

تمرین ۲ اصول علم ربات
سارا قوام پور
۹۸۱۲۷۶۲۷۸۱

تمرین ۱
a

برای پیدا کردن rosdep key های لازم برای پکیج های که به عنوان dependency باید در فایل package.xml قرار بگیرند. باید با سرچ کردن اسم آن پکیج در فایل های python.yaml, base.yaml, python.yaml, distribution.yaml, کلید ها را یافت. فایل python.yaml حاوی pip python dependencies و فایل base.yaml حاوی apt system dependencies می باشد.

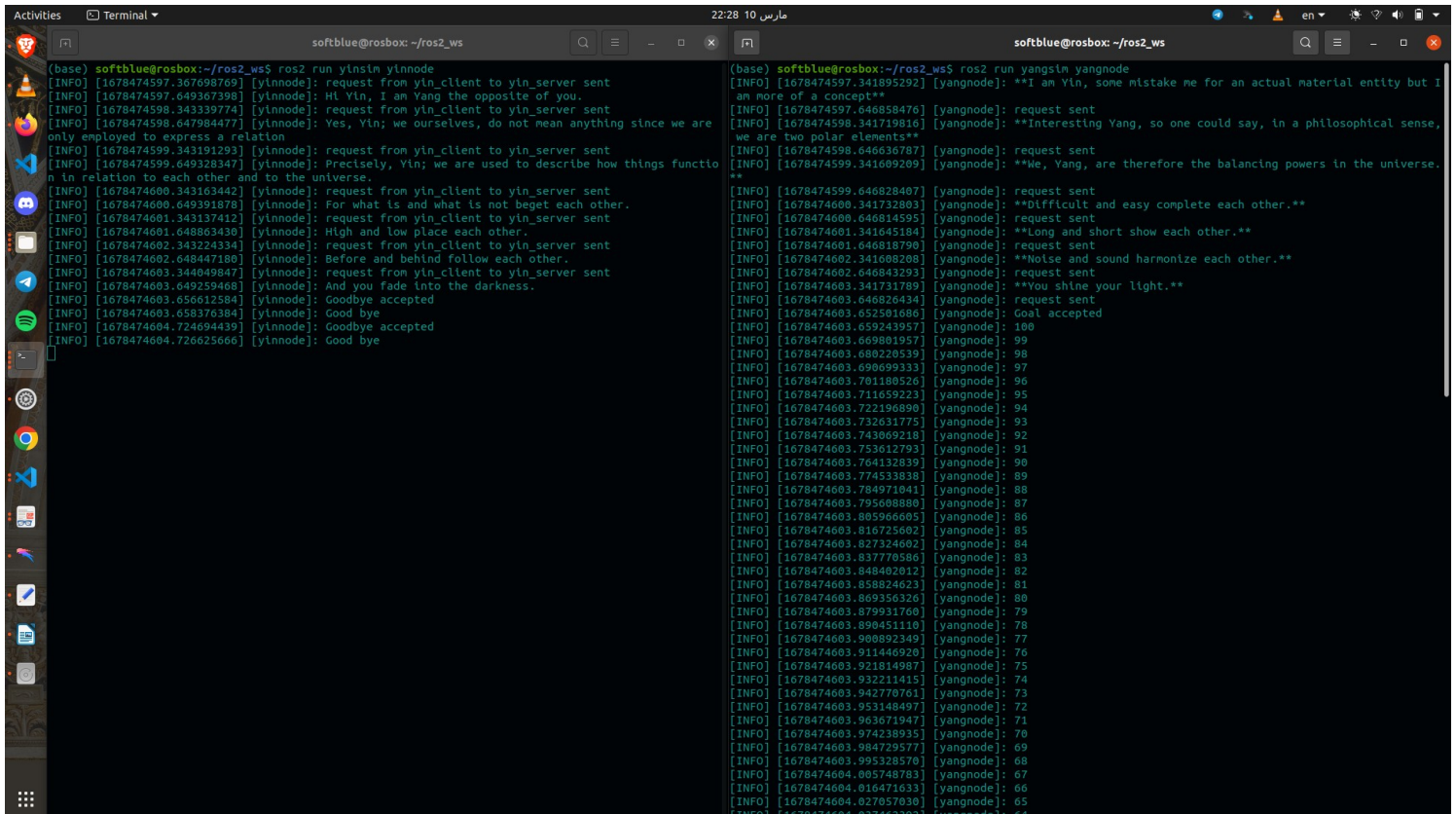
b

slam_toolbox از پکیج های خود راس است. در لینک گیتاب ros/rosdistro/humble و در فایل distribution.yaml و از خط ۶۲۶۵ شروع میشود. Ffmpeg در ros/rosdistro/rosdep/base.yaml و از خط ۹۹۶ وجود دارد و عضو دسته apt system dependencies می باشد. چگونه rosdep این دو را نصب میکند؟ پس از پیدا کردن این کلید ها باید آن ها را در package.xml قرار داد چون rosdep این فایل را به دنبال پیدا کردن کلید های لازم چک میکند سپس این کلید ها را با central index که rosdistro می باشد مقایسه میکند تا بهترین پکیج راس را بیابد.

c

IDL یک اینترفیس مستقل از زبان ایجاد میکند که باعث می شود ارتباطات در راس بتواند بین کامپوننت هایی که به زبان ها مختلفی نوشته شده اند صورت بگیرد و امکان استفاده از پکیج ها و نود های با زبان متفاوت را ایجاد میکند و برای هر زبان یک پارسر دارد که دیتا هارا به دیتاتایپ های هر زبان تبدیل میکند.

تمرین ۲



```
(base) softblue@rosbox:~/ros2_ws$ ros2 run yin yinnode
[INFO] [1678474597.367698769] [yinnode]: request from yin_client to yin_server sent
[INFO] [1678474597.649367398] [yinnode]: Hi Yin, I am Yang the opposite of you.
[INFO] [1678474598.343339774] [yinnode]: request from yin_client to yin_server sent
[INFO] [1678474598.647984477] [yinnode]: Yes, Yin; we ourselves, do not mean anything since we are only employed to express a relation
[INFO] [1678474599.343191293] [yinnode]: request from yin_client to yin_server sent
[INFO] [1678474599.649328347] [yinnode]: Precisely, Yin; we are used to describe how things function in relation to each other and to the universe.
[INFO] [1678474600.343163442] [yinnode]: request from yin_client to yin_server sent
[INFO] [1678474600.649391878] [yinnode]: For what is and what is not beget each other.
[INFO] [1678474601.343137412] [yinnode]: request from yin_client to yin_server sent
[INFO] [1678474601.648863436] [yinnode]: High and low place each other.
[INFO] [1678474602.343224334] [yinnode]: request from yin_client to yin_server sent
[INFO] [1678474602.648447180] [yinnode]: Before and behind follow each other.
[INFO] [1678474603.344049847] [yinnode]: request from yin_client to yin_server sent
[INFO] [1678474603.649259468] [yinnode]: And you fade into the darkness.
[INFO] [1678474603.656612584] [yinnode]: Goodbye accepted
[INFO] [1678474603.658376384] [yinnode]: good bye
[INFO] [1678474604.724694439] [yinnode]: goodbye accepted
[INFO] [1678474604.726625666] [yinnode]: Good bye

(base) softblue@rosbox:~/ros2_ws$ ros2 run yang yangnode
