pinpong入门之拓展模块

描述：开源硬件的还有很多电子模块，直接用读取或者控制引脚电平的方式是无法使用的，如DH11温湿度传感器，还有各种支持i2C协议的模块。

实现：pinpong库提供了大量的扩展库，支持常见的电子模块，还在不断更新中。可以通过查询pinpong的官方文档获得各种范例代码，也可以通过pinpong库自带的命令行工具来获取。

实验步骤

1.运行pinpong的命令行工具

pinpong提供了一个命令行工具，能够列出所有支持的扩展模块。只要安装过pinpong库，在命令行输入pinpong即可。

In [4]:

```
! pinpong
```

```
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|/_/    /_/_/ /_/_/     \____/_/ /_/\__, /        |
|   v0.3.3   Designed by DFRobot   /____/         |
|_____|
```

[1]环境信息(Environment information)：Python3.8.5 macOS-10.16-x86_64-i386-64bit

[2]文档网址(Document URL)：https://pinpong.readthedocs.io

[3]终端命令(Commands)：
```
   pinpong                 pinpong库的帮助信息
   pinpong libs list       pinpong库列表
   pinpong libs xxx        xxx库的使用方法
```

[4]串口列表(Serial ports list)：
```
   /dev/cu.Bluetooth-Incoming-Port - n/a
   /dev/cu.AirPods-WirelessiAP - n/a
```

2.查看支持的模块列表

按照提示，输入pinpong libs list，即可看到所有的模块列表。

```
! pinpong libs list
```

[-] 库列表(Libs list)：
board
pin
servo
lcd1602_i2c
mlx90614
tcs34725
urm09
dht11
dht22
neopixel
sr04_urm10
rgb1602
tone
softspi
pwm
adc
i2c
ir
ds1307
paj7620u2
bno055
bmp280
pn532
ds18b20
hx711
tds
heartrate
bme280
vl53l0
lis2dh
bmp388
ina219
ccs811
ads1115
huskylens

3.查看dh11模块的使用方法

输入"pinpong libs dht11"，即可查询dh11模块的使用范例。

```
! pinpong libs dht11
```

[-] 导入方法(How to import?)：
from pinpong.board import Board,Pin,DHT11

[-] API列表(API list)
DHT11(board, pin_obj)
  @board   使用Board类构造出来的主板
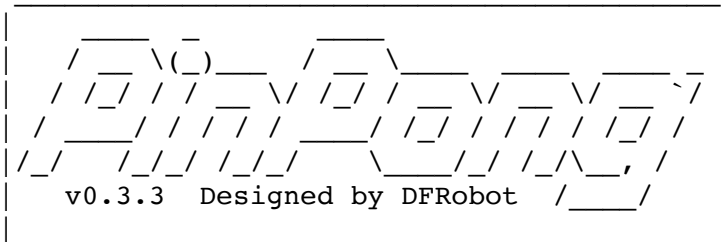 @pin_obj   使用Pin类构造出来的对象，连接DHT11的引脚
temp_c()：获取温度值，单位为摄氏度
humidity()：相对湿度值，范围0-100

4.运行范例代码

导入库，并且初始化板子和引脚，DH11温湿度传感器接在D7。

In [2]:

```python
from pinpong.board import Board,Pin,DHT11
Board("uno").begin()  # 选择板型(uno、leonardo、xugu)和端口号，不输入端口号则进行自动识别
dht11= DHT11(Pin(Pin.D7)) #初始化dht11对象
```

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|/_/    /_/_/ /_/_/     \____/_/ /_/\__, / |
|     v0.3.3  Designed by DFRobot  /____/  |
|_____|

