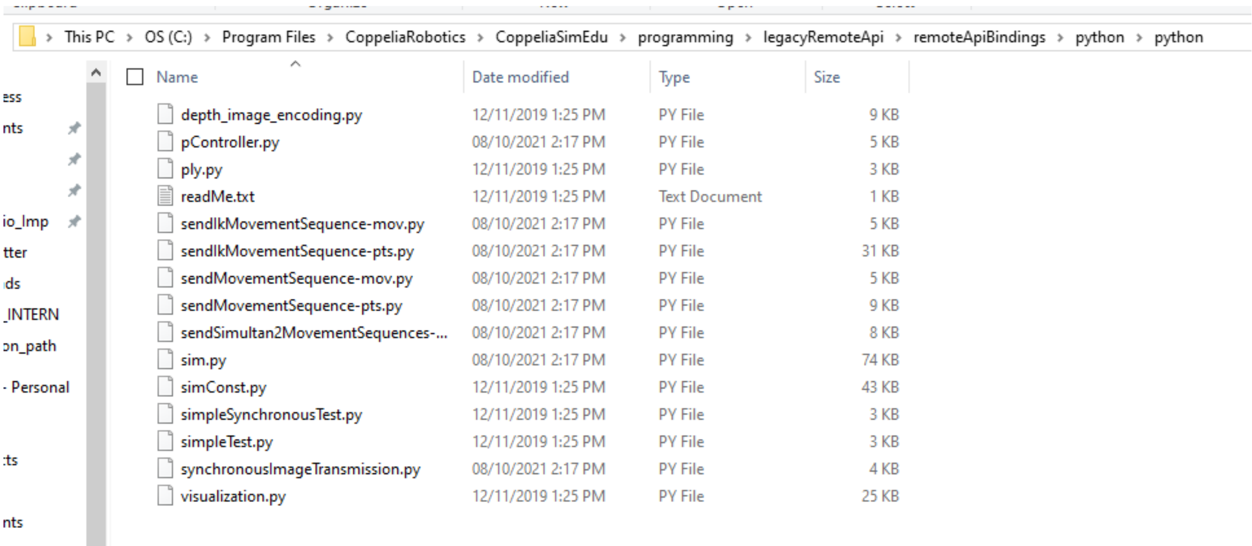
1.Make Folder for the Project e.g. Pioneer_Control

2.Copy all files from this folder to Pioneer_Control



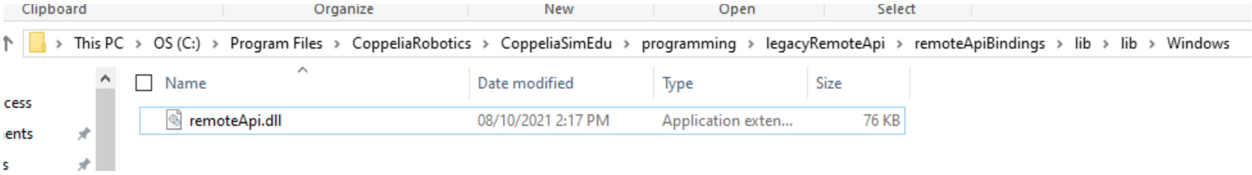
This PC › OS (C:) › Program Files › CoppeliaRobotics › CoppeliaSimEdu › programming › legacyRemoteApi › remoteApiBindings › python › python

Name	Date modified	Type	Size
depth_image_encoding.py	12/11/2019 1:25 PM	PY File	9 KB
pController.py	08/10/2021 2:17 PM	PY File	5 KB
ply.py	12/11/2019 1:25 PM	PY File	3 KB
readMe.txt	12/11/2019 1:25 PM	Text Document	1 KB
sendIkMovementSequence-mov.py	08/10/2021 2:17 PM	PY File	5 KB
sendIkMovementSequence-pts.py	08/10/2021 2:17 PM	PY File	31 KB
sendMovementSequence-mov.py	08/10/2021 2:17 PM	PY File	5 KB
sendMovementSequence-pts.py	08/10/2021 2:17 PM	PY File	9 KB
sendSimultan2MovementSequences-...	08/10/2021 2:17 PM	PY File	8 KB
sim.py	08/10/2021 2:17 PM	PY File	74 KB
simConst.py	12/11/2019 1:25 PM	PY File	43 KB
simpleSynchronousTest.py	12/11/2019 1:25 PM	PY File	3 KB
simpleTest.py	12/11/2019 1:25 PM	PY File	3 KB
synchronousImageTransmission.py	08/10/2021 2:17 PM	PY File	4 KB
visualization.py	12/11/2019 1:25 PM	PY File	25 KB

