آزمایش پنجم میکروپروسسور

گروه5:محسن فرج پور، عرفان میرحاجی، امیرمحمدحریمی

قسمت اول:

```
#include "LPC17xx.h"
#include "timer.h"
#include "adc.h"
#include "gpio.h"
#include "lcd.h"
#include "uart.h"
// variables
char password[] = "%GROUP 05\n";
char received[8];
char i = 0;
// functions

int main(void)
{
	//system
	SystemInit();
	//adc pin direction
	GPIO_PinDirection(P0_23,INPUT);
	GPIO_PinDirection(P0_24,INPUT);
	GPIO_PinDirection(P0_25,INPUT);
	GPIO_PinDirection(P0_26,INPUT);

	//lcd pin direction & init
	GPIO_PinDirection(P0_0,INPUT);
	GPIO_PinDirection(P0_1,INPUT);
	GPIO_PinDirection(P0_2,INPUT);
	GPIO_PinDirection(P0_4,INPUT);
	GPIO_PinDirection(P0_5,INPUT);
	GPIO_PinDirection(P0_6,INPUT);
	GPIO_PinDirection(P0_7,INPUT);
	LCD_SetUp(P0_0,P0_1,P0_2,P_NC,P_NC,P_NC,P_NC,P0_4,P0_5,P0_6,P0_7);
	LCD_Init(2,16);
	LCD_Clear();

	//uart2 init
	UART2_Init(9600);

	for (i=0;i<=9;i++)
		UART2_TxChar(password[i]);

	for (i=0;i<=6;i++)
		received[i] = UART2_RxChar();
	LCD_GoToLine(0);
	LCD_Printf("GROUP 05");
	LCD_GoToLine(1);
	LCD_Printf("pass = %s",received);
}
```

رمز عبور:

سوال دوم:

از تابع sprintf برای تبدیل اعداد دسیمال به رشته استفاده شده است، خروجی ها در فیلم موجود است. (زمان ارسال :9.24 دقیقه AM صبح چهارشنبه)

کاراکتر #

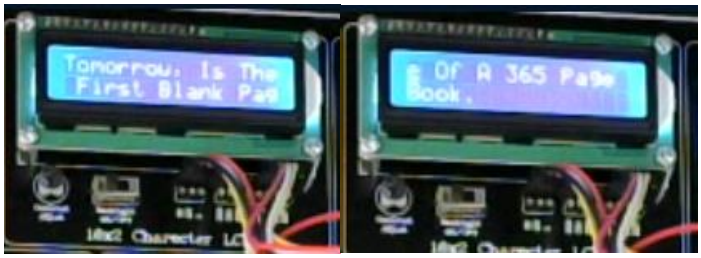
```
#include "LPC17xx.h"
#include "timer.h"
#include "adc.h"
#include "gpio.h"
#include "lcd.h"
#include "uart.h"
#include "stdio.h"

// variables
int voltage = 0;
int light = 0;
int temp = 0;
int humid = 0;

char password[] = "%GROUP 05\n";
char received[8];
char c = 0;
int i = 0;
char message_ok;
char string_i[1];
char string_temp[2];
char string_light[4];
char string_volt[4];
char string_humid[2];

// functions
int voltage_sensor(void);
int light_intensity(void);
int temperature_sensor(void);
int humidity_sensor(void);

void myFunction(void)
{
	i++;
		if(i<=10)
		{
			LCD_GoToLine(0);
			LCD_Printf("&05-");
			UART2_TxString("&05-");

			LCD_Printf("%s-",received);
			UART2_TxString(received);
			UART2_TxChar('-');

			LCD_Printf("%d-",i);
			sprintf(string_i, "%d", i);
			UART2_TxString(string_i);
			UART2_TxChar('-');

			LCD_Printf("%d-",voltage_sensor());
			sprintf(string_volt, "%d", voltage_sensor());
			UART2_TxString(string_volt);
```

```
                    UART2_TxChar('-');

                    LCD_Printf("%d-",light_intensity());
                    sprintf(string_light, "%d", light_intensity());
                    UART2_TxString(string_light);
                    UART2_TxChar('-');

                    LCD_Printf("%d-",temperature_sensor());
                    sprintf(string_temp, "%d", temperature_sensor());
                    UART2_TxString(string_temp);
                    UART2_TxChar('-');

                    LCD_Printf("%2d",humidity_sensor());
                    sprintf(string_humid, "%d", humidity_sensor());
                    UART2_TxString(string_humid);
                    UART2_TxChar('\n');

                    message_ok = UART2_RxChar();
                    LCD_Printf("%c",message_ok);
            }
            if(i > 10)
            {
            }
}


int main(void)
{
       //system
       SystemInit();
       //adc pin direction
       GPIO_PinDirection(P0_23,INPUT);
       GPIO_PinDirection(P0_24,INPUT);
       GPIO_PinDirection(P0_25,INPUT);
       GPIO_PinDirection(P0_26,INPUT);

       //lcd pin direction & init
       GPIO_PinDirection(P0_0,INPUT);
       GPIO_PinDirection(P0_1,INPUT);
       GPIO_PinDirection(P0_2,INPUT);
       GPIO_PinDirection(P0_4,INPUT);
       GPIO_PinDirection(P0_5,INPUT);
       GPIO_PinDirection(P0_6,INPUT);
       GPIO_PinDirection(P0_7,INPUT);
       LCD_SetUp(P0_0,P0_1,P0_2,P_NC,P_NC,P_NC,P_NC,P0_4,P0_5,P0_6,P0_7);
       LCD_Init(2,16);
       LCD_Clear();

       // adc init
       ADC_Init();

       //uart2 init
       UART2_Init(9600);

       for (c=0;c<=9;c++)
              UART2_TxChar(password[c]);

       for (c=0;c<=6;c++)
              received[c] = UART2_RxChar();

       //timer
       TIMER_Init(TIMER_1,10000000);
       TIMER_AttachInterrupt(TIMER_1, myFunction);
       TIMER_Start(TIMER_1);
       while(1){}
```

```
}

int voltage_sensor(void)
{
	int x;
	x = (ADC_GetAdcValue(0)*3300/(4096));
	return x;
}
int light_intensity(void)
{
	int x;
	x = (ADC_GetAdcValue(1));
	x = 10000 - ((x*9990)/4096);
	return x;
}
int temperature_sensor(void)
{
	int x;
	x = (ADC_GetAdcValue(2));
	x = (x*330)/4096;
	return x;
}
int humidity_sensor(void)
{
	int x;
	x = ((3300 - ((ADC_GetAdcValue(3)*3300)/(4096)))/3300)*100 ;
	return x;
}
```

