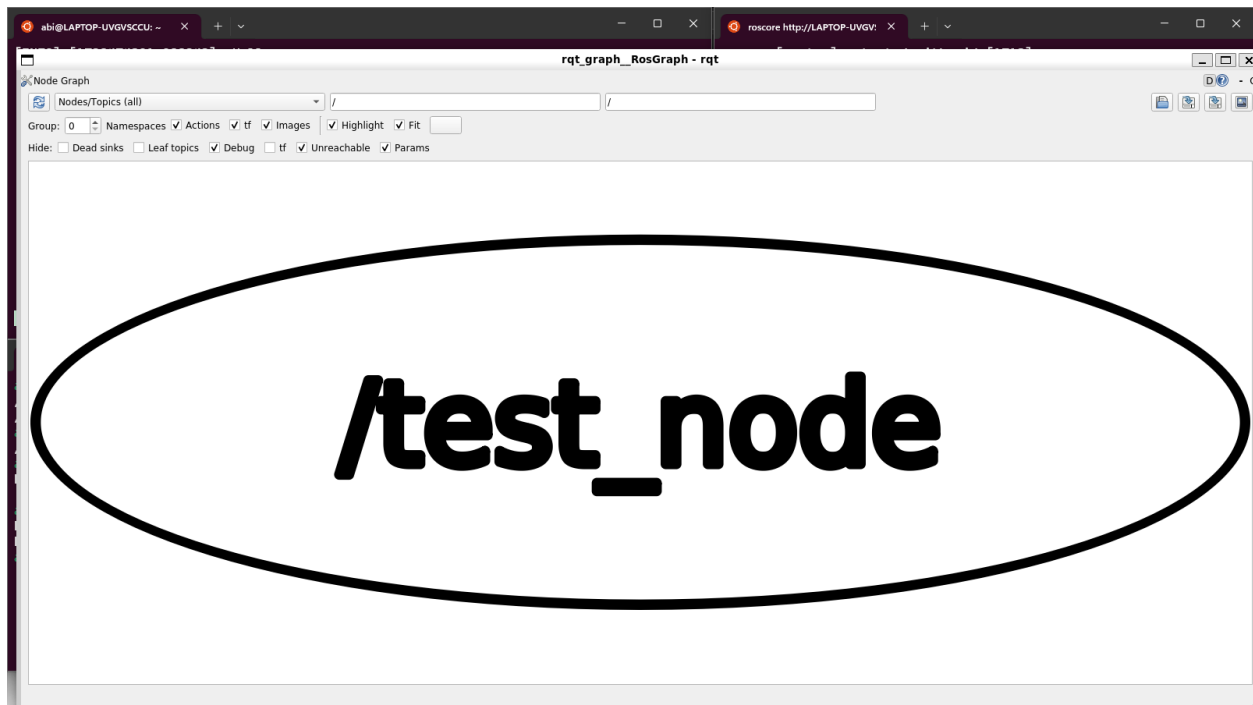
SUMMARY
=====

PARAMETERS
* /rostdistro: noetic
* /rosversion: 1.17.0

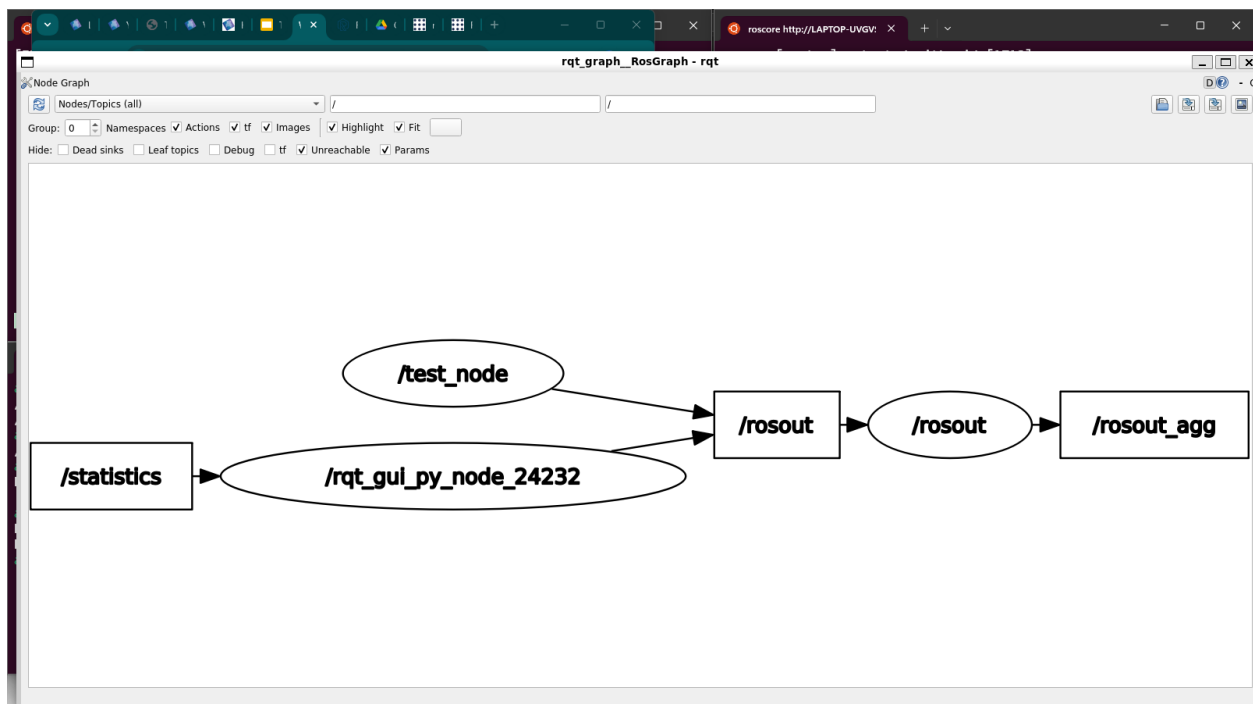
NODES

auto-starting new master
process[master]: started with pid [2973]
ROS_MASTER_URI=http://LAPTOP-UVGVSCCU:11311/

setting /run_id to b82cc80e-8631-11ef-a3d5-8b32d0a616b0
process[rosout-1]: started with pid [2983]
started core service [/rosout]
```



19. Hilangkan ceklis **Debug** di `rqt_graph` untuk menampilkan node secara rinci.



20. Jika mencoba menjalankan lagi `roslaunch my_robot_controller my_first_node.py` di terminal lain, maka akan muncul pesan bahwa node sudah berjalan.

```
abi@LAPTOP-UVGVSCCU: ~  
[INFO] [1728474420.625941]: Hello  
[INFO] [1728474420.725965]: Hello  
[INFO] [1728474420.825979]: Hello  
[INFO] [1728474420.926107]: Hello  
[INFO] [1728474421.026025]: Hello  
[INFO] [1728474421.126022]: Hello  
[INFO] [1728474421.226111]: Hello  
[INFO] [1728474421.326069]: Hello  
[INFO] [1728474421.426049]: Hello  
[INFO] [1728474421.525936]: Hello  
[INFO] [1728474421.625975]: Hello  
[INFO] [1728474421.726063]: Hello  
[INFO] [1728474421.825913]: Hello  
[INFO] [1728474421.925913]: Hello  
[INFO] [1728474422.026001]: Hello  
[INFO] [1728474422.126077]: Hello  
shutdown request: [/test_node] Reason: new node registered with same name  
abi@LAPTOP-UVGVSCCU: $  
  
abi@LAPTOP-UVGVSCCU: ~  
ERROR: Unknown node(s):  
* /test_node  
abi@LAPTOP-UVGVSCCU: $ rostopic kill /test_node  
killing /test_node  
killed  
abi@LAPTOP-UVGVSCCU: $ rqt_graph  
