浙大城市学院实验报告

课程名称　物联网技术与应用　实验项目　实验三　OLED 显示控制实验

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注意：

- 务请保存好各自的源代码及实验报告文档，已备后用。
- 请把实验报告转为 PDF 文档上传到 BB 平台。
- 文件名格式：学号_姓名_日期_实验，如 30801001_姓名_20200305_实验 02

一、实验目的：

熟悉 OLED 显示模块 SSD1306 的使用，熟悉 128*64 点阵分辨率的 OLED 的显示控制，掌握显示各类对象的函数及参数的用法，掌握屏幕显示坐标计算。

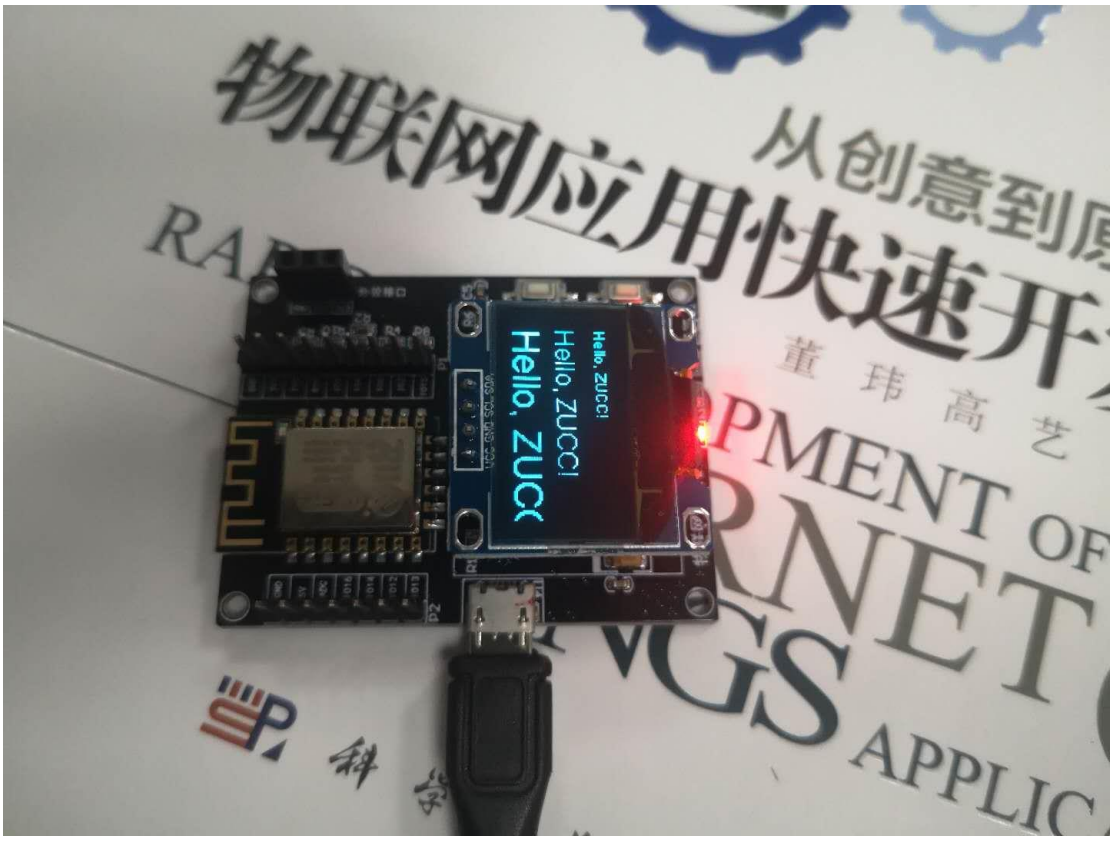
二、实验内容：

1. 用 10 号，12 号，16 号字号显示三行字符“Hello, ZUCC!”
2. 在屏幕中心位置，依次显示圆形、三角形，正方形
3. 采集 DHT11 的温湿度值并显示在 OLED 屏上
4. 自行查找资料，实现中文显示，显示自己的姓名和学号等

