```
#include <Servo.h>
Servo servo1;
Servo servo2;
char data;
char a;

int i1 = 0;
int i2 = 0;
int n = 0;
const int uv1 = 13;
const int uv2 = 12;
const int sweep1 = 9;
const int sweep2 = 8;
const int onled = 2;
const int offled = 7;
const int onoffbt = 3;  //핀 설정

#include <Wire.h>
#include <LiquidCrystal_I2C.h>
LiquidCrystal_I2C lcd(0x27,16,2); //lcd
설정

void spin1() {
  for (i1=0; i1<180; i1++) {
    servo1.write(i1);
    servo2.write(i1);
    delay(5);
  }
}

void spin2() {
  for (i2=179; i2>0; i2--) {
    servo1.write(i2);
    servo2.write(i2);
    delay(5);
  }
}

void uvon() {
  digitalWrite(uv1,HIGH);
  digitalWrite(uv2,HIGH);
}

void uvoff() {
  digitalWrite(uv1,LOW);
  digitalWrite(uv2,LOW);
}
```

```
void lcdst() {
  lcd.clear();
  lcd.setCursor(0,0);
  lcd.print("clean start in 5s");
  delay(1000);
  lcd.clear();
  lcd.setCursor(0,0);
  lcd.print("clean start in 4s");
  delay(1000);
  lcd.clear();
  lcd.setCursor(0,0);
  lcd.print("clean start in 3s");
  delay(1000);
  lcd.clear();
  lcd.setCursor(0,0);
  lcd.print("clean start in 2s");
  delay(1000);
  lcd.clear();
  lcd.setCursor(0,0);
  lcd.print("clean start in 1s");
  delay(1000);
  lcd.clear();
  lcd.setCursor(0,0);
  lcd.print("cleaning...");
}

void lcdend() {
  lcd.clear();
  lcd.setCursor(0,0);
  lcd.print("clean end in 5s");
  delay(1000);
  lcd.clear();
  lcd.setCursor(0,0);
  lcd.print("clean end in 4s");
  delay(1000);
  lcd.clear();
  lcd.setCursor(0,0);
  lcd.print("clean end in 3s");
  delay(1000);
  lcd.clear();
  lcd.setCursor(0,0);
  lcd.print("clean end in 2s");
  delay(1000);
  lcd.clear();
  lcd.setCursor(0,0);
  lcd.print("clean end in 1s");
  delay(1000);
  lcd.clear();
  lcd.setCursor(0,0);
  lcd.print("clean end.");
  delay(2000);
  lcd.clear();

}
```

```
void setup() {
  pinMode(uv1,OUTPUT);
  pinMode(uv2,OUTPUT);                //
자외선 살균
  pinMode(sweep1,OUTPUT);
  pinMode(sweep2,OUTPUT);             //
밑바닥 터는 모터
  pinMode(onoffbt,INPUT_PULLUP);
 //작동버튼
  pinMode(onled,OUTPUT);
 //작동 LED
  pinMode(offled,OUTPUT);
//비작동 LED
  servo1.attach(sweep1);
  servo2.attach(sweep2);
  lcd.init();
  lcd.backlight();
  Serial.begin(9600);

}

void loop() {
  int onoff = 0;
  onoff = digitalRead(onoffbt);
  digitalWrite(offled,HIGH);
  if (Serial.available() == 1){  //날씨
데이터 받아오기
     data=Serial.read();
  }
  if (onoff==LOW) {
    if (data=='0'){ //조건:비가 안온다면
        digitalWrite(offled,LOW);
        digitalWrite(onled,HIGH);
        lcdst();
        uvon();
        while (n<10) {   //솔 돌리기
          spin1();
          spin2();
          n+=1;
        }
        lcdend();
        uvoff();
        digitalWrite(onled,LOW);
        digitalWrite(offled,HIGH);
        n = 0;
      }
```

```
        if(data=='1') {//비가 온다면
          digitalWrite(offled,LOW);
          digitalWrite(onled,HIGH);
          lcdst();
          uvon();
