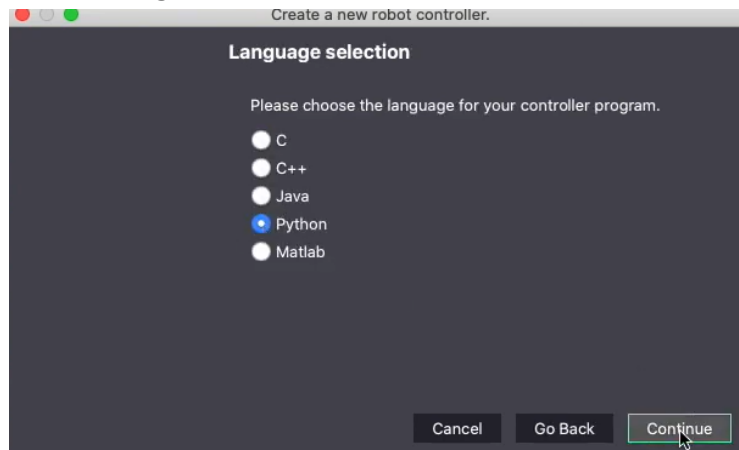


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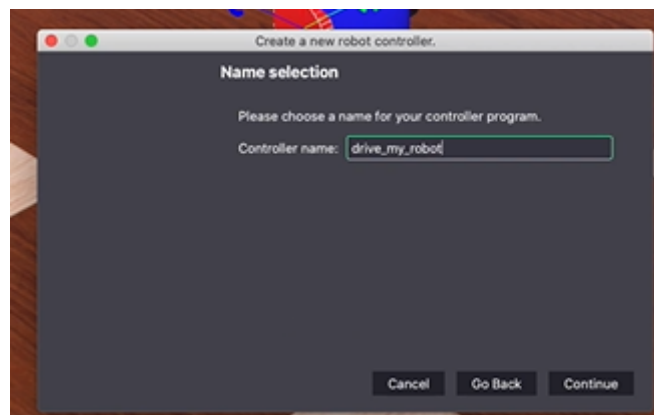
Controller Code to Drive a Differential Drive Robot

Step 1: Tekan “Wizards” dan pilih “New Robot Controller”

Step 2: Pilih bahasa pemrograman



Step 3: Masukkan nama controller



Step 4: Selanjutnya akan muncul code editor pada sebelah kanan

```
1 """drive_my_robot controller."""
2
3 # You may need to import some classes of the controller
4 # from controller import Robot, Motor, DistanceSensor
5 from controller import Robot
6
7 # create the Robot instance.
8 robot = Robot()
9
10 # get the time step of the current world.
11 timestep = int(robot.getBasicTimeStep())
12
13 # You should insert a getDevice-like function in order to
14 # instance of a device of the robot. Something like:
15 # motor = robot.getMotor('motorname')
16 # ds = robot.getDistanceSensor('dsname')
17 # ds.enable(timestep)
18
19 # Main loop:
20 # - perform simulation steps until Webots is stopping the
21 while robot.step(timestep) != -1:
22     # Read the sensors:
23     # Enter here functions to read sensor data, like:
24     # val = ds.getValue()
25
26     # Process sensor data here.
27
28     # Enter here functions to send actuator commands, like:
29     # motor.setPosition(10.0)
30     pass
31
32 # Enter here exit/cleanup code
```

Step 5: Lalu masukkan kode dibawah untuk membuat controller webots dalam bahasa yang sudah dipilih

```
if __name__ == "__main__":  
  
    # create the Robot instance.  
    robot = Robot()  
  
    # get the time step of the current world.  
    timestep = 64  
    max_speed = 6.28
```

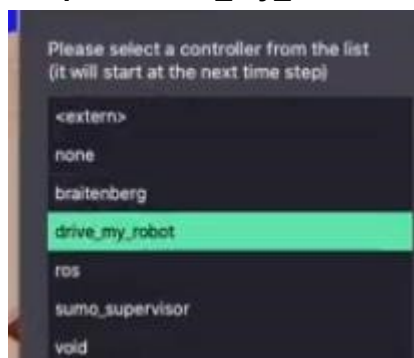
Step 6: Kemudian masukkan kodingan di bawah untuk objek pada motor sesuai dengan nama yang sudah dibuat

```
# Created motor instances  
left_motor = robot.getMotor('motor_1')  
right_motor = robot.getMotor('motor_2')  
  
left_motor.setPosition(float('inf'))  
left_motor.setVelocity(0.0)  
  
right_motor.setPosition(float('inf'))  
right_motor.setVelocity(0.0)
```

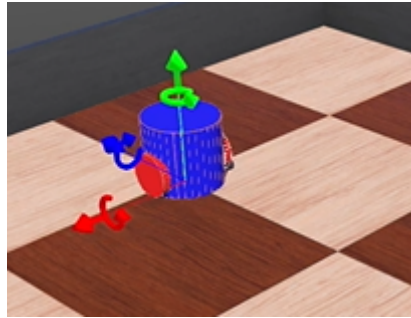
Step 7: Selanjutnya kita akan membuat loop dengan memasukkan codingan dibawah

```
# Main loop:  
# - perform simulation steps until Webots i  
while robot.step(timestep) != -1:  
  
    left_speed = 0.5 * max_speed  
    right_speed = 0.5 * max_speed  
  
    left_motor.setVelocity(left_speed)  
    right_motor.setVelocity(right_speed)
```

Step 8: Selanjutnya pada bagian “physics” pilih “controller ‘void’” dan tekan “select” lalu pilih “drive_my_Robot”



Step 9: Selanjutnya lakukan run dan amati pergerakan robot



Step 10: Selanjutnya kita akan mencoba membuat robot dapat berbelok dengan mengatur speed pada roda bagian kanan/kiri seperti kodingan dibawah

```
left_speed = 0.5 * max_speed
right_speed = 0.25 * max_speed
```

Step 11: Selanjutnya kita akan mencoba agar robot dapat berjalan dengan mundur sesuai dengan kodingan dibawah

```
num_side = 4
length_side = 0.25

wheel_radius = 0.025
linear_velocity = wheel_radius * max_speed

duration_side = length_side/linear_velocity
start_time = robot.getTime()
```

```
angle_of_rotation = 6.28/num_side
distance_between_wheels = 0.090
rate_of_rotation = (2 * linear_velocity)/distance_between_wheels
duration_turn = angle_of_rotation/rate_of_rotation
```

```
rot_start_time = start_time + duration_side
rot_end_time = rot_start_time
```

Step 12: Lalu tambahkan kodingan pada bagian ini

```
right_speed = max_speed

if rot_start_time < current_time < rot_end_time:
    left_speed = -max_speed
    right_speed = max_speed

elif current_time > rot_end_time:
    rot_start_time = current_time + duration_side
    rot_end_time = rot_start_time + duration_turn
```

Step 13: Hasil program di run dan amati apa yang terjadi