```
/*******************************************************************************
 * Name:    LCD.c
 * Description: STM32 LCD display
 * Version: V1.00
 * Authors: Li Pan
 *
 *******************************************************************************/

#include "stm32f10x.h"
#include "LCD.h"
#include "CLOCK.h"
#include "GPIO.h"
#include <string.h>

/*Enable LCD PORT*/
void LCD_IO_PC(void)
{

            GPIOB->CRL |= GPIO_CRL_MODE0 | GPIO_CRL_MODE1 | GPIO_CRL_MODE5 ;
    GPIOB->CRL &= ~GPIO_CRL_CNF0 & ~GPIO_CRL_CNF1 & ~GPIO_CRL_CNF5 ;

            GPIOC->CRL |= GPIO_CRL_MODE0 | GPIO_CRL_MODE1 | GPIO_CRL_MODE2|
GPIO_CRL_MODE3 |GPIO_CRL_MODE4 | GPIO_CRL_MODE5 | GPIO_CRL_MODE6| GPIO_CRL_MODE7
;
    GPIOC->CRL &= ~GPIO_CRL_CNF0 & ~GPIO_CRL_CNF1 & ~GPIO_CRL_CNF2 &
~GPIO_CRL_CNF3 & ~GPIO_CRL_CNF4 & ~GPIO_CRL_CNF5 & ~GPIO_CRL_CNF6 &
~GPIO_CRL_CNF7 ;
}

/* command to LCD  */
void CMD2LCD(uint8_t data)
{
      GPIOB->BSRR=LCD_CM_ENA;


      GPIOC->ODR&=0xFF00;
      GPIOC->ODR|=data;

      delay(8000);

      GPIOB->BSRR=LCD_CM_DIS;
      delay(80000);

}
/*data display on LCD*/
void DATA2LCD(uint8_t data)
{
      GPIOB->BSRR=LCD_DM_ENA;


      GPIOC->ODR&=0xFF00;
      GPIOC->ODR|=data;

      delay(8000);
```

```
	GPIOB->BSRR=LCD_DM_DIS;
	delay(80000);

}

/*intial the LCD location display*/
void INIT_LCD(void)
{
		delay(90000);

		CMD2LCD(LCD_8B2L);

		CMD2LCD(LCD_8B2L);

		CMD2LCD(LCD_8B2L);

		CMD2LCD(LCD_8B2L);


		CMD2LCD(LCD_DCB);

		CMD2LCD(LCD_CLR);

		CMD2LCD(LCD_MCR);

}


void STR2LCD(char *message)
{
	int i=0;
	uint16_t messageLength = strlen(message);
	for(i=0;i<messageLength;++i)
	{
		DATA2LCD(*message);
		++message;

	}

}
/*the value read from switches to display the acccording hex number.*/
uint16_t SW2ASCII(void)
{

	if(read_SW()<=0x09)
		return read_SW()+0x30;

	else
		 return read_SW()+0x37;

}

uint16_t SW2NUM(void)
```

```
{
if(read_SW()<=0x09)
            return read_SW()+0x30;
else
             return read_SW()+0x26;
}

/*hex and Ascii convert*/
uint32_t Hex2Ascii(uint32_t hexval)
{

      if(hexval<=0x9)
            return hexval +0x30;
      else
            return hexval +0x37;

}
/*display the float number on LCD*/
void Float2LCD(double VAL, int DecLTR)
{ int tem;
      int IntNums=1;

      int INT_PART;
      double DEC_PART;
      INT_PART=VAL;
      DEC_PART=(VAL - INT_PART)*pow(10,DecLTR);

      while(INT_PART>=10)
      {
            INT_PART=INT_PART/10;
            IntNums=IntNums*10;
      }

  while(IntNums >= 1)
      {
            tem=VAL/IntNums;
            VAL=VAL-tem*IntNums;
            IntNums=IntNums/10;
            DATA2LCD(Hex2Ascii(tem));
      }

      DATA2LCD(0x2E); // print "."

  VAL=DEC_PART;
  IntNums=pow(10,DecLTR-1);
  while(IntNums >= 1)
      {
            tem=VAL/IntNums;
            VAL=VAL-tem*IntNums;
            IntNums=IntNums/10;
            DATA2LCD(Hex2Ascii(tem));
      }

}
```