          while(n<10){
            spin1();
            spin2();
            n+=1;
          }
          lcdend();
          uvoff();
          digitalWrite(onled,LOW);
          digitalWrite(offled,HIGH);
          n=0;
      }
    }
}
```

```python
import requests
from selenium import webdriver #자동화 모듈(동적 웹)
from bs4 import BeautifulSoup#웹 스크랩 모듈
import tkinter#GUI모듈
from datetime import datetime#현재시간 구하는 모듈
import serial#파이썬과 아두이노 간의 통신 모듈
import time
two_hour=[]
commend=""; #python --> 아두이노  데이터 저장 변수
py_serial=0
def crawling():       #크롤링 함수
    global four_hour, commend,py_serial
    print("날씨 크롤링 시작")
    rain=["비","약한비","강한비","비","눈","약한눈","강한눈","진눈깨비","소나기","소낙눈","번개, 뇌우","우박","비 또는 눈","가끔 비","가끔 눈","가끔 비 또는 눈","흐려져 비","흐려져 비(밤)","흐려져 눈","흐려져 눈(밤)"] #비와 관련된 날씨
    url="https://search.naver.com/search.naver?where=nexearch&sm=top_hty&fbm=1&ie=utf8&query=%EB%85%B8%EC%9B%90%EA%B5%AC+%EB%82%A0%EC%94%A8" #크롤링 웹 페이지 주소
    options = webdriver.ChromeOptions()
    options.add_experimental_option("excludeSwitches", ["enable-logging"])
    options.add_argument("headless")    #크롤링 인터넷 창면 숨기기
    driver = webdriver.Chrome(executable_path="C:\code\WORKSPACE\school\대회\코드페어\chromedriver.exe",chrome_options=options)#driver  주소 설정
    driver.get(url=url)
    res = driver.page_source
    soup=BeautifulSoup(res,'lxml')
```

```python
def main(): #메인 함수
    global py_serial
    print("PYTHON: 프로그램 시작")
    py_serial = serial.Serial(port='COM3',baudrate=9600,)
    crawling()
    #10분측정
    old_minute=0
    today=datetime.now()
    old_minute=today.minute
    while True:
        #현재시간
        today=datetime.now()
        current_minute=today.minute

        print(current_minute)
        #10분이 지나면 크롤링 실행되는 코드
        if current_minute==old_minute+10:
            crawling()
            old_minute=current_minute
        elif (old_minute>50 and old_minute<=0):
            if current_minute==old_minute+10:
                crawling()
                old_minute=current_minute
#신발 청소기 관리 프로그램 GUI(프로그램 창)
window=tkinter.Tk()
window.title("신발 청소기 관리 프로그램") #TITLE
title=tkinter.Label(text="장치 시작")
title.pack()
start= tkinter.Button(window, text="start",command=main)#장치시작 버튼
start.pack()
window.mainloop()
```

```python
#날씨 정보
a=soup.find("p","summary").getText()
a=a.split(" ")
ok=0
weather = a[4]

print(weather)
status=0
for i in range(0,20): #비와 관련된 날씨에 해당하는지 확인
    if weather==rain[i]:
        ok=ok+1
if ok>=1: #ok=1이면 비가 온다. ok=0이면 비가 안온다.
    print("PYTHON: 비가 옵니다.")
    status=1
else:
    print("PYTHON: 날씨가 맑습니다.")
    status=0
if len(two_hour)<12:
    two_hour.append(status)
elif len(two_hour)==12:
    two_hour.append(status)
    del two_hour[0]
sum_status=sum(two_hour)
if sum_status>=1:
    commend="1"
elif sum_status==0:
    commend="0"
#데이터 송신 코드
commend=commend.encode('utf-8')
py_serial.write(commend)
print("PYTHON: 날씨 데이터 수송 중.....")
```