Path for files-

C:\Program Files\CoppeliaRobotics\CoppeliaSimEdu\programming\legacyRemoteApi\remoteApiBindings\python\python

3.Copy this file into Pioneer_Control (It has files for MacOs and Ubuntu) select according to OS.



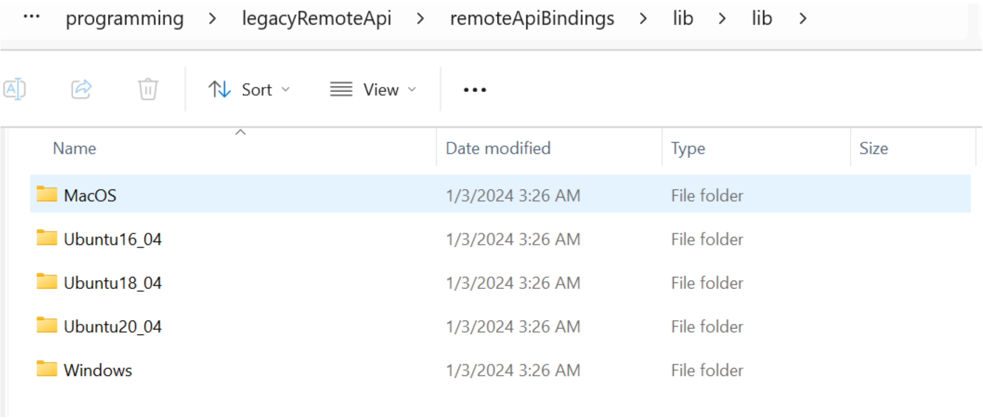
This PC › OS (C:) › Program Files › CoppeliaRobotics › CoppeliaSimEdu › programming › legacyRemoteApi › remoteApiBindings › lib › lib › Windows

Name	Date modified	Type	Size
remoteApi.dll	08/10/2021 2:17 PM	Application exten...	76 KB

Path for file-

Windows

C:\Program Files\CoppeliaRobotics\CoppeliaSimEdu\programming\legacyRemoteApi\remoteApiBindings\lib\lib\Windows

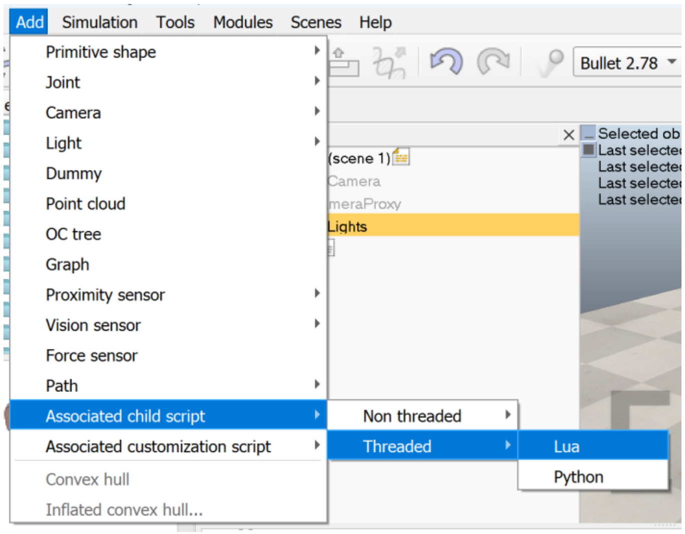


··· programming > legacyRemoteApi > remoteApiBindings > lib > lib >

Name	Date modified	Type	Size
MacOS	1/3/2024 3:26 AM	File folder	
Ubuntu16_04	1/3/2024 3:26 AM	File folder	
Ubuntu18_04	1/3/2024 3:26 AM	File folder	
Ubuntu20_04	1/3/2024 3:26 AM	File folder	
Windows	1/3/2024 3:26 AM	File folder	

