**I2C PROGRAM:**

/\*SCL ----> P0.23

SDA ----> P0.24\*/

#include <LPC17xx.H>

#include "GLCD.H"

#define \_\_FI 1 /\* Font Index (0 = 6x8, 1 = 16x24) \*/

#define SCL(x) ((x) ? (LPC\_GPIO0->FIOSET = 1<<23) : (LPC\_GPIO0->FIOCLR = 1<<23));delay()

#define SDA(x) ((x) ? (LPC\_GPIO0->FIOSET = 1<<24) : (LPC\_GPIO0->FIOCLR = 1<<24));delay()

#define I2C\_SDA ((LPC\_GPIO0->FIOPIN & 0x01000000) >> 24)

/\*

The I2C address of U1,U2,U3 and U4 depend on the IC palced on the interface.

Addrss for PCF8574AP is 0x7X and for PCF8574P is 0x4X.

So read the part number from the device and define in the below line.

Make sure all the four IC part nos are same.

\*/

#define PCF8574AP // Specify the U1,U2,U3&U4 part number by reading from interface.

#ifdef PCF8574AP /\* If Part number is PCF8574AP then assign the address\*/

#define U1 0x70

#define U2 0x72

#define U3 0x74

#define U4 0x76

#endif

#ifdef PCF8574P /\* If Part number is PCF8574P then assign the address\*/

#define U1 0x40

#define U2 0x42

#define U3 0x44

#define U4 0x46

#endif

unsigned char Recved\_Data[7];

unsigned char lookup[10] = {0xC0,0xF9,0xA4,0xB0,0x99,0x92,0x82,0xF8,0x80,0x90};

/\* Lookup table for display code of 0 to 9 digits on LED \*/

unsigned long SDA =0;

void LED\_display(unsigned char , unsigned char);

void Send\_Ack(void);

void Send\_Start(void);

void Send\_Data(unsigned char);

void Send\_Stop(void);

unsigned char Recv\_Data(void);

void Recv\_Ack(void);

void Delay(void);

void LED\_display(unsigned char Slv\_Addr, unsigned char Data)

{

Send\_Start(); /\* Send START Signal \*/

Send\_Data(Slv\_Addr); /\* Send Slave address \*/

Recv\_Ack(); /\* Receive Acknoledge \*/

Send\_Data(Data); /\* Send Data \*/

Recv\_Ack(); /\* Receive Acknoledge \*/

Send\_Stop(); /\* Send STOP Signal \*/

}

void Delay() /\* Delay Routine \*/

{

unsigned int j,i;

for(i=0; i<10; i++)

for(j=0; j<=15; j++);

}

void delay()

{

unsigned int i;

for(i=0;i<100;i++);

}

void Send\_Start()

{

SCL(1); /\* Make Clock line High \*/

SDA(1); /\* Make Data line High \*/

SDA(0); /\* Make Data line Low \*/

SCL(0); /\* Make Clock line Low \*/

}

void Send\_Data(unsigned char dat)

{

unsigned char i;

SCL(0); /\* Make Clock line Low \*/

for(i=8; i>0; i--)

{

SDA(((dat >> (i-1)) & 0x01)); /\* Place the Data \*/

delay();

SCL(1); /\* Make Clock line High \*/

SCL(0); /\* Make Clock line Low \*/

}

}

void Recv\_Ack()

{

// SDA(1); /\* Initialize Data pin as as Input \*/

SCL(1); /\* Make Clock line High \*/

while(I2C\_SDA); /\* Wait till Acknoledge received \*/

SCL(0); /\* Make Clock line Low \*/

}

void Send\_Stop()

{

SDA(0);

SCL(1); /\* Make Clock line High \*/

SDA(0); /\* Make Data line Low \*/

SDA(1); /\* Make Data line High \*/

SCL(0);

}

main()

{

LPC\_SC->PCONP = 1 << 15; /\* POWER TO PORTS\*/

LPC\_GPIO0->FIODIR = 3 << 23; /\* P0.23 AND P0.24 AS SCL AND SDA OUTPUTS\*/

#ifdef \_\_USE\_LCD

GLCD\_Init(); /\* Initialize graphical LCD \*/

GLCD\_Clear(White); /\* Clear graphical LCD display \*/

GLCD\_SetBackColor(Blue);

GLCD\_SetTextColor(White);

GLCD\_DisplayString(0, 0, \_\_FI, " ESA ");

GLCD\_DisplayString(1, 0, \_\_FI, " Bangalore ");

GLCD\_DisplayString(2, 0, \_\_FI, " www.esaindia.com ");

GLCD\_SetBackColor(White);

GLCD\_SetTextColor(Blue);

GLCD\_DisplayString(6, 0, \_\_FI, " I2C SEVEN SEGMENT ");

#endif

while(1)

{

delay();

LED\_display(U4,0x88); /\* Display 'A' \*/

LED\_display(U3,0x92); /\* Display 'S' \*/

LED\_display(U2,0x86); /\* Display 'E' \*/

LED\_display(U1,0xBF);

Delay();

}

}

**I2C INTERFACING:**



