

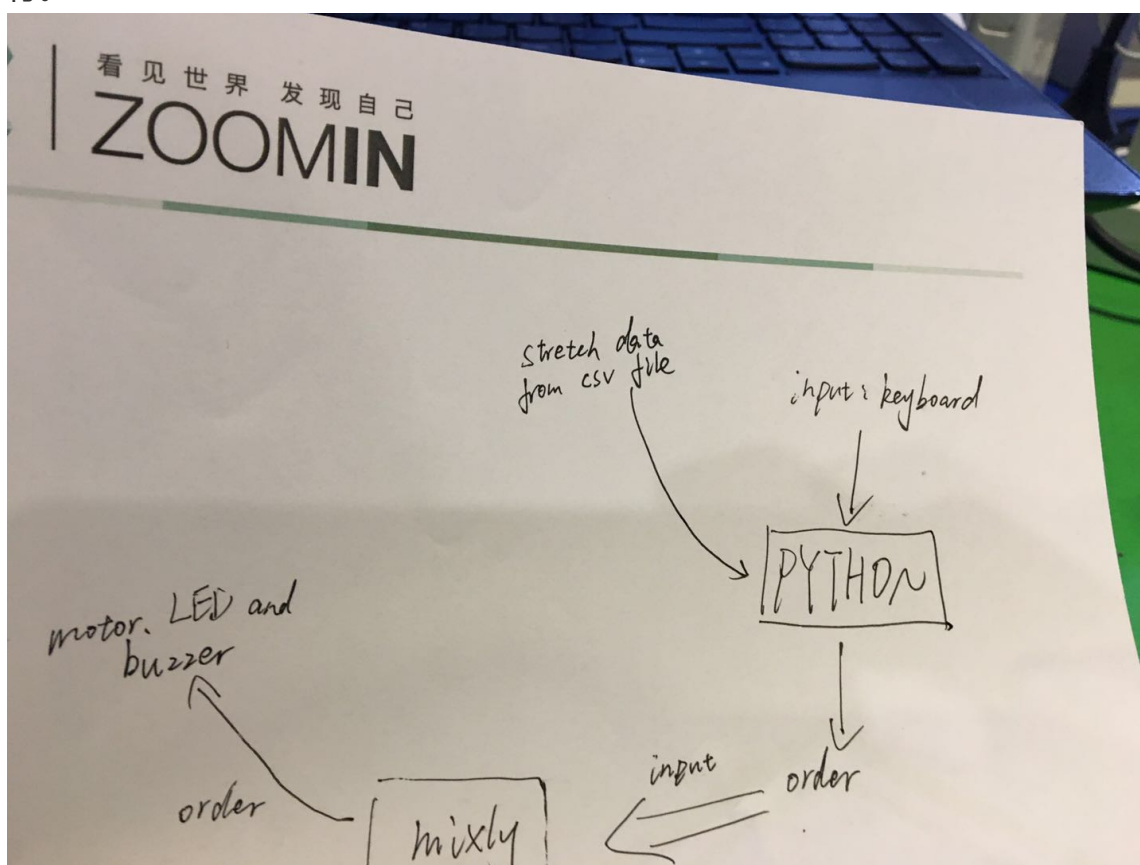
# 总结报告（刘骏飞）

## 目标：

制作一个可以用python程序控制的风车

## 过程：

用mixly制作串口程序再用python写终端控制程序，然后搭好积木、连接好线路运行。



csv:

tinkelstar,1,2,start\_LED,5,5,6,6,5,start\_fan,5,4,4,3,3,stop\_LED,2,2,stop\_fan,1,1