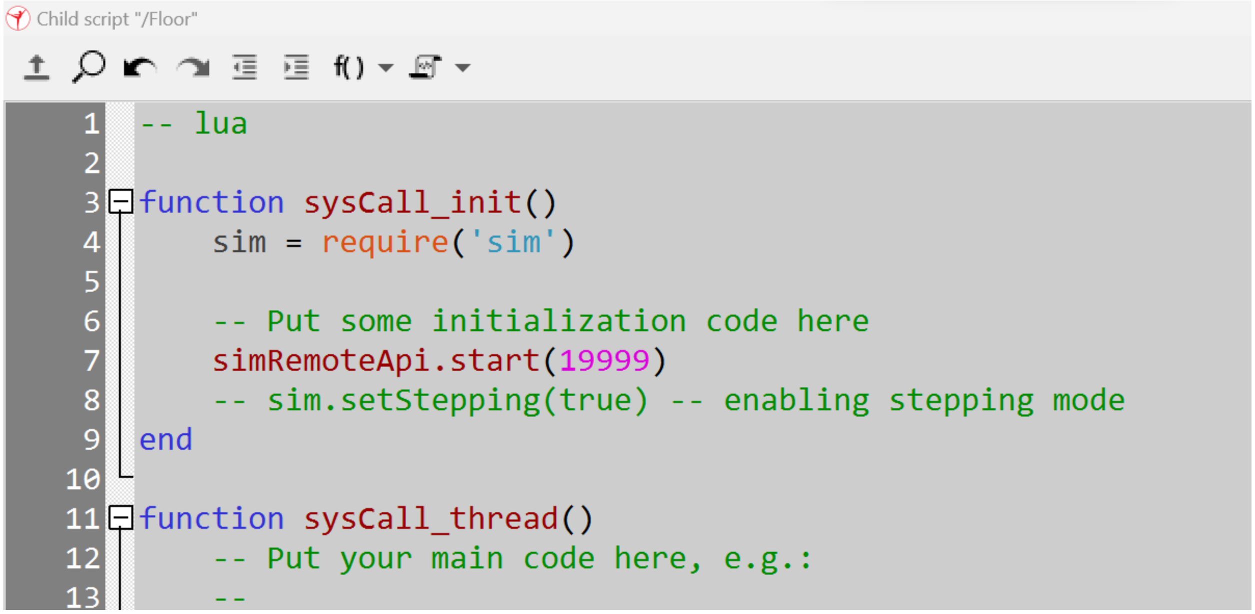
4.Open CoppeliaSim. Save First Scene eg. First_test in the folder Pioneer_Control.

5. Add child lua script to the any object in the scene. Eg. To the Floor.



6.Open that script and paste following for the connection.

simRemoteApi.start(19999)

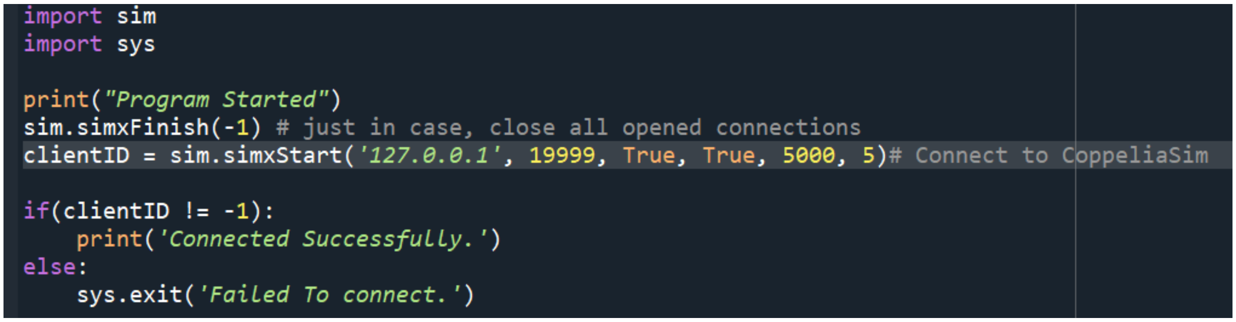


```lua
-- lua

function sysCall_init()
    sim = require('sim')

    -- Put some initialization code here
    simRemoteApi.start(19999)
    -- sim.setStepping(true) -- enabling stepping mode
end

function sysCall_thread()
    -- Put your main code here, e.g.:
    --
```

