**ROS2 Basics CLI Command Cheat Sheet**

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| **Category** | **Command** | **Description** | **MentorPi Example** |
| **📡 Topics** | ros2 topic list | List all active topics | ros2 topic list |
|  | ros2 topic info <topic> | Show info about a topic | ros2 topic info /ros\_robot\_controller/set\_rgb |
|  | ros2 topic echo <topic> | Display messages on a topic | ros2 topic echo /ros\_robot\_controller/battery |
|  | ros2 topic echo <topic> -n 1 | Echo one message and exit | ros2 topic echo /imu -n 1 |
|  | ros2 topic echo <topic> --field <field> | Echo specific field only | ros2 topic echo /imu --field angular\_velocity.z |
|  | ros2 topic pub <topic> <msg\_type> "<data>" | Publish a message | ros2 topic pub /ros\_robot\_controller/set\_rgb ros\_robot\_controller\_msgs/msg/RGBStates "{states: [{index: 1, red: 255, green: 0, blue: 0}]}" |
|  | ros2 topic hz <topic> | Show publish rate | ros2 topic hz /imu |
|  | ros2 topic bw <topic> | Show bandwidth usage | ros2 topic bw /odom |
| **🧠 Nodes** | ros2 node list | List all nodes | ros2 node list |
|  | ros2 node info <node> | Show topics/services for a node | ros2 node info /ros\_robot\_controller |
| **📦 Messages & Interfaces** | ros2 interface show <pkg>/msg/<Message> | Show message structure | ros2 interface show ros\_robot\_controller\_msgs/msg/MotorsState |
| **🧪 Parameters** | ros2 param list | List parameters for all nodes | ros2 param list |
|  | ros2 param get <node> <param> | Get a parameter value | ros2 param get /ros\_robot\_controller use\_sim\_time |
|  | ros2 param set <node> <param> <value> | Set a parameter | ros2 param set /teleop\_turtle scale\_angular 2.0 |
| **📋 Services** | ros2 service list | List available services | ros2 service list |
|  | ros2 service type <service> | Show service type | ros2 service type /clear |
|  | ros2 interface show <srv\_type> | Show service structure | ros2 interface show std\_srvs/srv/Empty |
|  | ros2 service call <service> <srv\_type> "<args>" | Call a service | ros2 service call /clear std\_srvs/srv/Empty "{}" |
| **🚀 Launching** | ros2 launch <pkg> <file>.launch.py | Launch nodes | ros2 launch controller controller.launch.py |
| **🧮 Counting** | ros2 topic list | wc -l | Count active topics | ros2 topic list | wc -l |
|  | ros2 node list | wc -l | Count active nodes | ros2 node list | wc -l |