Programmes en Micropython SmartHome

Test Led pin 12

exemple001.py

```
from machine import Pin
import time

led = Pin(12, Pin.OUT)# Build an LED object, connect the external LED
light to pin 0, and set pin 0 to output mode
while True:
    led.value(1)# turn on led
    time.sleep(1)# delay 1s
    led.value(0)# turn off led
    time.sleep(1)# delay 1s
```

Test Led PWM

exemple002.py

```
import time
from machine import Pin,PWM

#The way that the ESP32 PWM pins output is different from traditionally
controllers.
#It can change frequency and duty cycle by configuring PWM's parameters
at the initialization stage.
#Define GPIO 0's output frequency as 10000Hz and its duty cycle as 0,
and assign them to PWM.
p0 = Pin(012, Pin.OUT)
pwm = PWM(p0, freq=10000, duty_u16=8192)


try:
    while True:
#The range of duty cycle is 0-1023, so we use the first for loop to
control PWM to change the duty
#cycle value,making PWM output 0% -100%; Use the second for loop to
make PWM output 100%-0%.
        for i in range(0,1023):
            pwm.duty(i)
            time.sleep_ms(1)

        for i in range(0,1023):
```

```
            pwm.duty(1023-i)
            time.sleep_ms(1)
except:
#Each time PWM is used, the hardware Timer will be turned ON to
cooperate it. Therefore, after each use of PWM,
#deinit() needs to be called to turned OFF the timer. Otherwise, the
PWM may fail to work next time.
    pwm.deinit()
```

Test des 2 Boutons

exemple003.py

```
from machine import Pin
import time

button1 = Pin(16, Pin.IN, Pin.PULL_UP)
button2 = Pin(27, Pin.IN, Pin.PULL_UP)

while True:
    btnVal1 = button1.value()  # Reads the value of button 1
    btnVal2 = button2.value()
    print("button1 =",btnVal1)  #Print it out in the shell
    print("button2 =",btnVal2)
    time.sleep(0.1) #delay 0.1s
```

Test Bouton 1 M/A Led

exempl004.py

```
from machine import Pin
import time

button1 = Pin(16, Pin.IN, Pin.PULL_UP)
led = Pin(12, Pin.OUT)
count = 0

while True:
    btnVal1 = button1.value()  # Reads the value of button 1
    #print("button1 =",btnVal1)  #Print it out in the shell
    if(btnVal1 == 0):
        time.sleep(0.01)
        while(btnVal1 == 0):
            btnVal1 = button1.value()
```

```
            if(btnVal1 == 1):
                count = count + 1
                print(count)
    val = count % 2
    if(val == 1):
        led.value(1)
    else:
        led.value(0)
    time.sleep(0.1) #delay 0.1s
```

Test PIR : detection de personnes

exemple005.py

```
from machine import Pin
import time

PIR = Pin(14, Pin.IN)
while True:
    value = PIR.value()
    print(value, end = " ")
    if value == 1:
        print("Des personnes sont dans la zone ...!")
    else:
        print("il n'y a personne ...!")
    time.sleep(0.1)
```

Test Buzzer Music

exemple006.py

```
from machine import Pin, PWM
from time import sleep
buzzer = PWM(Pin(25))

buzzer.duty(1000)

# Happy birthday
buzzer.freq(294)
sleep(0.25)
buzzer.freq(440)
sleep(0.25)
buzzer.freq(392)
sleep(0.25)
buzzer.freq(532)
```

```
sleep(0.25)
buzzer.freq(494)
sleep(0.25)
buzzer.freq(392)
sleep(0.25)
buzzer.freq(440)
sleep(0.25)
buzzer.freq(392)
sleep(0.25)
buzzer.freq(587)
sleep(0.25)
buzzer.freq(532)
sleep(0.25)
buzzer.freq(392)
sleep(0.25)
buzzer.freq(784)
sleep(0.25)
buzzer.freq(659)
sleep(0.25)
buzzer.freq(532)
sleep(0.25)
buzzer.freq(494)
sleep(0.25)
buzzer.freq(440)
sleep(0.25)
buzzer.freq(698)
sleep(0.25)
buzzer.freq(659)
sleep(0.25)
buzzer.freq(532)
sleep(0.25)
buzzer.freq(587)
sleep(0.25)
buzzer.freq(532)
sleep(0.5)
buzzer.duty(0)
```