7. Write Code in python (eg. First_test_code) and save it in the same folder (eg. Pioneer_Control).

Following code provides connection between python and CoppeliaSim

sim.simxStart('127.0.0.1', 19999, True, True, 5000, 5)



```python
import sim
import sys

print("Program Started")
sim.simxFinish(-1) # just in case, close all opened connections
clientID = sim.simxStart('127.0.0.1', 19999, True, True, 5000, 5)# Connect to CoppeliaSim

if(clientID != -1):
    print('Connected Successfully.')
else:
    sys.exit('Failed To connect.')
```

Complete code-

import sim

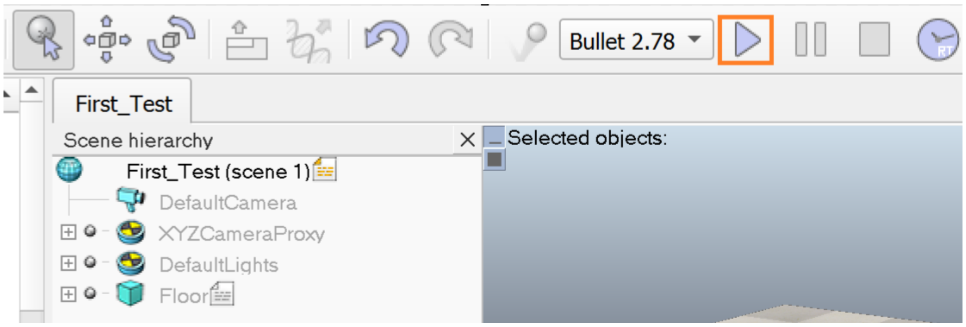
import sys

print("Program Started")

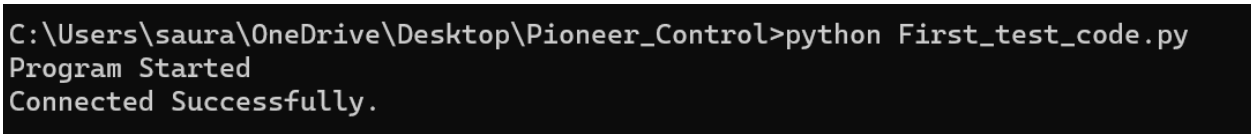
sim.simxFinish(-1)

```
clientID = sim.simxStart('127.0.0.1', 19999, True, True, 5000, 5)

if(clientID != -1):

    print('Connected Successfully.')

else:

    sys.exit('Failed To connect.')
```

8.Run the Simulation in the CoppeliaSim



9.Run the Python script

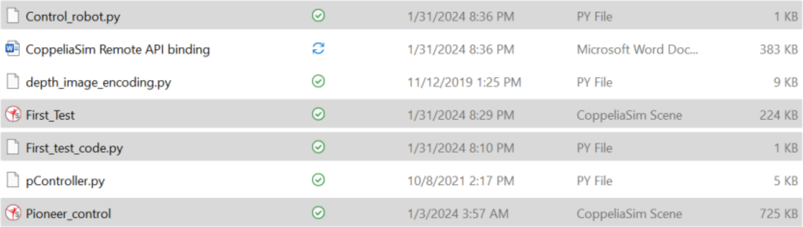


```
C:\Users\saura\OneDrive\Desktop\Pioneer_Control>python First_test_code.py
Program Started
Connected Successfully.
```

Example to Run basic code and control Pioneer 3DX in the CoppeliaSim using python.