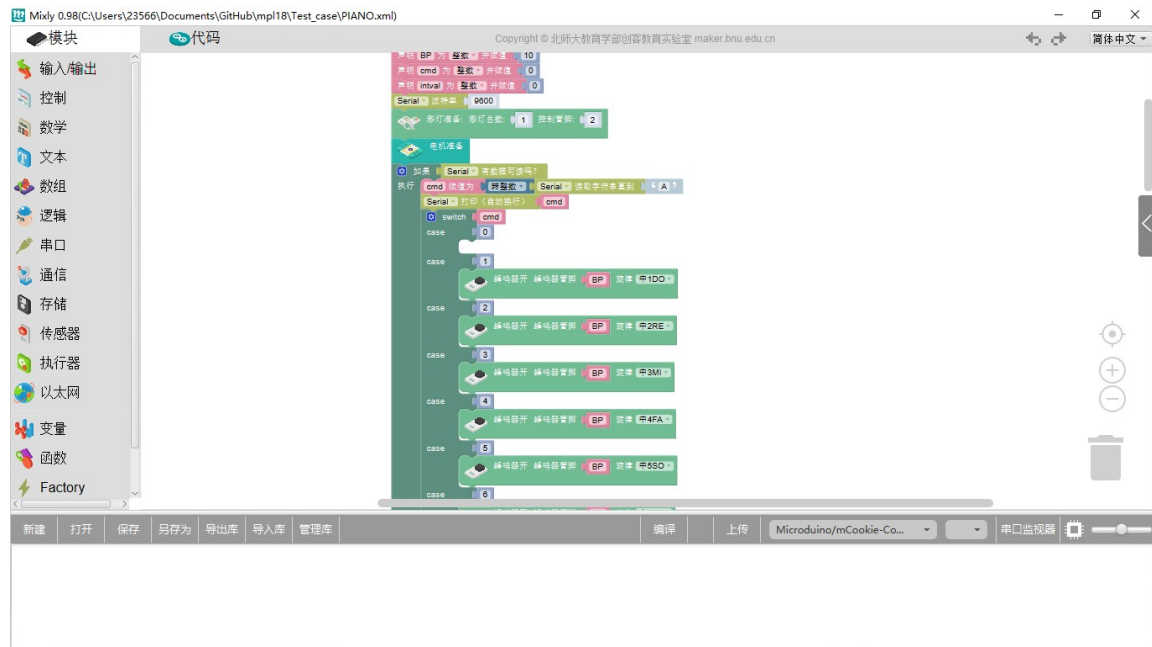
dadaotuhao,1,2,3,1,1,2,3,1,start\_LED,3,4,5,3,4,5,stop\_LED,5,6,5,4,3,1,2,1,1

