

```

1 # Robot, sensor, and I/O device
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15 # limitations under the License.
16
17 #!/usr/bin/env python
18
19 from robot_2d import Robot2D
20 from sensor import Sensor
21
22 class ServiceNode(Robot2D):
23     def __init__(self, args):
24         super().__init__(args)
25
26         # Enable 3 sensors
27         self.service_node_wel_timeout = 10
28
29         # Sensor creation
30         self.sensor_factory = self.create_publisher(0.001, self.service_node_wel_timeout,
31                                                    self.sensor_callback)
32
33         self.right_sensor = self.robot.getDistanceSensor('to right')
34         self.right_sensor.enable(self.service_node_wel_timeout)
35         self.sensorPublisher_right = self.create_publisher(0.001, 'right_2d', 1)
36
37         self.mid_sensor = self.robot.getDistanceSensor('to mid')
38         self.mid_sensor.enable(self.service_node_wel_timeout)
39         self.sensorPublisher_mid = self.create_publisher(0.001, 'mid_3d', 1)
40
41         self.left_sensor = self.robot.getDistanceSensor('to left')
42         self.left_sensor.enable(self.service_node_wel_timeout)
43         self.sensorPublisher_left = self.create_publisher(0.001, 'left_3d', 1)
44
45         self.get_logger().info('Sensor enabled')
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Kemudian terdapat file node master.py yang berfungsi untuk menguji data yang telah didapatkan dari slave.py dengan cara kita mengatur direction robot kita sendiri sehingga menghasilkan data output.

```

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13 # limitations under the License.
14
15 import rclpy
16 from rclpy.node import Node
17 from geometry_msgs.msg import Twist
18
19 class LineFollower(Node):
20     def __init__(self):
21         super().__init__("line_follower_cndvel")
22         # Subscribe IR sensors
23         self.subs_right_ir = self.create_subscription(Float64, "right_IR", self.rightIR_cb, 1)
24         self.subs_left_ir = self.create_subscription(Float64, "left_IR", self.leftIR_cb, 1)
25         self.subs_mid_ir = self.create_subscription(Float64, "mid_IR", self.midIR_cb, 1)
26         # Publish cmd_vel
27         self.pubs_cmdvel = self.create_publisher(Twist, "cmd_vel", 1)
28
29         # vehicle parameters
30         self.speed = 0.2
31         self.angle_correction = 0.01
32
33         # Initialize parameters
34         self.GS_LEFT, self.GS_MD, self.GS_LEFT = 0, 0, 0
35         self.DeltaS = 0
36         self.cmd = Twist()
37         self.stop = False
38         self.count = 0
39         self.count_threshold = 10
40
41     def lineFollowingModule(self):
42         # Call back to update sensor reading variables
43         def rightIR_cb(self, msg):
44             self.GS_RIGHT = msg.data
45         def leftIR_cb(self, msg):
46             self.GS_LEFT = msg.data
47         def midIR_cb(self, msg):
48             self.GS_MD = msg.data
49
50     def main(self):
51         self.lineFollowingModule()
52         rclpy.spin(self)
53
54 if __name__ == '__main__':
55     import sys
56     sys.argv.remove('--ros-args')
57     master = LineFollower(sys.argv[0])
58     master.main()
59 
```

Setelah mendapatkan dari data-data diatas kita kembali ke file node line_following_launch.py yang berguna untuk menyimpan packages directory yang telah kita buat di langkah-langkah sebelumnya. Kemudian kita melakukan integrasi antara file line following ini dengan setup.py

```

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14
15 import os
16 from launch.actions import IncludeLaunchDescription
17 from launch.actions import IncludeLaunchDescription
18 from launch.launch_description_sources import PythonLaunchDescriptionSource
19 from launch import LaunchDescription
20 from ament_index_python.packages import get_package_share_directory
21 from launch_ros.actions import Node
22
23 def generate_launch_description():
24     package_dir = get_package_share_directory('webots_ros2_tutorials')
25     core_dir = get_package_share_directory('webots_ros2_core')
26     webots = IncludeLaunchDescription(
27         PythonLaunchDescriptionSource(
28             os.path.join(core_dir, 'launch', 'robot_launch.py')
29         ),
30         launch_arguments=[
31             ('package', 'webots_ros2_tutorials'),
32             ('executable', 'enable_robot'),
33             ('world', PathJoinSubstitution([package_dir, 'worlds', 'Custom_line_follower.world'])),
34         ],
35     )
36
37     line_follower = Node(
38         package='webots_ros2_tutorials',
39         executable='line_follower',
40         name='master_node'
41     )
42
43     return LaunchDescription([
44         webots,
45         line_follower
46     ])
47 
```

Terakhir kita melakukan demo terhadap code line following diatas pada webots