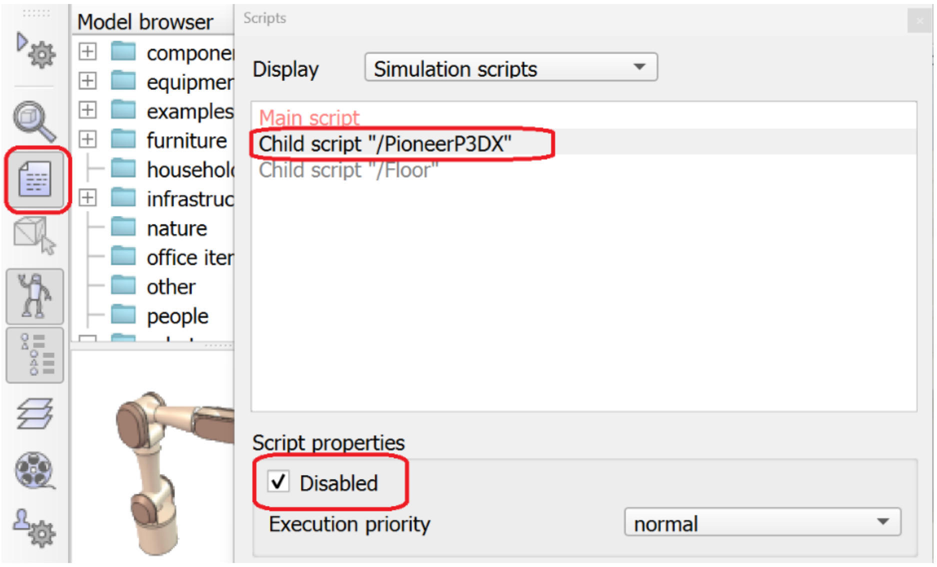
10.Example script to run the Pioneer robot.

I have added scene “Pioneer_control” and the script “Control_robot.py” for your reference.



Control_robot.py	✓	1/31/2024 8:36 PM	PY File	1 KB
CoppeliaSim Remote API binding	⟳	1/31/2024 8:36 PM	Microsoft Word Doc...	383 KB
depth_image_encoding.py	✓	11/12/2019 1:25 PM	PY File	9 KB
First_Test	✓	1/31/2024 8:29 PM	CoppeliaSim Scene	224 KB
First_test_code.py	✓	1/31/2024 8:10 PM	PY File	1 KB
pController.py	✓	10/8/2021 2:17 PM	PY File	5 KB
Pioneer_control	✓	1/3/2024 3:57 AM	CoppeliaSim Scene	725 KB

Before running this script Disable the original Pioneer script in the CoppeliaSim



Scripts

Display: Simulation scripts

Main script

Child script "/PioneerP3DX"

Child script "/Floor"

