**ALL BELOW CODES ARE OF ON CHIP PHERIPHERAL ARM7 based LPC2148 Microcontroller FOR further details visit ARM official website.**

///// 1st one uart are in interrupt mode

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#include<lpc21xx.h>

unsigned char mg;

unsigned char msg[]={"bvb"};

void delay(void);

void serial(void);

void UART0intrpt\_ISR(void) \_\_irq;

int main()

{

serial();

VICVectAddr0=(unsigned long) UART0intrpt\_ISR;

VICVectCntl0=20|6;//6th bit for uart0

VICIntEnable=0x40;//0100-6th bit

}

void serial(void)

{

PINSEL0=0x00000005;

U0LSR=0x83; //1 stop bit, 8 bit character length

U0DLL=0x61; //determines baud rate

U0LCR=0x03; //8 bit datalength

U0IER=0x03;//0011 to enable both THRE and RBR reg;(interrupt enable reg)

}

void delay()

{

unsigned int i;

for(i=0;i<1000;i++);

}

void UART0intrpt\_ISR(void) \_\_irq

{

unsigned int i;

for(i=0;i<3;i++)

{

while(!(U0LSR&0x20));

U0IIR=msg[i];

}

while(!(U0LSR&0x01));

mg=U0RBR;

U0THR=mg;

delay();

VICVectAddr0=0;

}

--------------------------------------------------------------------------------------------------------------------------------------

//////// 2nd timer in interrupt mode

#include<lpc21xx.h>

#define DESIRED\_COUNT 5000

#define PRESCALER 11999

//void InitTimer0(void);

void delay(unsigned int a)

{

unsigned int j;

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

}

void extint0\_ISR(void)\_\_irq

{

IOCLR0=0x000f0000;//led

delay(6000);

VICVectAddr=0x00; //end of interupt execution

delay(65000);

delay(6500000);

delay(65000000);

delay(65000);

T0IR=0X00000001;// cleAR

IOSET0=0x000f0000;//led

}

void InitTimer0(void)

{

T0PR=PRESCALER;

T0MR0=DESIRED\_COUNT;//

T0MCR=3;//interrupt and reset when counter =match

T0TCR=2;//reset the counter

VICVectAddr0=(unsigned long)extint0\_ISR;

VICVectCntl0=0x20|4;//20 industrial standard, 4 for external interrupt

VICIntEnable|=0x00000010;//enabling the intrpt

}

int main()

{

PINSEL0=0x00000000;

IODIR0=0x000f0000;//led output configure

InitTimer0();//initialising the timer

T0TCR = 0x00000001;//enable counter

IOSET0=0x000f0000;//led

delay(6500);

while(1);

}

--------------------------------------------------------------------------------------------------------------------------------------

/// 3 rd one switch controlled uart

#include<lpc21xx.h>

unsigned int value;

void delay()

{

unsigned int j;

for(j=0;j<10000;j++);

}

void serial()

{

PINSEL0=0X00000005;

U0LCR=0X83;

U0DLL=0X61;

U0LCR=0X03;

}

void serial1()

{

PINSEL0=0X00050000;

U1LCR=0X83;

U1DLL=0X61;

U1LCR=0X03;

}

void uart(void)

{

unsigned int i;

unsigned char a;

unsigned char msg[]={"how are you"};

serial();

for(i=0;i<12;i++)

{

while(!(U0LSR&0x20));

U0THR=msg[i];

}

while(!(U0LSR&0x20));

a=U0RBR;

U0THR=a;

delay();

}

void uart2(void)

{

unsigned int i;

unsigned char a;

unsigned char msg1[]={"i am dead"};

serial1();

for(i=0;i<12;i++)

{

while(!(U1LSR&0x20));

U1THR=msg1[i];

}

while(!(U1LSR&0x20));

a=U1RBR;

U1THR=a;

delay();

}

int main()

{

PINSEL1=0x00000000;

PINSEL2=0x00000000;

IODIR0=0x000F4000;