سوال سوم:

متن خوانده شده به صورت زیر است (پس از capitalize first letter):



باید مشابه سوال قبل ارسال شده و کاراکتر شارپ دریافت شود: (ارسال 9.19 چهارشنبه صبح AM)

```
#include "LPC17xx.h"
#include "timer.h"
#include "adc.h"
#include "gpio.h"
#include "lcd.h"
#include "uart.h"
#include "stdio.h"

#define MAX 53

// variables
char password[4] = "$05\n";
char received[MAX];
char i = 0;
char message_ok;
char str[MAX];

int main(void)
{
	//system
	SystemInit();
	//adc pin direction
	GPIO_PinDirection(P0_23,INPUT);
	GPIO_PinDirection(P0_24,INPUT);
```

```
	GPIO_PinDirection(P0_25,INPUT);
	GPIO_PinDirection(P0_26,INPUT);

	//lcd pin direction & init
	GPIO_PinDirection(P0_0,INPUT);
	GPIO_PinDirection(P0_1,INPUT);
	GPIO_PinDirection(P0_2,INPUT);
	GPIO_PinDirection(P0_4,INPUT);
	GPIO_PinDirection(P0_5,INPUT);
	GPIO_PinDirection(P0_6,INPUT);
	GPIO_PinDirection(P0_7,INPUT);
	LCD_SetUp(P0_0,P0_1,P0_2,P_NC,P_NC,P_NC,P_NC,P0_4,P0_5,P0_6,P0_7);
	LCD_Init(2,16);
	LCD_Clear();

	//uart2 init
	UART2_Init(9600);

	for (i=0;i<=3;i++)
		UART2_TxChar(password[i]);

	for (i=0;i<=MAX;i++)
		received[i] = UART2_RxChar();

for(i=0; received[i]!='\0'; i++)
	{
		if(i==0)
		{
			if((received[i]>='a' && received[i]<='z'))
			received[i]=received[i]-32;
			continue;
		}
		if(received[i]==' ')
		{
			++i;
			if(received[i]>='a' && received[i]<='z')
			{
				received[i]=received[i]-32;
				continue;
			}
		}
		else
		{
			if(received[i]>='A' && received[i]<='Z')
				received[i]=received[i]+32;
		}
	}


	/*LCD_GoToLine(0);

	for(i=32;i<=MAX;i++)
	{
		LCD_Printf("%c",received[i]);
	}*/

	UART2_TxString("@05:");
	UART2_TxString(received);
	UART2_TxChar('\n');
	message_ok=UART2_RxChar();
	LCD_Printf("%c", message_ok);
}
```


16x2 Character LC