[01] Python3.6.6 Darwin-20.2.0-x86_64-i386-64bit Board：UNO
Automatically selected ->  /dev/cu.usbmodem14101
[10] Opening /dev/cu.usbmodem14101
[15] Close /dev/cu.usbmodem14101
[32] Firmata ID: 2.6
[10] Opening /dev/cu.usbmodem14101...
[20] Waiting 4 seconds(arduino_wait) for Arduino devices to reset...
[22] Arduino compatible device found and connected to /dev/cu.usbmod
em14101
[30] Retrieving Arduino Firmware ID...
[32] Arduino Firmware ID: 2.6 DFRobot firmata
[40] Retrieving analog map...
[42] Auto-discovery complete. Found 20 Digital Pins and 6 Analog Pin
s
------------------------------
All right. PinPong go...
------------------------------
```

5.读取数据并打印

In [3]:

```python
temp = dht11.temp_c() #读取摄氏温度
humi = dht11.humidity() #读取湿度
print("dht11 temperature=",temp," humidity=",humi)
```

```
dht11 temperature= 16.2  humidity= 84.0
```

范例：定时读取dht温湿度传感器
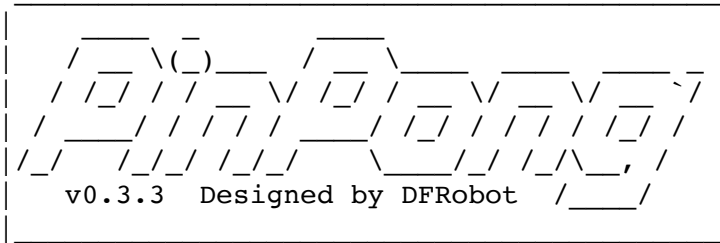
使用windows或linux电脑连接一块Arduino主控板，dht11连接D6

注：如果需要运行下面的程序或者关闭窗口，请先点击"服务"，执行"重启 & 清空输出"。

```python
import time
from pinpong.board import Board,Pin,DHT11

Board("uno").begin()
dht11 = DHT11(Pin(Pin.D7))

while True:
  temp = dht11.temp_c() #读取摄氏温度
  humi = dht11.humidity() #读取湿度
  print("dht11 temperature=",temp," humidity=",humi)
  time.sleep(1)
```

```python
import time
from pinpong.board import Board,Pin,DHT11

Board("uno").begin()
dht11 = DHT11(Pin(Pin.D7))
```

```
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|   ____   _     ____            |
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|/_/   /_/_/ /_/_/    \____/_/ /_/\__, / |
|   v0.3.3  Designed by DFRobot   /____/ |
|_____|
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[01] Python3.6.6 Darwin-20.2.0-x86_64-i386-64bit Board: UNO
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[20] Waiting 4 seconds(arduino_wait) for Arduino devices to reset...
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em14101
[30] Retrieving Arduino Firmware ID...
[32] Arduino Firmware ID: 2.6 DFRobot firmata
[40] Retrieving analog map...
[42] Auto-discovery complete. Found 20 Digital Pins and 6 Analog Pin
s

All right. PinPong go...
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dht11 temperature= 0 humidity= 0
dht11 temperature= 0 humidity= 0
dht11 temperature= 0 humidity= 0
dht11 temperature= 15.8 humidity= 85.0
dht11 temperature= 15.8 humidity= 85.0
dht11 temperature= 15.9 humidity= 85.0
dht11 temperature= 15.9 humidity= 85.0
dht11 temperature= 15.9 humidity= 85.0
dht11 temperature= 15.9 humidity= 85.0
dht11 temperature= 15.9 humidity= 85.0
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dht11 temperature= 15.9 humidity= 85.0
dht11 temperature= 15.9 humidity= 85.0
dht11 temperature= 16.0 humidity= 86.0
dht11 temperature= 16.0 humidity= 86.0
dht11 temperature= 16.0 humidity= 86.0
dht11 temperature= 16.0 humidity= 86.0
dht11 temperature= 16.0 humidity= 85.0
dht11 temperature= 16.0 humidity= 85.0
dht11 temperature= 16.1 humidity= 85.0
dht11 temperature= 16.1 humidity= 85.0

In [ ]:
```

```