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/*****
*   Title:           Delfino Evaluation Board LCD 2x16 Display   *
*   Filename:        LCD2x16Display.c                          *
*   Date:           20-11-2014                                *
*   Last Modify:    20-11-2014                                *
*   File Version:   1.0                                        *
*                                                           *
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*   Company:        Flaxer.net                                *
*                                                           *
*                                                           */

#include "DSP28x_Project.h"    // Device Header file and Examples Include File

/*****/
static inline void LcdControlBit(int bit)
{
    if (bit)
        GpioDataRegs.GPBSET.bit.GPIO57 = 1;
    else
        GpioDataRegs.GPBCLEAR.bit.GPIO57 = 1;
}

/*****/
static inline void LcdEnable1Bit(int bit)
{
    if (bit)
        GpioDataRegs.GPBSET.bit.GPIO56 = 1;
    else
        GpioDataRegs.GPBCLEAR.bit.GPIO56 = 1;
}

/*****/
static inline void LcdBlink1Bit(int bit)
{
    if (bit)
        GpioDataRegs.GPBSET.bit.GPIO58 = 1;
    else
        GpioDataRegs.GPBCLEAR.bit.GPIO58 = 1;
}

/*****/
static inline void LcdWriteData(char data)
{
    GpioDataRegs.GPBCLEAR.all = (0xFFL << 16);    // Clear all data bits GPIO48-GPIO55
    GpioDataRegs.GPBSET.all = ((long)data << 16); // Set the relevant data bits GPIO48-GPIO55
}

/*****/
void BackLightLCD(int x)
{
    LcdBlink1Bit(x);
}

/*****/
void PutcLCD(const char c)
{
    LcdControlBit(1);    // Data
    DELAY_US(1);
    LcdEnable1Bit(1);
    LcdWriteData(c);
}

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DELAY_US(1);
LcdEnablelBit(0);
DELAY_US(100);
}
/*****/
void PrintLCD(const char *str)
{
int i;
for(i=0; str[i]; i++)
{
PutcLCD(str[i]);
}
}
/*****/
void ClearLCD(void)
{
LcdControlBit(0); // Control
DELAY_US(1);
LcdEnablelBit(1);
LcdWriteData(0x01); // Clear code
DELAY_US(1);
LcdEnablelBit(0);
DELAY_US(10000);
}
/*****/
void InItLCD(void)
{
static const char LcdInitStr[] = {0x38, 0x0E, 0x06, 0x01};
int i;

LcdControlBit(0); // Control

for (i=0; i<4; i++)
{
LcdEnablelBit(1);
LcdWriteData(LcdInitStr[i]);
DELAY_US(10000);
LcdEnablelBit(0);
DELAY_US(5000);
}
}
/*****/
void HomeLCD()
{
LcdControlBit(0); // Control
DELAY_US(1);
LcdEnablelBit(1);
LcdWriteData(0x02); // Home Code
DELAY_US(1);
LcdEnablelBit(0);
DELAY_US(1000);
}
/*****/
void OnOffLCD(char D, char C, char B)
{
LcdControlBit(0); // Control
DELAY_US(1);

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LcdEnablelBit(1);
LcdWriteData(0x08 | (D<<2) | (C<<1) | (B<<0)); // DCB Code
DELAY_US(1);
LcdEnablelBit(0);
DELAY_US(1000);
}
/*=====*/
void GoToLCD(char y, char x)
{
LcdControlBit(0); // Control
DELAY_US(1);
LcdEnablelBit(1);
LcdWriteData((1<<7) | (0x40*y + x)); // Set DDRAM Address
DELAY_US(1);
LcdEnablelBit(0);
DELAY_US(50);
}
/*=====*/
void PrintLineLCD(char line, const char *str)
{
static const char EmptyLine[]=" ";
GoToLCD(line, 0);
PrintLCD(EmptyLine);
GoToLCD(line, 0);
PrintLCD(str);
}
/*=====*/

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