Script properties

☑ Disabled

Execution priority: normal

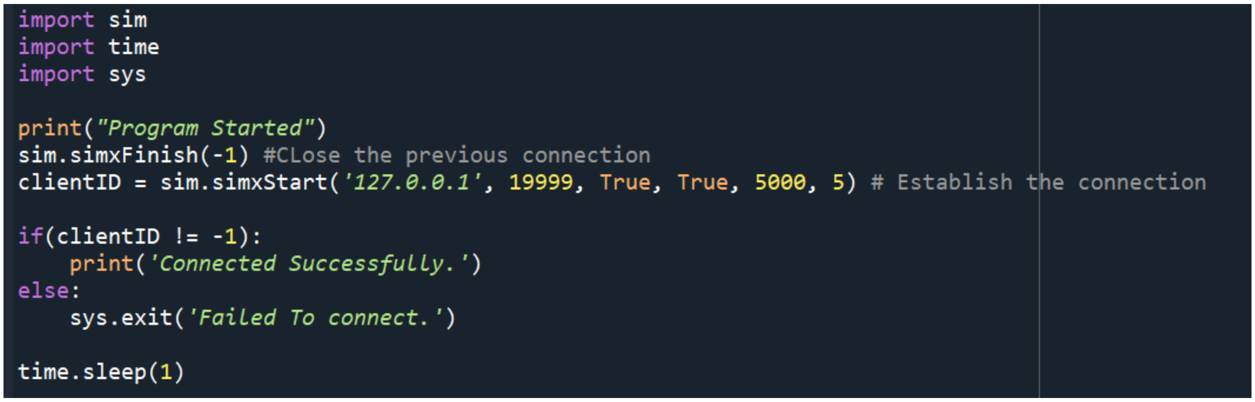
Code-

```
import sim
import time
import sys


print("Program Started")
sim.simxFinish(-1) #CLose the previous connection
```

```
clientID = sim.simxStart('127.0.0.1', 19999, True, True, 5000, 5) # Establish the connection

if(clientID != -1):
   print('Connected Successfully.')
else:
   sys.exit('Failed To connect.')

time.sleep(1)


#Get the object handle for the motors
error_code, left_motor_handle = sim.simxGetObjectHandle(clientID, '/PioneerP3DX/leftMotor', sim.simx_opmode_oneshot_wait)
error_code, right_motor_handle = sim.simxGetObjectHandle(clientID, '/PioneerP3DX/rightMotor', sim.simx_opmode_oneshot_wait)


#Give the commands to the robot about velocity
error_code = sim.simxSetJointTargetVelocity(clientID, left_motor_handle, 0.4, sim.simx_opmode_oneshot_wait)
error_code = sim.simxSetJointTargetVelocity(clientID, right_motor_handle, 1, sim.simx_opmode_oneshot_wait)
```

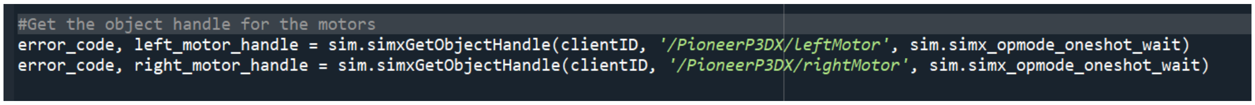
Script explanation

Import Sim

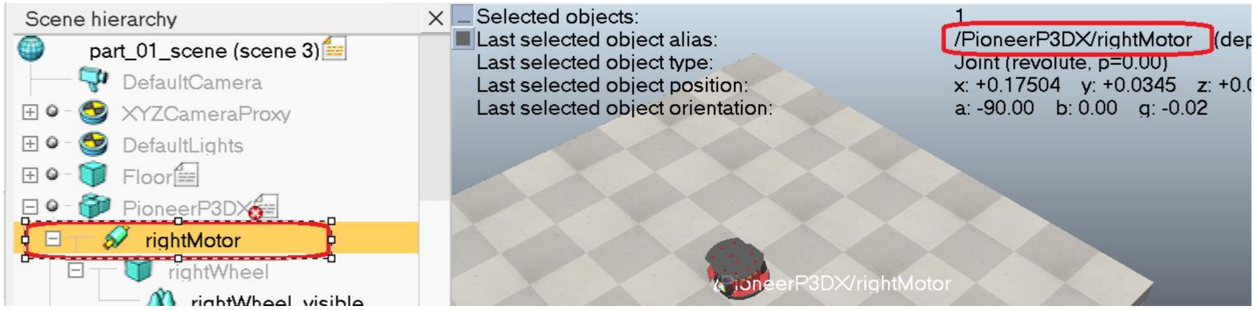


```
import sim
import time
import sys

print("Program Started")
sim.simxFinish(-1) #CLose the previous connection
clientID = sim.simxStart('127.0.0.1', 19999, True, True, 5000, 5) # Establish the connection

if(clientID != -1):
    print('Connected Successfully.')
else:
    sys.exit('Failed To connect.')

time.sleep(1)
```

