

# Nokia 5110 LCD

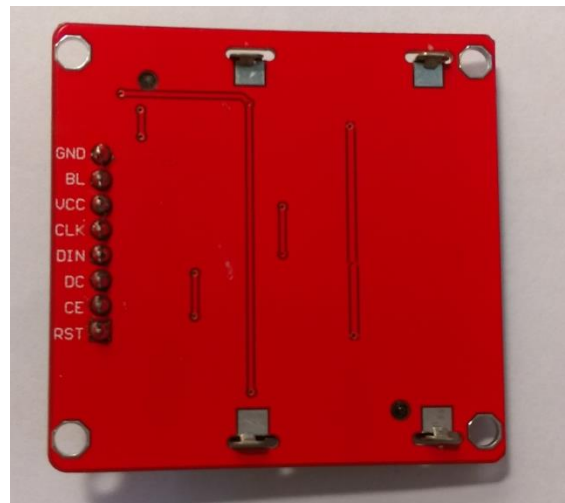
指導老師：謝文哲

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## 一、 Nokia 5110 LCD 模組介紹

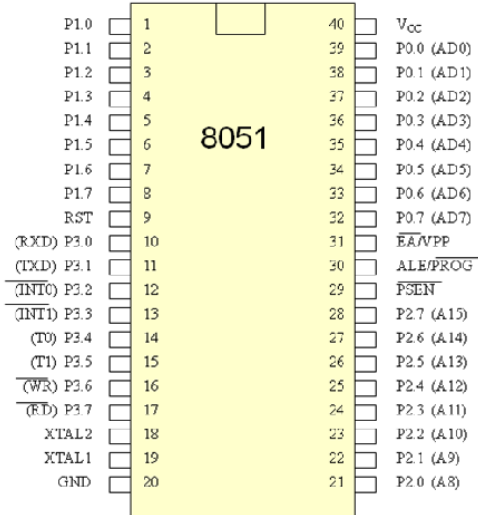
### (1) Nokia 5110 LCD 圖片



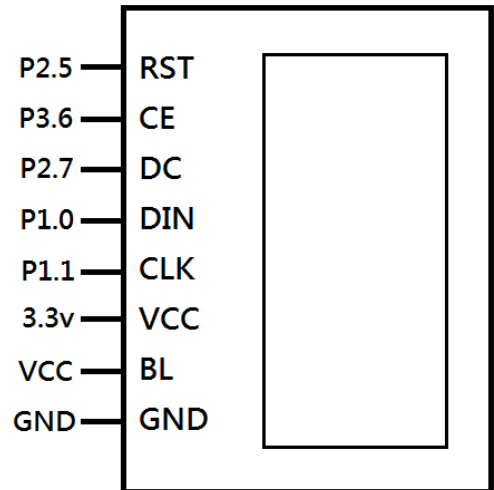
### (2) 接腳說明

Nokia 5110 LCD	
接腳	接腳說明
VCC	5V
GND	接地
CE	晶片致能
RST	晶片重置
D/C	資料/命令選擇
DIN	資料輸出
CLK	脈波控制輸出
BL	背光源