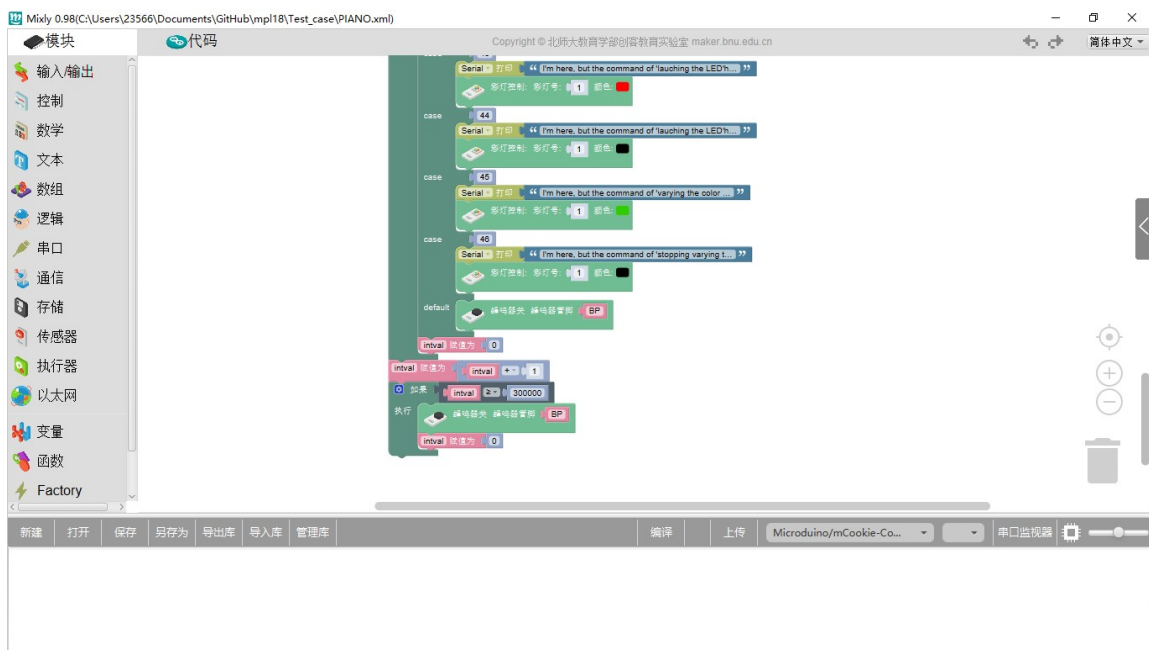
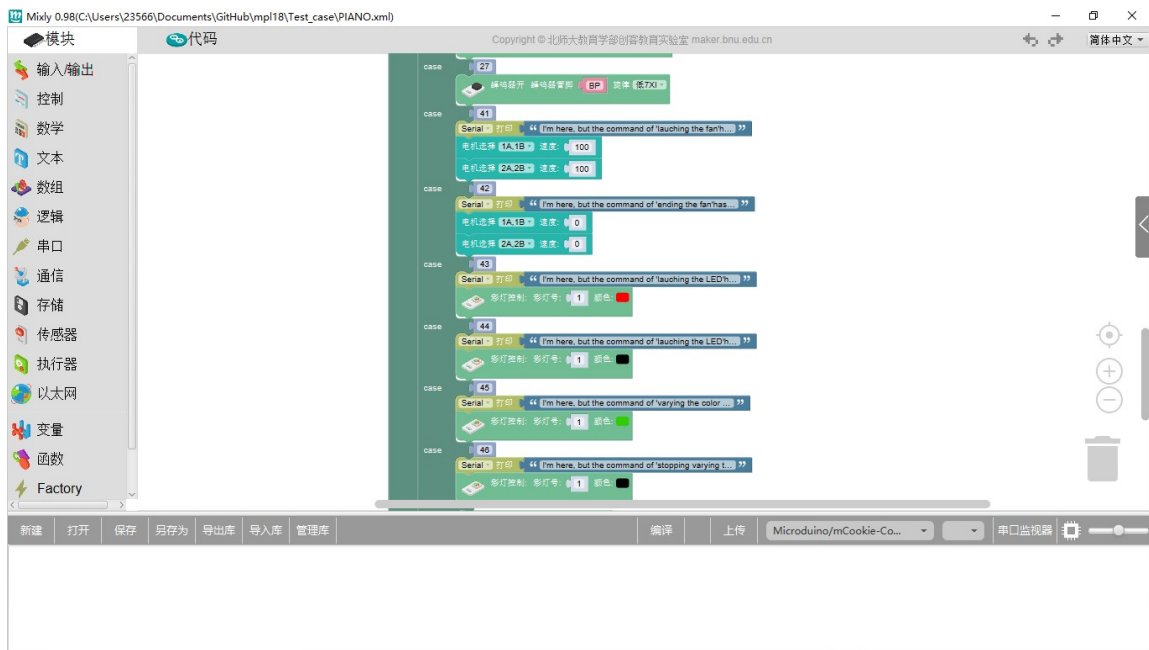
RadetzkyMarsch,4,4,4,4,4,4,3,2,1,7,6,7,1,2,7,5

RadetzkyMarsch2,4,3,4,4,3,4,4,3,4,3,2,6,5,6,6,5,6,6,4,5,7,6,4,3,4,3,2,3,2,1,7,6,5