三、实验步骤：

1. 用 10 号，16 号，24 号字号显示三行字符“Hello, ZUCC!”。

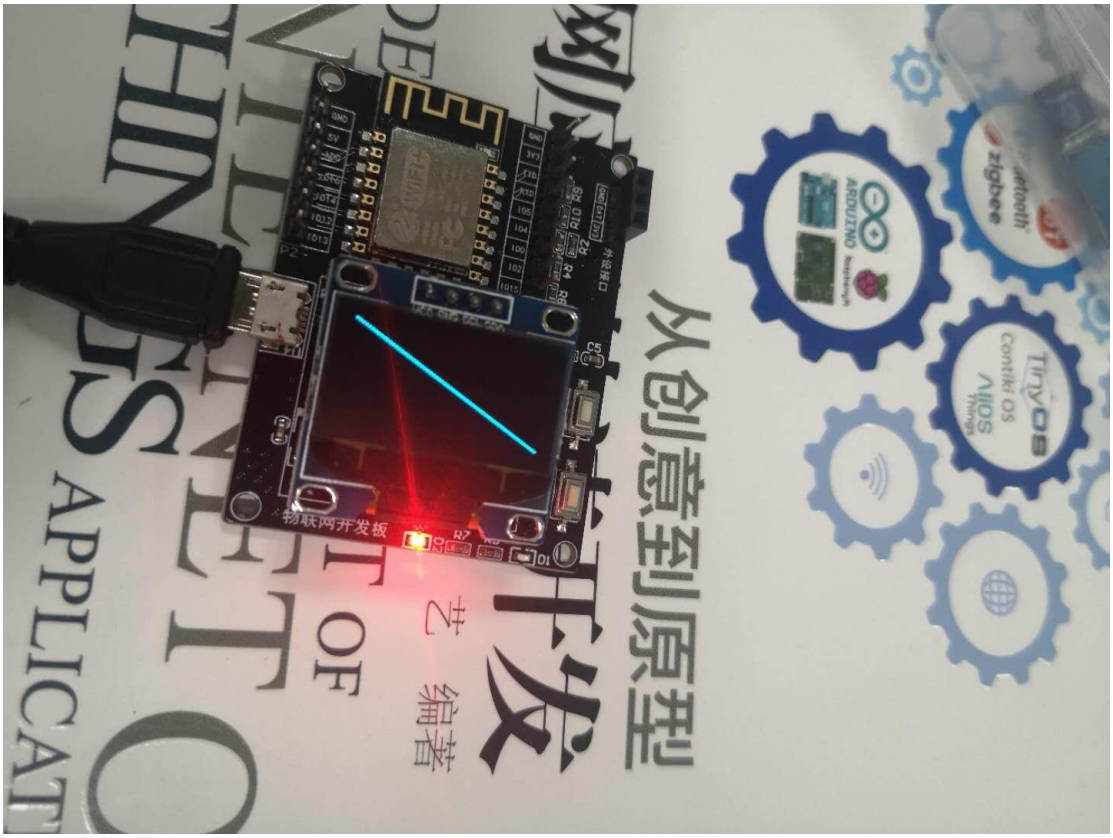
   示例：　display->setFont(ArialMT_Plain_16);