## 二、 8051 控制電路圖

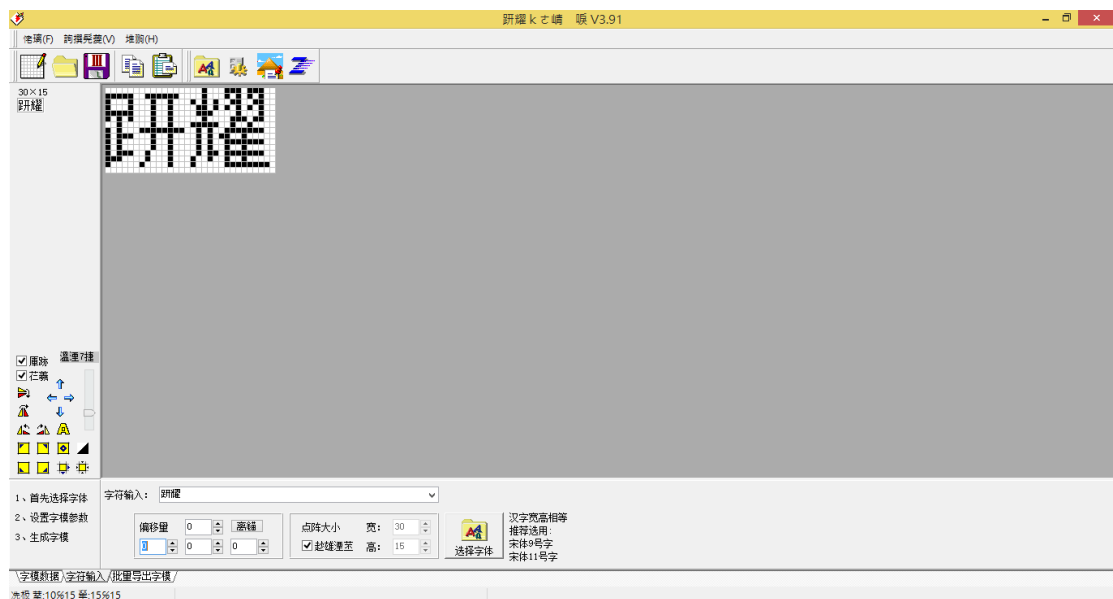


## Nokia 5110 lcd

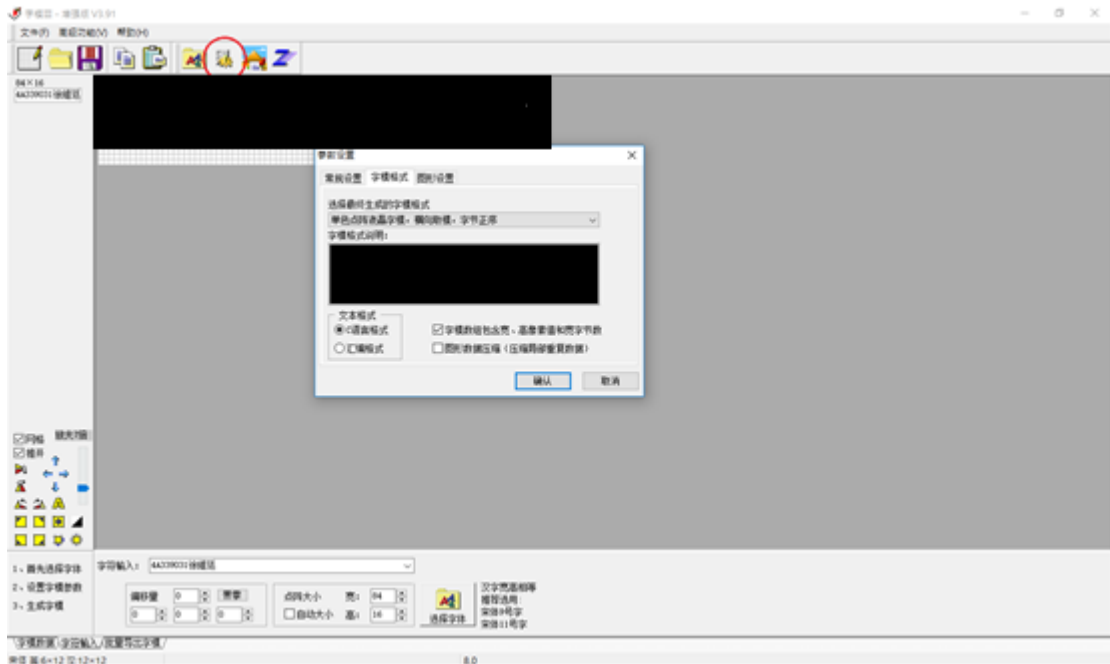