//IODIR1=0x00000000;

//IOPIN1=0x00f00000;

while(1)

{

value=IOPIN1;

value=value&0x00f00000;

if((value)==0x00100000)

{

uart2();

}

else if((value)==0x00200000)

{

uart();

}

}

}

--------------------------------------------------------------------------------------------------------------------------------------

/////// 4th dc motor

#include<lpc21xx.h>

#define DESIRED\_COUNT1 5000

#define DESIRED\_COUNT2 10000

#define PRESCALAR 11999

void delay(void);

void inittimer0(void);

void inittimer1(void);

int main()

{

unsigned int x;

PINSEL0=0x00000000;

IODIR0=0x00F00C00;

IOCLR0=0x00000C00;

IODIR1=0x00000C00;

while(1)

{

inittimer0();

T0TCR=0X01;

while(!(T0IR==0X01))

{

T0IR=0X01;

IOCLR0=0x00000400;

IOSET0=0x00000C00;

}

T0IR=0X01;

inittimer1();

while(!(T0IR==0X01))

{

IOSET0=0x00000C00;

IOCLR0=0x00000800;

}

T0IR=0X01;

}

}

void inittimer0(void)

{

T0PR=PRESCALAR;

T0MR0=DESIRED\_COUNT1;

T0MCR=3;

T0TCR=1;

}

void inittimer1(void)

{

T0PR=PRESCALAR;

T0MR1=DESIRED\_COUNT2;

T0MCR=3;

T0TCR=1;

}

--------------------------------------------------------------------------------------------------------------------------------------

///// 5 seven segment ext interrupt

#include<lpc214x.h>

#include<stdio.h>

void extint0\_ISR(void)\_\_irq;

void display1(unsigned int y);

void display2(unsigned int z);

void delay(void);

unsigned int counter = 0;

unsigned int counter1 = 0;

unsigned int counter2 = 0;

int main()

{

PINSEL1=0X00000001;

IODIR0=0x20FF0000;

IOCLR0=0X00FF0000;

EXTMODE=0X01;

VICVectAddr0=(unsigned long)extint0\_ISR;

VICVectCntl0=0x20|14;

VICIntEnable|=0x00004000;

while(1);

}

void extint0\_ISR(void)\_\_irq

{

display1(counter);

counter=counter+1;

if (counter > 9)

{

counter1=counter/10;

counter2=counter%10;

display1(counter2);

display2(counter1);

}

EXTINT|=0X01;

VICVectAddr=0;

}

void display1(unsigned int x)

{

unsigned int i;

int a[10]={0x003f0000,0x0060000,0x005b0000,0x004f0000,0x00660000,0x006d0000,0x007d0000,0x00070000,0x007f0000,0x006f0000};

IODIR0=0x10FF0000;

IOSET0=0x10000000;

IOSET0=a[x];

delay();

IOCLR0=a[x];

}

void display2(unsigned int y)

{

unsigned int j;

int b[10]={0x003f0000,0x0060000,0x005b0000,0x004f0000,0x00660000,0x006d0000,0x007d0000,0x00070000,0x007f0000,0x006f0000};

IODIR0=0x20FF0000;

IOSET0=0x20000000;

IOSET0=b[y];

delay();

IOCLR0=b[y];

delay();

}

void delay(void)

{

unsigned int m;

for(m=0;m<650000;m++);

}

--------------------------------------------------------------------------------------------------------------------------------------

/////// 6 concatination

#include<lpc214x.h>

unsigned char var;

unsigned char arr[2400];

void serial0()

{

PINSEL0=0x00000005;

U0LCR=0x83;

U0DLL=0x61;

U0LCR=0x03;

}

void serial1()

{

PINSEL0=0x00050000;

U1LCR=0x83;

U1DLL=0x61;

U1LCR=0x03;

}

int main()

{

unsigned int i,j,k;

while(1)

{

serial1();

i=0;

j=0;

while(1)

{

while(!(U1LSR & 0x01));

var=U1RBR;