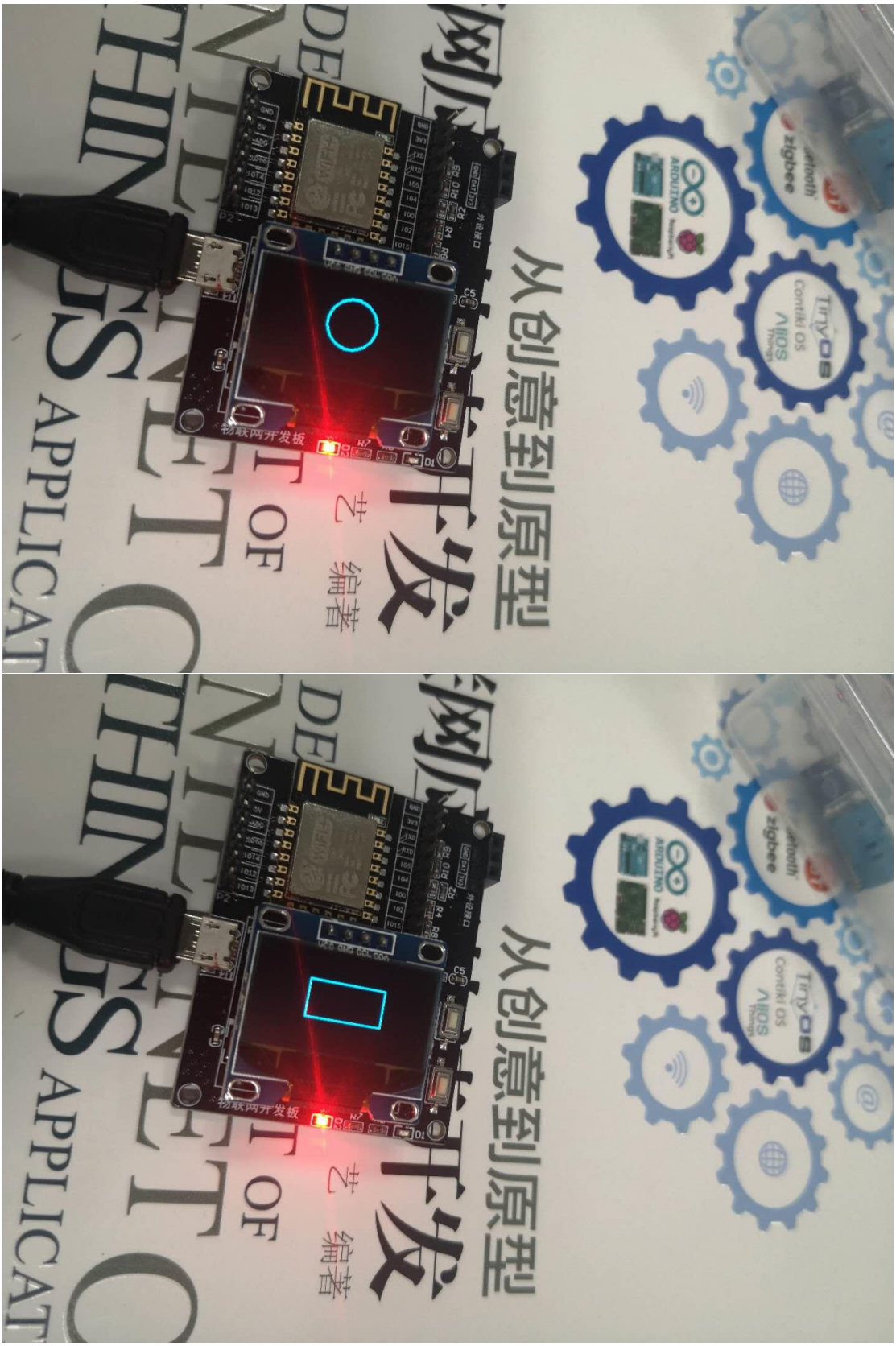



```
#include"SSD1306Wire.h"

SSD1306Wire display(0x3c,2,14);

void setup() {

    // put your setup code here, to run once:

    display.init();

}

void loop() {

    // put your main code here, to run repeatedly:

    display.clear();

    display.setFont(ArialMT_Plain_10);

    display.drawString(5,0,"Hello, ZUCC!");

    display.setFont(ArialMT_Plain_16);
```

```
    display.drawString(5,20,"Hello, ZUCC!");
    display.setFont(ArialMT_Plain_24);
    display.drawString(5,40,"Hello, ZUCC!");
    display.display();
    delay(2000);
}
```