^Cabi@LAPTOP-UVGVSCCU: $ roslaunch my_robot_controller my_first_node.py  
[INFO] [1728474422.157034]: Test node has been started.  
[INFO] [1728474422.158177]: Hello  
[INFO] [1728474422.258619]: Hello  
[INFO] [1728474422.358651]: Hello  
[INFO] [1728474422.458640]: Hello  
[INFO] [1728474422.558669]: Hello  
[INFO] [1728474422.658634]: Hello  
[INFO] [1728474422.758651]: Hello  
[INFO] [1728474422.858654]: Hello  
[INFO] [1728474422.958650]: Hello  
[INFO] [1728474423.058540]: Hello  
  
roscore http://LAPTOP-UVGVSCCU: ~  
process[roscore]: started with pid [1713]  
ROS_MASTER_URI=http://LAPTOP-UVGVSCCU:11311/  
  
setting /run_id to 135c592c-862f-11ef-a3d5-8b32d0a616b0  
process[rosout-1]: started with pid [1723]  
started core service [/rosout]  
^C[rosout-1] killing on exit  
[master] killing on exit  
shutting down processing monitor...  
... shutting down processing monitor complete  
done  
abi@LAPTOP-UVGVSCCU: $ roscore  
... logging to /home/abi/.ros/log/b82cc80e-8631-11ef-a3d5-8b32d0a616b0/roslaunch-LAPTOP-UVGVSCCU-2965.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://LAPTOP-UVGVSCCU:37755/  
ros_comm version 1.17.0  
  
SUMMARY  
=====  
PARAMETERS  
* /roscore: noetic  
* /rosversion: 1.17.0  
  
NODES  
auto-starting new master  
process[roscore]: started with pid [2973]  
ROS_MASTER_URI=http://LAPTOP-UVGVSCCU:11311/  
  
setting /run_id to b82cc80e-8631-11ef-a3d5-8b32d0a616b0  
process[rosout-1]: started with pid [2983]  
started core service [/rosout]
```