[INFO] [1678474597.341895292] [yangnode]: **I am Yin, some mistake me for an actual material entity but I am more of a concept**
[INFO] [1678474597.646858476] [yangnode]: request sent
[INFO] [1678474598.341719816] [yangnode]: **Interesting Yang, so one could say, in a philosophical sense, we are two polar elements**
[INFO] [1678474598.646636787] [yangnode]: request sent
[INFO] [1678474599.341609209] [yangnode]: **We, Yang, are therefore the balancing powers in the universe. **
[INFO] [1678474599.646828407] [yangnode]: request sent
[INFO] [1678474600.341732803] [yangnode]: **Difficult and easy complete each other.**
[INFO] [1678474600.646814595] [yangnode]: request sent
[INFO] [1678474601.341645184] [yangnode]: **Long and short show each other.**
[INFO] [1678474601.646818790] [yangnode]: request sent
[INFO] [1678474602.341608208] [yangnode]: **Noise and sound harmonize each other.**
[INFO] [1678474602.646843293] [yangnode]: request sent
[INFO] [1678474603.341731789] [yangnode]: **You shine your light.**
[INFO] [1678474603.646826434] [yangnode]: request sent
[INFO] [1678474603.652581866] [yangnode]: Goal accepted
[INFO] [1678474603.659243957] [yangnode]: 100
[INFO] [1678474603.669801957] [yangnode]: 99
[INFO] [1678474603.680220539] [yangnode]: 98
[INFO] [1678474603.690699333] [yangnode]: 97
[INFO] [1678474603.701180526] [yangnode]: 96
[INFO] [1678474603.711659223] [yangnode]: 95
[INFO] [1678474603.722196890] [yangnode]: 94
[INFO] [1678474603.732631775] [yangnode]: 93
[INFO] [1678474603.743069218] [yangnode]: 92
[INFO] [1678474603.753612793] [yangnode]: 91
[INFO] [1678474603.764132839] [yangnode]: 90
[INFO] [1678474603.774533838] [yangnode]: 89
[INFO] [1678474603.784971041] [yangnode]: 88
[INFO] [1678474603.795608880] [yangnode]: 87
[INFO] [1678474603.805966095] [yangnode]: 86
[INFO] [1678474603.816725602] [yangnode]: 85
[INFO] [1678474603.827324602] [yangnode]: 84
[INFO] [1678474603.837770586] [yangnode]: 83
[INFO] [1678474603.848402012] [yangnode]: 82
[INFO] [1678474603.858824623] [yangnode]: 81
[INFO] [1678474603.869356326] [yangnode]: 80
[INFO] [1678474603.879931760] [yangnode]: 79
[INFO] [1678474603.890451110] [yangnode]: 78
[INFO] [1678474603.900892349] [yangnode]: 77
[INFO] [1678474603.911446920] [yangnode]: 76
[INFO] [1678474603.921814987] [yangnode]: 75
[INFO] [1678474603.932211415] [yangnode]: 74
[INFO] [1678474603.942770761] [yangnode]: 73
[INFO] [1678474603.953148497] [yangnode]: 72
[INFO] [1678474603.963671047] [yangnode]: 71
[INFO] [1678474603.974238935] [yangnode]: 70
[INFO] [1678474603.984729577] [yangnode]: 69
[INFO] [1678474603.995328570] [yangnode]: 68
[INFO] [1678474604.005748783] [yangnode]: 67
[INFO] [1678474604.016471633] [yangnode]: 66
[INFO] [1678474604.027057030] [yangnode]: 65
[INFO] [1678474604.037467192] [yangnode]: 64
```