2. 在屏幕中心位置，依次循环显示画斜线、画圆形、画矩形。



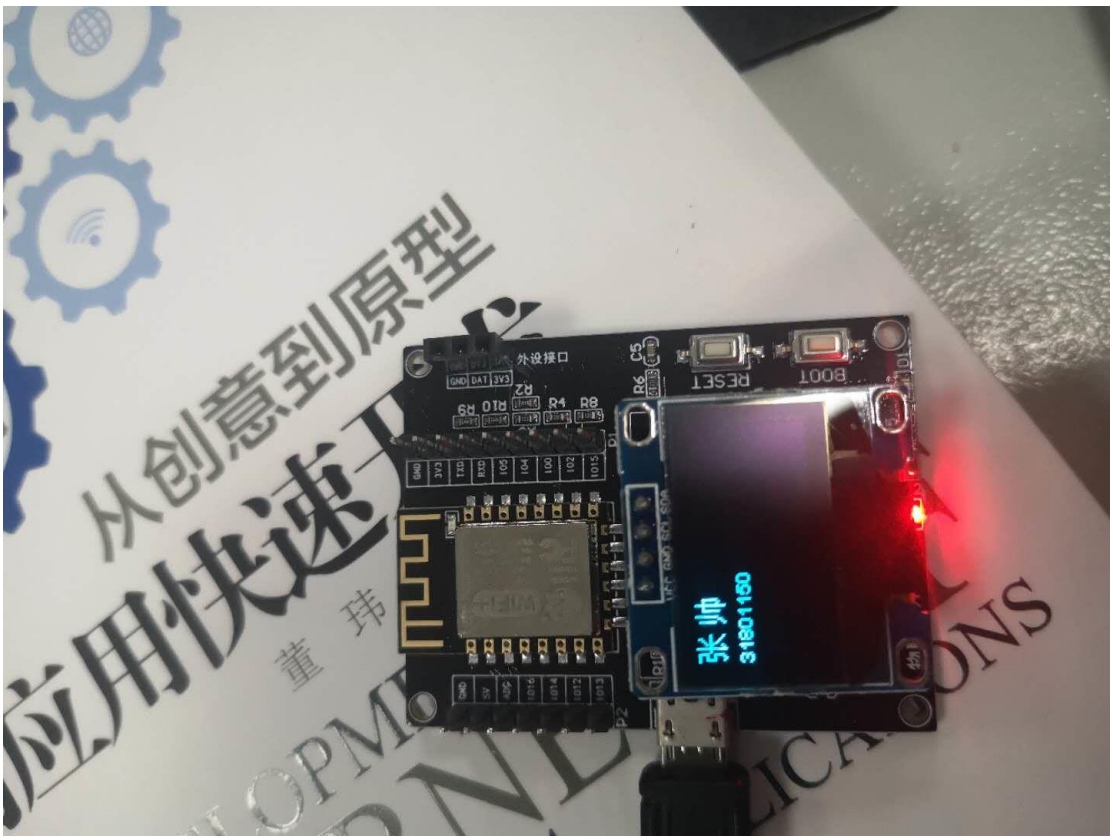


```
#include"SSD1306Wire.h"

SSD1306Wire display(0x3c,2,14);
```

```
void setup() {
    // put your setup code here, to run once:


    display.init();



}


void loop() {
    // put your main code here, to run repeatedly:
    display.clear();
    display.drawLine(0,0,128,64);
    display.display();
    delay(2000);
    display.clear();
    display.drawCircle(64,32,20);
    display.display();
    delay(2000);
      display.clear();
    display.drawRect(32,16,64,32);
    display.display();
    delay(2000);
```