Test Servo Porte entrée : angle 25° 77° 180°

exemple007.py

```
from machine import Pin, PWM
import time
pwm = PWM(Pin(13))
pwm.freq(50)

'''
```

```
Duty cycle corresponding to the Angle
0°----2.5%----25
45°----5%----51.2
90°----7.5%----77
135°----10%----102.4
180°----12.5%----128
'''
angle_0 = 25
angle_90 = 77
angle_180 = 128

while True:
    pwm.duty(angle_0)
    time.sleep(1)
    pwm.duty(angle_90)
    time.sleep(1)
    pwm.duty(angle_180)
    time.sleep(1)
```

Test Capteur Humidité 0= Fenetre Ouverte, 0> Fenetre fermée

exemple008.py

```
# Import Pin, ADC and DAC modules.
from machine import ADC,Pin,DAC,PWM
import time
pwm = PWM(Pin(5))
pwm.freq(50)

# Turn on and configure the ADC with the range of 0-3.3V
adc=ADC(Pin(34))
adc.atten(ADC.ATTN_11DB)
adc.width(ADC.WIDTH_12BIT)

# Read ADC value once every 0.1seconds, convert ADC value to DAC value
and output it,
# and print these data to “Shell”.
try:
    while True:
        adcVal=adc.read()
        dacVal=adcVal//16
        voltage = adcVal / 4095.0 * 3.3
        print("ADC
Val:",adcVal,"DACVal:",dacVal,"Voltage:",voltage,"V")
        if(voltage > 0.6):
            pwm.duty(46)
        else:
            pwm.duty(100)
```

```
        time.sleep(0.1)
except:
    pass
```

Test Neopixels : Blanc, Rouge, Vert, Bleu

exemple009.py

```
#Import Pin, neopiexl and time modules.
from machine import Pin
import neopixel
import time

#Define the number of pin and LEDs connected to neopixel.
pin = Pin(26, Pin.OUT)
np = neopixel.NeoPixel(pin, 4)

#brightness :0-255
brightness=100
colors=[[brightness,0,0],                    #red
        [0,brightness,0],                    #green
        [0,0,brightness],                    #blue
        [brightness,brightness,brightness],  #white
        [0,0,0]]                             #close

#Nest two for loops to make the module repeatedly display five states
of red, green, blue, white and OFF.
while True:
    for i in range(0,5):
        for j in range(0,4):
            np[j]=colors[i]
            np.write()
            time.sleep_ms(50)
        time.sleep_ms(500)
    time.sleep_ms(500)
```

Test Bouton et Neopixels Bp1 - Bp2 + incremente les couleurs

exemple010.py

```
#Import Pin, neopiexl and time modules.
from machine import Pin
import neopixel
import time
```

```
button1 = Pin(16, Pin.IN, Pin.PULL_UP)
button2 = Pin(27, Pin.IN, Pin.PULL_UP)
count = 0

#Define the number of pin and LEDs connected to neopixel.
pin = Pin(26, Pin.OUT)
np = neopixel.NeoPixel(pin, 4)

#brightness :0-255
brightness=100
colors=[[0,0,0],
        [brightness,0,0],                    #red
        [0,brightness,0],                    #green
        [0,0,brightness],                    #blue
        [brightness,brightness,brightness]  #white
        ]                                 #close

def func_color(val):
    for j in range(0,4):
        np[j]=colors[val]
        np.write()
        time.sleep_ms(50)

#Nest two for loops to make the module repeatedly display five states
of red, green, blue, white and OFF.
while True:
    btnVal1 = button1.value()  # Reads the value of button 1
    #print("button1 =",btnVal1)  #Print it out in the shell
    if(btnVal1 == 0):
        time.sleep(0.01)
        while(btnVal1 == 0):
            btnVal1 = button1.value()
            if(btnVal1 == 1):
                count = count - 1
                print(count)
                if(count <= 0):
                    count = 0

    btnVal2 = button2.value()
    if(btnVal2 == 0):
        time.sleep(0.01)
        while(btnVal2 == 0):
            btnVal2 = button2.value()
            if(btnVal2 == 1):
                count = count + 1
                print(count)
                if(count >= 4):
                    count = 4

    if(count == 0):
```

```
        func_color(0)
    elif(count == 1):
        func_color(1)
    elif(count == 2):
        func_color(2)
    elif(count == 3):
        func_color(3)
    elif(count == 4):
        func_color(4)
```