U1THR=var;

arr[j]=U1THR;

j++;

if (var == ' ') {

k=j;

break;

}

}

U1THR='\0';

serial1();

j=k-1;

while(1)

{

while(!(U1LSR & 0x01));

var=U1RBR;

U1THR=var;

if (var == ' ') {

break;

}

arr[j]=U1THR;

j++;

}

U1THR='\0';

arr[j]='\0';

serial0();

j=0;

while(1)

{

while(!(U0LSR & 0x20));

U0THR=arr[j];

if (arr[j] == '\0')

{

break;

}

j++;

}

while(!(U0LSR & 0x01));

//U1THR=msg3[k+1];

U0THR='\0';

}

return 0;

}

--------------------------------------------------------------------------------------------------------------------------------------

//////////7 seven segment and buzzer

#include<lpc21xx.h>

#define DESIRED\_COUNT1 3500

#define DESIRED\_COUNT2 2000

#define PRESCALAR 11999

unsigned int a;

void display1(unsigned int x);

void delay(void);

void inittimer0(void);

void inittimer1(void);

int main()

{

unsigned int x;

PINSEL0=0x00000000;

IODIR0=0x00F04C00;

IOCLR0=0x00000C00;

IODIR1=0x00000C00;

while(1)

{

inittimer0();

T0TCR=0X01;

while(!(T0IR==0X01))

{

display1(a);

if(a>9)

a=0;

a++;

}

T0IR=0X01;

inittimer1();

while(!(T0IR==0X01))

{

IOSET0=0x00004000;

}

IOCLR0=0x00004000;

T0IR=0X01;

}

}

void inittimer0(void)

{

T0PR=PRESCALAR;

T0MR0=DESIRED\_COUNT1;

T0MCR=3;

T0TCR=1;

}

void inittimer1(void)

{

T0PR=PRESCALAR;

T0MR1=DESIRED\_COUNT2;

T0MCR=3;

T0TCR=1;

}

void display1(unsigned int x)

{

unsigned int i;

int a[10]={0x003f0000,0x0060000,0x005b0000,0x004f0000,0x00660000,0x006d0000,0x007d0000,0x00070000,0x007f0000,0x006f0000};

IODIR0=0x10FF0000;

IOSET0=0x10000000;

IOSET0=a[x];

delay();

IOCLR0=a[x];

}

--------------------------------------------------------------------------------------------------------------------------------------

///// 8: RING AND JOHNSON

#include<lpc214x.h>

void serial()

{

 PINSEL0=0x00000005;

 U0LCR=0x83;

 U0DLL=0x61;

 U0LCR=0x03;

}

void delay(unsigned int j)

{

 unsigned int i;

 for(i=0;i<j;i++);

}

void ring\_counter()

{

 while(1)

    {

             IO0CLR=0x00010000;

             delay(650000);

             IO0SET=0x00010000;

             delay(650000);

             IO0CLR=0x00020000;

             delay(650000);

             IO0SET=0x00020000;

             delay(650000);

             IO0CLR=0x00040000;

             delay(650000);

             IO0SET=0x00040000;

             delay(650000);

             IO0CLR=0x00080000;

             delay(650000);

             IO0SET=0x00080000;

             delay(650000);

  }

}

void johnson\_counter()

{

 while(1)

 {

             IO0CLR=0x00010000;

             delay(650000);

             IO0SET=0x00010000;

             delay(650000);

             IO0CLR=0x00030000;

             delay(650000);

             IO0SET=0x00030000;

             delay(650000);

           IO0CLR=0x00070000;

             delay(650000);

             IO0SET=0x00070000;

             delay(650000);

             IO0CLR=0x000f0000;

             delay(650000);

             IO0SET=0x000f0000;

             delay(650000);

             IO0CLR=0x000E0000;

             delay(650000);

             IO0SET=0x000E0000;

             delay(650000);

             IO0CLR=0x000C0000;

             delay(650000);

             IO0SET=0x000C0000;

             delay(650000);