## 三、 建立文字

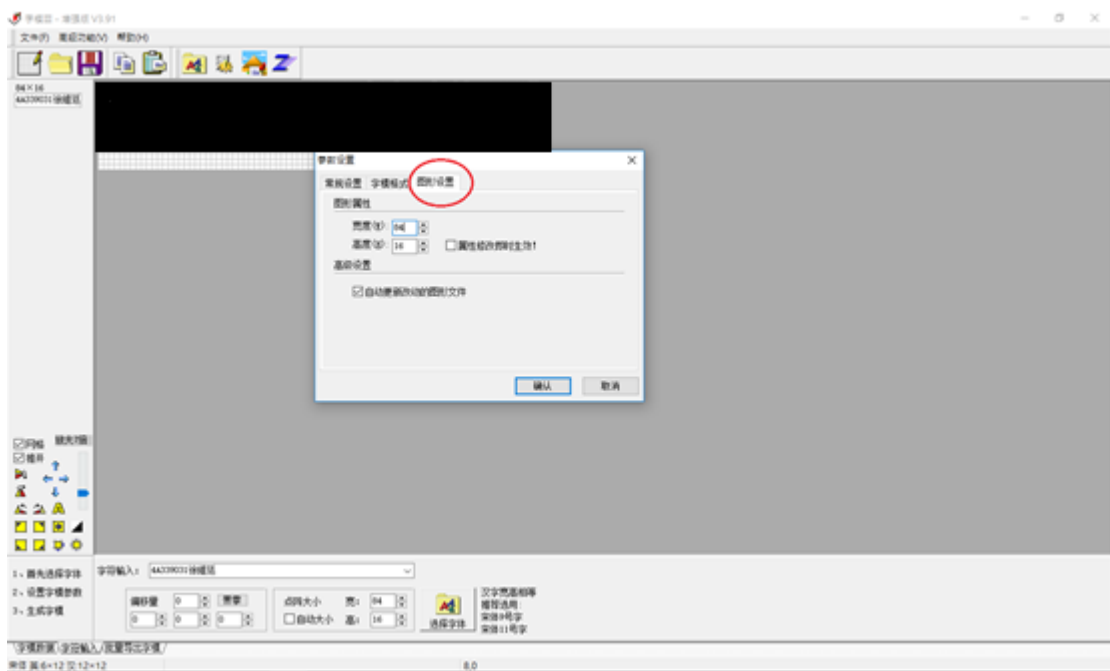
### (1) 建字軟體(字模 3 增强版)