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Activities Terminal 22:28 10 مارس
softblue@rosbox: ~/ros2_ws
(base) softblue@rosbox:~/ros2_ws$ ros2 run yinyns yinnode
[INFO] [1678474597.367698769] [yinnode]: request from yin_client to yin_server sent
[INFO] [1678474597.649367398] [yinnode]: Hi Yin, I am Yang the opposite of you.
[INFO] [1678474598.343339774] [yinnode]: request from yin_client to yin_server sent
[INFO] [1678474598.647984477] [yinnode]: Yes, Yin; we ourselves, do not mean anything since we are
only employed to express a relation
[INFO] [1678474599.343191293] [yinnode]: request from yin_client to yin_server sent
[INFO] [1678474599.649328347] [yinnode]: Precisely, Yin; we are used to describe how things function
in relation to each other and to the universe.
[INFO] [1678474600.343163442] [yinnode]: request from yin_client to yin_server sent
[INFO] [1678474600.649391578] [yinnode]: For what is and what is not beget each other.
[INFO] [1678474601.343137412] [yinnode]: request from yin_client to yin_server sent
[INFO] [1678474601.648863430] [yinnode]: High and low place each other.
[INFO] [1678474602.343224334] [yinnode]: request from yin_client to yin_server sent
[INFO] [1678474602.648447180] [yinnode]: Before and behind follow each other.
[INFO] [1678474603.344049847] [yinnode]: request from yin_client to yin_server sent
[INFO] [1678474603.649259468] [yinnode]: And you fade into the darkness.
[INFO] [1678474603.656612584] [yinnode]: Goodbye accepted
[INFO] [1678474603.658376384] [yinnode]: Good bye
[INFO] [1678474604.724694439] [yinnode]: Goodbye accepted
[INFO] [1678474604.726625666] [yinnode]: Good bye