}

3. 自行查找资料，实现中文显示，显示自己的姓名和学号。

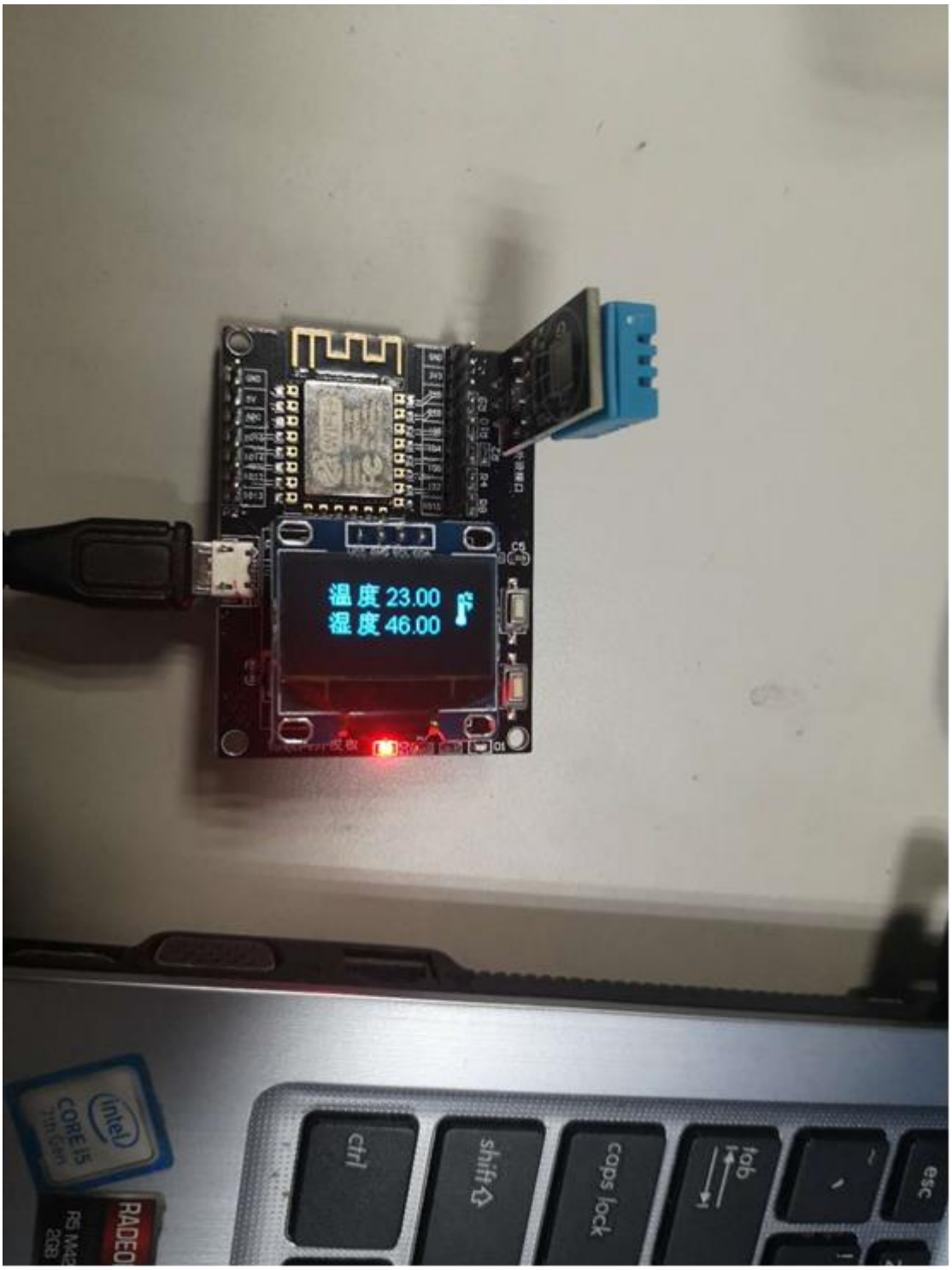



```
#include"SSD1306Wire.h"

SSD1306Wire display(0x3c,2,14);

const char image[]={

0x80,0x00,0x9F,0x10,0x90,0x10,0x90,0x08,0x90,0x04,0x9E,0x02,0x82,0x00,0xE2,

0x7F,

0x82,0x02,0x9E,0x04,0x90,0x04,0x90,0x08,0x90,0x10,0x90,0x22,0x8A,0x41,0x84,

0x00,/*"张",0*/};

const char image2[]={

0x10,0x04,0x10,0x04,0x12,0x04,0x12,0x04,0x92,0x3F,0x92,0x24,0x92,0x24,0x92,
```

```
0x24,
0x92,0x24,0x92,0x24,0x92,0x24,0x90,0x2C,0x88,0x14,0x08,0x04,0x04,0x04,0x02,
0x04,/*"帅",1*/
};

void setup() {
  // put your setup code here, to run once:

  display.init();
  Serial.begin(115200);

}

void loop() {
  // put your main code here, to run repeatedly:
  display.flipScreenVertically();
  display.clear();
  display.drawIco16x16(0,0,image,0);
  display.drawIco16x16(20,0,image2,0);
  display.drawString(0,20,"31801150");
  display.display();
  delay(2000);
```