             IO0CLR=0x00080000;

             delay(650000);

             IO0SET=0x00080000;

             delay(650000);

  }

 }

int main()

{

 unsigned char a;

 PINSEL1=0x00000000;

 IO0DIR=0x000f0000;

 serial();

 while(1)

 {

  while(!(U0LSR & 0x01));

  {

        a=U0RBR;

       U0THR=a;

   if(a=='j')

    johnson\_counter();

   else if(a=='r')

    ring\_counter();

  }

 }

}

--------------------------------------------------------------------------------------------------------------------------------------

////// 9: #include<lpc21xx.h>

#include<stdio.h>

void extint0\_ISR(void)\_\_irq;

void extint1\_ISR(void)\_\_irq;

void serial1();

void serial();

void delay();

int main(void)

{

PINSEL1=0x01;//p0.16 eint0;

EXTMODE=0x01;

VICVectAddr0=(unsigned long)extint0\_ISR;

VICVectCntl0=0x20|14;

VICIntEnable|=0x00004000;//ext interrupt 0 ;

PINSEL0=0x10000000;//p0.14 eint1(new)// p0.3 (old);

EXTMODE=0x02;

VICVectAddr1=(unsigned long)extint1\_ISR;

VICVectCntl1=0x20|15;

VICIntEnable|=0x00008000;//ext interrupt 1;

while(1);

}

void extint0\_ISR(void)\_\_irq

{

unsigned int i;

unsigned char a;

unsigned char msg[]={"how are you"};

serial();

for(i=0;i<12;i++)

{

while(!(U0LSR&0x20));

U0THR=msg[i];

}

while(!(U0LSR&0x20));

a=U0RBR;

U0THR=a;

delay();

EXTINT|=0x00000001;//clr interrupt flag

VICVectAddr=0; //end of interrupt execution

}

void extint1\_ISR(void)\_\_irq

{

unsigned int i;

unsigned char a;

unsigned char msg[]={"dont ask"};

serial1();

for(i=0;i<12;i++)

{

while(!(U1LSR&0x20));

U1THR=msg[i];

}

while(!(U1LSR&0x20));

a=U1RBR;

U1THR=a;

delay();

EXTINT|=0x00000001;//clr interrupt flag

VICVectAddr=0; //end of interrupt execution

}

void delay()

{

unsigned int i;

for(i=0;i<1000;i++);

}

void serial()

{

PINSEL0=0X00000005;

U0LCR=0X83;

U0DLL=0X61;

U0LCR=0X03;

U0IER=0X0000004;

}

void serial1()

{

PINSEL0=0X00050000;

U1LCR=0X83;

U1DLL=0X61;

U1LCR=0X03;

U1IER=0X0000004;

}

//UART1,1 EXT0,1 ON PROCESS OF WORKING

--------------------------------------------------------------------------------------------------------------------------------------

////// 10 timer input uart

#include<lpc21xx.h>

#define PRESCALER 11999

void delay();

void serial();

unsigned long int a;

void InitTimer0(long int a);

int main()

{

PINSEL0=0X00000000;

IODIR0=0X00FF0000;

serial();

while(!(U0LSR & 0x01));

a=U0RBR;

U0THR='\0';

U0THR=a;

InitTimer0((a-48));

T0TCR = 0x01;

while(1)

{

while(!(T0IR == 0X01));

T0IR=0X01;

IOCLR0=0X00FF0000;

while(!(T0IR == 0X01));

IOSET0=0X00FF0000;

T0IR=0X01;

}

}

void serial()

{

PINSEL0=0X00000005;

U0LCR=0X83;

U0DLL=0X61;

U0LCR=0X03;

}

void delay()

{

unsigned int j;

for(j=0;j<10000;j++);

}

void InitTimer0(long int a)

{

T0PR=PRESCALER;

T0MR0=(a\*1000);

T0MCR=3;

T0TCR=2;

}

--------------------------------------------------------------------------------------------------------------------------------------