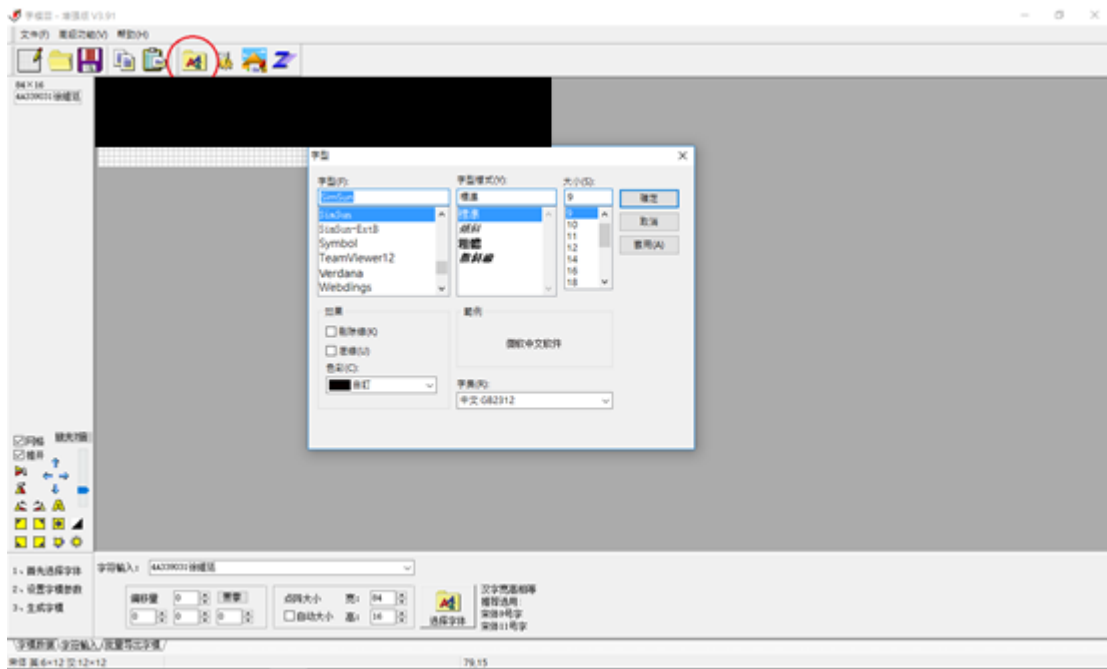
## (2) 建立步驟



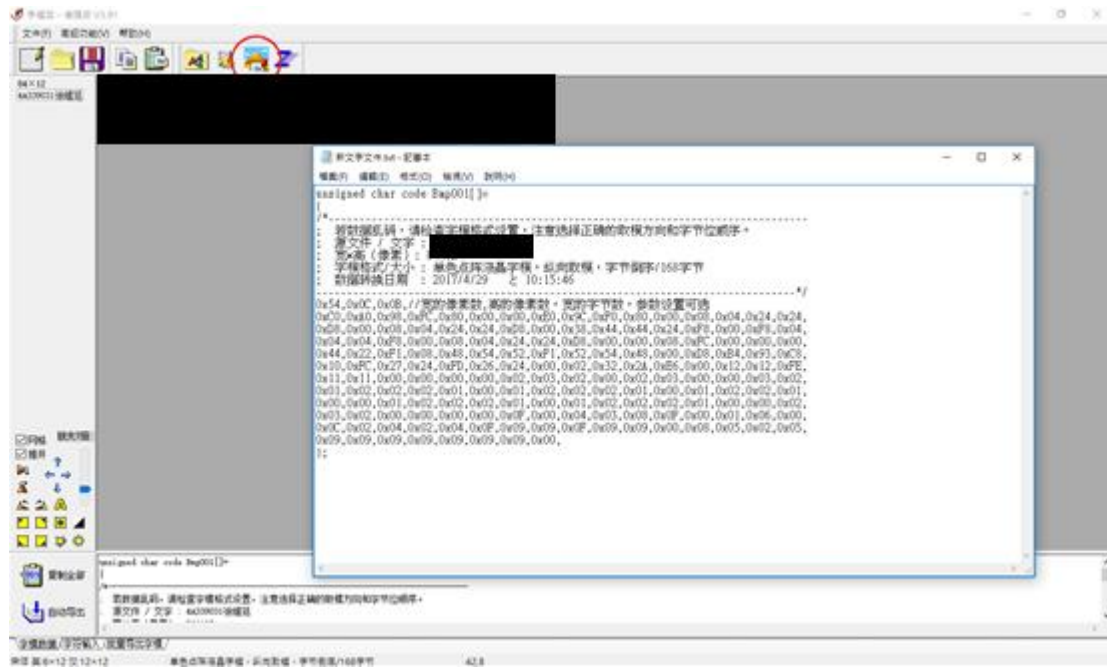
### ▲ 參數設定



### ▲ 圖形設定



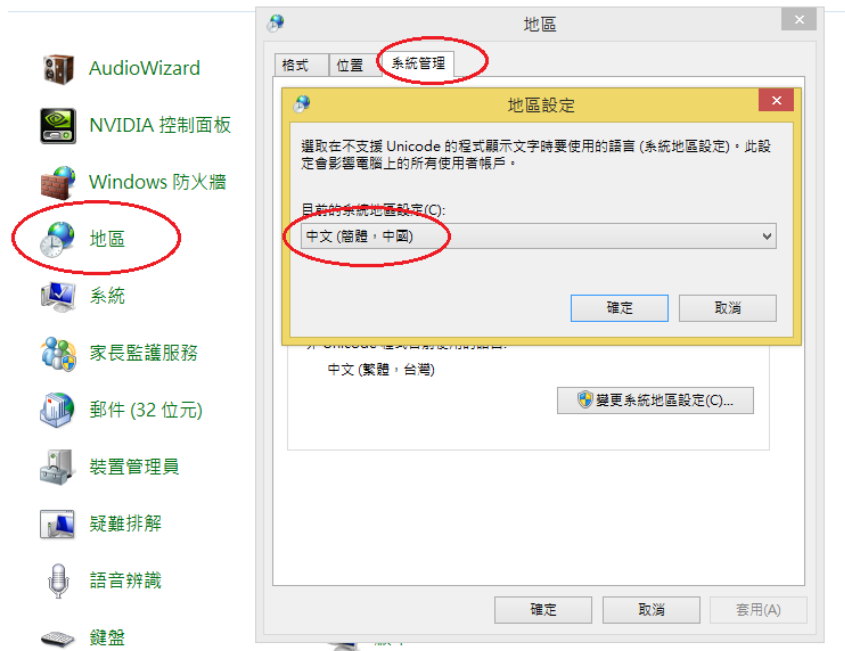
▲ 字型選擇



▲ 輸出編碼

(3) 注意事項

安裝軟體(字模 3 增強版)時，要記得到控制台將地區改為中文(簡體,中國)才能夠安裝並開啟。



#### 四、 程式碼

(1) 主程式

```
#include<reg51.h>
#include"fonts.h"
sbit RST=P2^5;
sbit CE=P2^6;
sbit DC=P2^7;
sbit DIN=P1^0;
sbit CLK=P1^1;

#define DATA 1
#define CMD 0
void delay_us(unsigned int t);
void init(void);
void clear(void);
void set_xy(unsigned char x, unsigned char y);
```

```
void write_byte(unsigned char cdata, unsigned char command);
void write_char(unsigned char cdata, unsigned char mode);
void write_string(unsigned char *str, unsigned char mode);
void LCD_write_LOGO(unsigned char X, unsigned char Y, unsigned char
*Str);
```

```
void main(void)
{
    unsigned char X, Width;

    init();
    clear();

    while(1)
    {
        Width = ID1[0];
        X = (84 - Width)/2;
        LCD_write_LOGO(X, 0, &ID1[0]);

        Width = ID2[0];
        X = (84 - Width)/2;
        LCD_write_LOGO(X, 2, &ID2[0]);
    }
}
```

```
void delay_us(unsigned int t)
{
    while(t--);
}
```

```
void write_byte(unsigned char cdata, unsigned char command)
{
    unsigned char i;
    CE=0;
    DC=command;
    for(i=0;i<8;i++)
    {
```



```

        if(cdata&0x80)
        {
            DIN=1;
        }
        else
        {
            DIN=0;
        }
        cdata=cdata<<1;
        CLK=0;
        CLK=1;
    }
    DC=1;
    CE=1;
    DIN=1;
}

void write_char(unsigned char cdata, unsigned char mode)
{
    unsigned char line;
    cdata-=32;