}

4. 根据 DHT11 的示例程序，连接 DHT11 温湿度传感器，通过串口打印输出温湿度值。在 OLED 屏上显示温湿度值，并设计自己个性化的数字温湿度计，要求有数值显示，有图形元素，或有中文字符显示。




```
#include"SSD1306Wire.h"

#include<dht11.h>

dht11 DHT11;

SSD1306Wire display(0x3c,2,14);
```

```
const char image[]={
0x00,0x00,0xC4,0x1F,0x48,0x10,0x48,0x10,0xC1,0x1F,0x42,0x10,0x42,0x10,0xC8
,0x1F,
0x08,0x00,0xE4,0x3F,0x27,0x25,0x24,0x25,0x24,0x25,0x24,0x25,0xF4,0x7F,0x00,
0x00,/*"温",0*/};
const char image2[]={
0x80,0x00,0x00,0x01,0xFC,0x7F,0x44,0x04,0x44,0x04,0xFC,0x3F,0x44,0x04,0x44,
0x04,
0xC4,0x07,0x04,0x00,0xF4,0x0F,0x24,0x08,0x42,0x04,0x82,0x03,0x61,0x0C,0x1C
,0x70,/*"度",1*/
};
const char image3[]={
0x00,0x00,0xE4,0x1F,0x28,0x10,0x28,0x10,0xE1,0x1F,0x22,0x10,0x22,0x10,0xE8,
0x1F,
0x88,0x04,0x84,0x04,0x97,0x24,0xA4,0x14,0xC4,0x0C,0x84,0x04,0xF4,0x7F,0x00
,0x00,/*"湿",2*/};
const char image4[]={
0x80,0x00,0x00,0x01,0xFC,0x7F,0x44,0x04,0x44,0x04,0xFC,0x3F,0x44,0x04,0x44,
0x04,
0xC4,0x07,0x04,0x00,0xF4,0x0F,0x24,0x08,0x42,0x04,0x82,0x03,0x61,0x0C,0x1C
,0x70,/*"度",3*/
};
```

```
const char image5[]={
0x00,0x00,0x00,0x00,0x00,0x06,0x00,0x36,0xF0,0x08,0xF0,0x28,0x90,0x38,0x90,
0x00,
0x90,0x00,0x90,0x06,0xF0,0x3E,0xF0,0x08,0xF0,0x38,0xF0,0x08,0xF0,0x08,0xF0,
0x00,/*"未命名文件",0*/
};
const char image6[]={

0xF0,0x00,0xF0,0x00,0xF0,0x00,0xF0,0x00,0xF0,0x00,0xF8,0x01,0xF8,0x01,0xFC,
0x01,
0xFC,0x01,0xF8,0x01,0x60,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,
0x00,/*"未命名文件",0*/

};



void setup() {
  // put your setup code here, to run once:

  display.init();
```

```
    Serial.begin(115200);


}


void loop() {
     int chk = DHT11.read(5);
    // put your main code here, to run repeatedly:
    display.flipScreenVertically();
    display.setFont(ArialMT_Plain_16);
    display.clear();
    display.drawIco16x16(20,10,image,0);
    display.drawIco16x16(40,10,image2,0);
    display.drawString(60,10,String((float)DHT11.temperature));
    display.drawIco16x16(20,30,image3,0);
    display.drawIco16x16(40,30,image4,0);
    display.drawIco16x16(110,13,image5,0);
     display.drawIco16x16(110,28,image6,0);
    display.drawString(60,30,String((float)DHT11.humidity));
    display.display();
    delay(2000);


}
```