TP1 — Ubuntu Terminal Basics for ROS 2 Humble

1-Hour Hands-On Practice (Beginners)

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Objective of this session (1 hour)

At the end of this session, you will be able to:

- Open and use **Terminator**
- Navigate directories confidently
- Create a ROS 2 workspace structure
- Read terminal output and logs
- Use essential commands required for ROS 2

1 Part 1 — Terminator basics (10 min)

Terminator allows multiple terminals in one window (very useful in ROS 2).

Launch Terminator

Open it from the application menu or type:

```
terminator
```

Essential shortcuts

- Split vertically: `Ctrl+Shift+E`
- Split horizontally: `Ctrl+Shift+O`
- Close current terminal: `Ctrl+Shift+W`

2 Part 2 — Where am I? (10 min)

`pwd` — print working directory

```
pwd
```

`ls` — list files

```
ls          # list files and folders in the current directory
ls -l       # long format: permissions, owner, size, date
ls -la      # long format + hidden files (starting with .)
```

`cd` — change directory

```
cd          # home directory
cd /         # root directory
cd ..        # parent directory
cd -         # previous directory
```

Very important: Press `Tab` to autocomplete paths.

3 Part 3 — Create a ROS 2 workspace (15 min)

Create folders

Go to the home directory:

```
cd
```

Create the next folder:

```
mkdir -p ros2_ws/src
```

Check structure

```
cd ros2_ws
ls
cd src
pwd
```

Expected result:

- You are inside `~/home/<username>/ros2_ws/src`

4 Part 4 — Create and manipulate files (10 min)

`touch` — create a file

```
touch notes.txt
```

Check the folder content:

```
ls
```

`cp`: create a copy of a file and `mv`: move a file to another

```
cp notes.txt notes_backup.txt
mv notes_backup.txt backup.txt
```

`rm` delete a file

```
rm -i backup.txt
```

Rule: Always use `-i` when deleting files (The system ask about the delete confirmation).

5 Part 5 — Read files and logs (10 min)

`cat` and `less`

Assume the file `notes.txt` contains the following content:

```
# notes.txt     Survival guide for ROS 2 beginners

1) If nothing works:
   - Check the terminal.
   - Read the error.
   - Read it again.
   - THEN panic (optional).

2) Rule of ROS:
   If it worked yesterday, it will not work today.

3) Always remember:
   - One terminal = one command
   - Ctrl + C is your emergency brake
   - Tab is your best friend

4) Common student mistake:
   "ros2 topic echo /cmd_vel"
   (robot moves)
   Student: "WHY IS IT MOVING?!"

5) Debugging checklist:
   - Did you source ROS?
   - Did you source the workspace?
   - Did you spell the topic correctly?
   - Did you forget Tab?

6) Final wisdom:
   ROS does not hate you.
   It just wants attention.

Good luck, and may your nodes never crash
```

Display the entire file at once:

```
cat notes.txt
```

Read the file safely using a scrollable view (recommended for logs):

```
less notes.txt
```

Inside `less`, you can scroll using the arrow keys. Exit `less` with `q`.

`nano` — edit the files using the terminal

```
nano notes.txt
```

6 Part 6 — Commands you will use in ROS 2 (5 min)

Check that ROS 2 is available and see all possible commands:

```
ros2 --help
```

List all currently active ROS 2 topics:

```
ros2 topic list
```

List all running ROS 2 nodes:

```
ros2 node list
```

Stop any running command or node in a terminal:

```
Ctrl + C
```

Essential command summary (ROS-oriented)

- `pwd` — where am I
- `ls`, `ls -la` — list files
- `cd` — navigate directories
- `mkdir -p` — create workspace folders
- `touch` — create files
- `cp`, `mv` — copy / move
- `rm -i` — delete safely
- `cat`, `less`, `nano`
- `Ctrl+C` — stop ROS nodes
- `Tab` — autocomplete (VERY IMPORTANT)

End of TP1

You are now ready to:

- Navigate comfortably in Ubuntu
- Use Terminator efficiently
- Create and manage a ROS 2 workspace

Next session: ROS 2 concepts — nodes, topics, and launch files.