    for(line=0;line<6;line++)
    {
        if(mode)
        {
            write_byte(~font6x8[cdata][line], DATA);
        }
        else
        {
            write_byte(font6x8[cdata][line], DATA);
        }
    }
}

void write_string(unsigned char *str, unsigned char mode)
{
    while(*str)
    {

```

```

        write_char(*str,mode);
        str++;
    }
}

void set_xy(unsigned char x, unsigned char y)
{
    write_byte(0x40|y, CMD);
    write_byte(0x80|x, CMD);
}

void clear(void)
{
    unsigned char t;
    unsigned char k;
    set_xy(0,0);
    for(t=0;t<6;t++)
    {
        for(k=0;k<84;k++)
        {
            write_byte(0x00, DATA);
        }
    }
}

void init(void)
{
    RST=0;
    delay_us(10000);
    RST=1;
    write_byte(0x21, CMD);
    write_byte(0xc8, CMD);
    write_byte(0x06, CMD);
    write_byte(0x13, CMD);
    write_byte(0x20, CMD);
    write_byte(0x0c, CMD);
    clear();
}

```

```

void LCD_write_LOGO(unsigned char X, unsigned char Y, unsigned char
*Str)
{
    unsigned char Width, Height, *p;
    unsigned char i, j;

    Width = Str[0];
    Height = Str[1]>>3;

    for (i=0; i<Height; i++)
    {
        set_xy(X,Y+i);
        p = &Str[3+(i*Width)];
        for (j=0; j<Width; j++)
        {
            write_byte(p[j],DATA);
        }
    }
}

```

(2) 標頭檔(.h)

```

extern unsigned char code font6x8[][6];
extern unsigned char code ID1[];
extern unsigned char code ID2[];

```

(3) 標頭檔程式(.c)

```

unsigned char code ID1[]=
{

};

unsigned char code ID2[]=
{

};

```

## 五、 參考資料

8051 圖片

<https://aninditadhikary.files.wordpress.com/2011/01/8051pins.png>