,4,3,2,2,2, xjbsong,1,4|2,4,5,7,2,7,3,6,3,7,5,2,4,6,2,5,3,6,3,6,2,1 clash  
royale,5-4,6|2,5,4,3,4,5-4,start\_g\_LED,start\_fan,2,3,4,3|2,2|2,3,4,5-4,start\_r\_LE  
D,5,6,5,4,3,4,5-4,stop\_fan,2,3,4,3|2,2|2,1-4,stop\_LED

mixly:





python:

```
import serial
import serial.tools.list_ports
import time

def get_song_dictionary(input_lst):
    dictionary={}
    for i in range(len(songs)):
        song=songs[i]
        dictionary[song[0]]=i
    return dictionary
```

```
print ('hello')
ports = list(serial.tools.list_ports.comports())
print (ports)
for p in ports:
    print (p[1])
    if "SERIAL" in p[1] or "Serial" in p[1]:
        ser=serial.Serial(port=p[0])
    else :
        print ("No Arduino Device was found connected to the computer")

song1 = ['star','1','1','5','5','6','6','5','5','4','4','3','3','2','2','1','1']
song2 = ['hallo','1','2','3','1','1','2','3','1','3','4','5','3','4','5']

f = open('mysongs.csv', 'r')
data = f.read()
rows = data.split('\n')
print(rows[0:5])

songs=[]
for row in rows:
    song=row.split(',')
    songs.append(song)
print(songs)

album={}
album["tinkelstar"]=0
n=0
for song in songs:
    songname=song[0]
    print("songname is %s" %(songname))
    album[songname]=n
    n=n+1
print(album)

dic={"start_r_LED":'43',"stop_LED":'44',"start_fan":"41","stop_fan":'42',

#songs_dictionary={'tinklestar':1,'dadaotuhao':2,'RadetzkyMarsch':3,'xjbs
songs_dictionary=get_song_dictionary(songs)

#song_dic={'tinkelstar':1,'dadaotuhao':2,'RadetzkyMarsch':3,'RadetzkyMars
#ser=serial.Serial(port='COM4')
#ser=serial.Serial(port='/dev/ttymodem542')
#ifha;oifhad;oifh
def run():

    action = "empty"
    while action != "q":
        print ('select 1.input song sequence, number,select 2 , input sor
```

```

action = input("> ")
if action=='1' :
    print ('select in which song do you want to play:for example:
    song_number = int(input("> "))
    print("song number is:")
    print(song_number)
    for notes in songs[song_number]:
        note=['0','0']
        if '|' in notes:
            note=notes.split('|')
        elif '-' in notes:
            note=notes.split('-')
        else:
            note[0]=notes
        if note[0].isdigit():
            ser.write(note[0].encode())
            ser.write("A".encode())
            print ("send:"+note[0])
            pai=int(note[1])
            if pai==2:
                sl=1/2
            elif pai==4:
                sl=2
            else:
                sl=1
            time.sleep(sl)
        else:
            if notes in dic:
                s_notes=dic[notes]
                print(s_notes)
                ser.write(s_notes.encode())
                print ("send:"+s_notes)
                ser.write("A".encode())
            ser.write("50".encode())
elif action == "2":
    print ('select in which song do you want to play:tinklestar,c
    song_name = input("> ")
    print("songs name is:")
    print(song_name)
    song_number=songs_dictionary[song_name]
    print("song number is:")
    print(song_number)
    for notes in songs[song_number-1]:
        ser.write(notes.encode())
        print ("send:"+notes)
        time.sleep(1)
else :
    return

```

run()

## 结果：

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风车能按音符顺序发出二分、四分、八分音符，能亮不同颜色的LED灯，风车能转



## 讨论

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我在原程序的基础上增加了几个判断循环，因此运行的时候能做到区分音符的发音长度；也添加了切换LED颜色的部分。以后可以从网络上下载简谱做成csv文件直接读取以后放出来，只需要电脑端操作就可以了。