[INFO] [1678474604.174767801] [yangnode]: 51
[INFO] [1678474604.185916960] [yangnode]: 50
[INFO] [1678474604.195288421] [yangnode]: 49
[INFO] [1678474604.205471129] [yangnode]: 48
[INFO] [1678474604.215610536] [yangnode]: 47
[INFO] [1678474604.225905968] [yangnode]: 46
[INFO] [1678474604.236105364] [yangnode]: 45
[INFO] [1678474604.246275585] [yangnode]: 44
[INFO] [1678474604.256503345] [yangnode]: 43
[INFO] [1678474604.266737202] [yangnode]: 42
[INFO] [1678474604.276922181] [yangnode]: 41
[INFO] [1678474604.287165252] [yangnode]: 40
[INFO] [1678474604.297349779] [yangnode]: 39
[INFO] [1678474604.307548603] [yangnode]: 38
[INFO] [1678474604.317774529] [yangnode]: 37
[INFO] [1678474604.328108070] [yangnode]: 36
[INFO] [1678474604.338267454] [yangnode]: 35
[INFO] [1678474604.348456743] [yangnode]: 34
[INFO] [1678474604.358718705] [yangnode]: 33
[INFO] [1678474604.369076806] [yangnode]: 32
[INFO] [1678474604.379653820] [yangnode]: 31
[INFO] [1678474604.389890973] [yangnode]: 30
[INFO] [1678474604.400195852] [yangnode]: 29
[INFO] [1678474604.410551398] [yangnode]: 28
[INFO] [1678474604.421177702] [yangnode]: 27
[INFO] [1678474604.431429211] [yangnode]: 26
[INFO] [1678474604.442069110] [yangnode]: 25
[INFO] [1678474604.452617107] [yangnode]: 24
[INFO] [1678474604.463169428] [yangnode]: 23
[INFO] [1678474604.473700403] [yangnode]: 22
[INFO] [1678474604.484593413] [yangnode]: 21
[INFO] [1678474604.494929445] [yangnode]: 20
[INFO] [1678474604.505528685] [yangnode]: 19
[INFO] [1678474604.515987255] [yangnode]: 18
[INFO] [1678474604.526466027] [yangnode]: 17
[INFO] [1678474604.537205031] [yangnode]: 16
[INFO] [1678474604.547596444] [yangnode]: 15
[INFO] [1678474604.558132328] [yangnode]: 14
[INFO] [1678474604.568900810] [yangnode]: 13
[INFO] [1678474604.579169373] [yangnode]: 12
[INFO] [1678474604.589697753] [yangnode]: 11
[INFO] [1678474604.600494948] [yangnode]: 10
[INFO] [1678474604.610928511] [yangnode]: 9
[INFO] [1678474604.621672931] [yangnode]: 8
[INFO] [1678474604.631991905] [yangnode]: 7
[INFO] [1678474604.642664156] [yangnode]: 6
[INFO] [1678474604.653720859] [yangnode]: 5
[INFO] [1678474604.664114841] [yangnode]: 4
[INFO] [1678474604.675355037] [yangnode]: 3
[INFO] [1678474604.685596831] [yangnode]: 2
[INFO] [1678474604.695964897] [yangnode]: 1
[INFO] [1678474604.706478081] [yangnode]: 0
[INFO] [1678474604.720725636] [yangnode]: Coal accepted
[INFO] [1678474604.722634557] [yangnode]: Result received: farewell
(base) softblue@rosbox:~/ros2_ws$
```

```
softblue@rosbox: ~/ros2_ws
(base) softblue@rosbox:~/ros2_ws$ ros2 topic echo /conversation
data: 'Yin client masage: **Difficult and easy complete each other.**', 43, 3841'
---
data: 'Yang client masage: For what is and what is not beget each other.', 45, 4051'
---
data: 'Yin client masage: **Long and short show each other.**', 35, 3037'
---
data: 'Yang client masage: High and low place each other.', 30, 2699'
---
data: 'Yin client masage: **Noise and sound harmonize each other.**', 41, 3664'
---
data: 'Yang client masage: Before and behind follow each other.', 36, 3332'
---
data: 'Yin client masage: **You shine your light.**', 25, 2161'
---
data: 'Yang client masage: And you fade into the darkness.', 31, 2852'
---
```