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/\* CIS 4930 - Microprocessor Interfacing \*/

/\* LCD Code \*/

/\* \*/

/\* Printed from: <http://www.microdigitaled.com/HCS12/Hardware/Dragon12-Plus-Support.htm>, by way of \*/

/\* <http://www.evbplus.com/hcs12_9s12_resources/hc11_68hc11_hc12_68hc12_9s12_hcs12_sites.html> \*/

/\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*/

#define LCD\_DATA PORTK

#define LCD\_CTRL PORTK

#define RS 0x01

#define EN 0x02

void COMWRT4(unsigned char);

void DATWRT4(unsigned char);

void MSDelay(unsigned int);

void main(void)

{

DDRK = 0xFF;

COMWRT4(0x33); //reset sequence provided by data sheet

MSDelay(1);

COMWRT4(0x32); //reset sequence provided by data sheet

MSDelay(1);

COMWRT4(0x28);

MSDelay(1);

COMWRT4(0x06);

MSDelay(1);

COMWRT4(0x0E);

MSDelay(1);

COMWRT4(0x01);

MSDelay(1);

COMWRT4(0x80);

MSDelay(1);

DATWRT4('H');

MSDelay(1);

DATWRT4('E');

MSDelay(1);

DATWRT4('L');

MSDelay(1);

DATWRT4('L');

MSDelay(1);

DATWRT4('O');

for(;;); //stay here

}

void MSDelay(unsigned int itime)

{

unsigned int i; unsigned int j;

for(i=0;i<itime;i++)

for(j=0;j<4000;j++);

}

void COMWRT4(unsigned char command)

{

unsigned char x;

x = (command & 0xF0) >> 2; //shift high nibble to center of byte for Pk5-Pk2

LCD\_DATA =LCD\_DATA & ~0x3C; //clear bits Pk5-Pk2

LCD\_DATA = LCD\_DATA | x; //sends high nibble to PORTK

MSDelay(1);

LCD\_CTRL = LCD\_CTRL & ~RS; //set RS to command (RS=0)

MSDelay(1);

LCD\_CTRL = LCD\_CTRL | EN; //raise enable

MSDelay(5);

LCD\_CTRL = LCD\_CTRL & ~EN; //Drop enable to capture command

MSDelay(15); //wait

x = (command & 0x0F)<< 2; // shift low nibble to center of byte for Pk5-Pk2

LCD\_DATA =LCD\_DATA & ~0x3C; //clear bits Pk5-Pk2

LCD\_DATA =LCD\_DATA | x; //send low nibble to PORTK

LCD\_CTRL = LCD\_CTRL | EN; //raise enable

MSDelay(5);

LCD\_CTRL = LCD\_CTRL & ~EN; //drop enable to capture command

MSDelay(15);

}

void DATWRT4(unsigned char data)

{

unsigned char x;

x = (data & 0xF0) >> 2;

LCD\_DATA =LCD\_DATA & ~0x3C;

LCD\_DATA = LCD\_DATA | x;

MSDelay(1);

LCD\_CTRL = LCD\_CTRL | RS;

MSDelay(1);

LCD\_CTRL = LCD\_CTRL | EN;

MSDelay(1);

LCD\_CTRL = LCD\_CTRL & ~EN;

MSDelay(5);

x = (data & 0x0F)<< 2;

LCD\_DATA =LCD\_DATA & ~0x3C;

LCD\_DATA = LCD\_DATA | x;

LCD\_CTRL = LCD\_CTRL | EN;

MSDelay(1);

LCD\_CTRL = LCD\_CTRL & ~EN;

MSDelay(15);

}