Get object handle eg. right motor

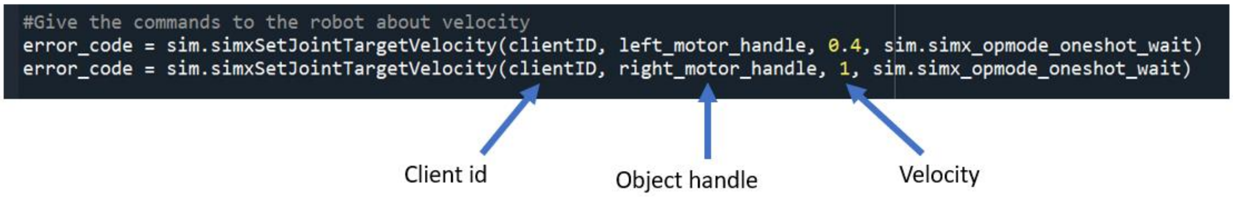


```
#Get the object handle for the motors
error_code, left_motor_handle = sim.simxGetObjectHandle(clientID, '/PioneerP3DX/leftMotor', sim.simx_opmode_oneshot_wait)
error_code, right_motor_handle = sim.simxGetObjectHandle(clientID, '/PioneerP3DX/rightMotor', sim.simx_opmode_oneshot_wait)
```



Selected objects: 1
Last selected object alias: /PioneerP3DX/rightMotor (dep
Last selected object type: Joint (revolute, p=0.00)
Last selected object position: x: +0.17504 y: +0.0345 z: +0.0
Last selected object orientation: a: -90.00 b: 0.00 g: -0.02

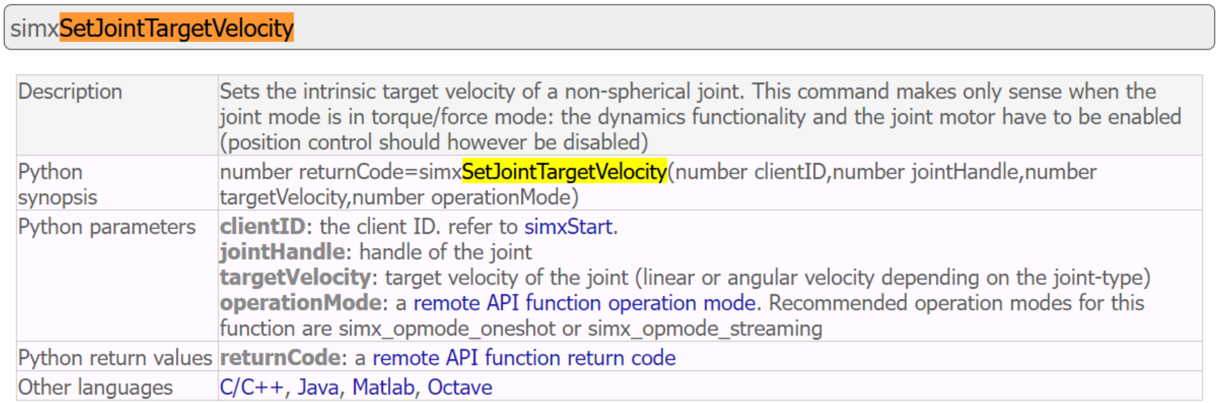
Set velocity



```
#Give the commands to the robot about velocity
error_code = sim.simxSetJointTargetVelocity(clientID, left_motor_handle, 0.4, sim.simx_opmode_oneshot_wait)
error_code = sim.simxSetJointTargetVelocity(clientID, right_motor_handle, 1, sim.simx_opmode_oneshot_wait)
```

Documentation Link

https://manual.coppeliarobotics.com/en/remoteApiFunctionsPython.htm



simxSetJointTargetVelocity

Description	Sets the intrinsic target velocity of a non-spherical joint. This command makes only sense when the joint mode is in torque/force mode: the dynamics functionality and the joint motor have to be enabled (position control should however be disabled)
Python synopsis	number returnCode=simxSetJointTargetVelocity(number clientID,number jointHandle,number targetVelocity,number operationMode)
Python parameters	**clientID**: the client ID. refer to simxStart. **jointHandle**: handle of the joint **targetVelocity**: target velocity of the joint (linear or angular velocity depending on the joint-type) **operationMode**: a remote API function operation mode. Recommended operation modes for this function are simx_opmode_oneshot or simx_opmode_streaming
Python return values	**returnCode**: a remote API function return code
Other languages	C/C++, Java, Matlab, Octave