Lab-6

Friday, October 09, 2020 11:28 AM

DATE: 25/09/20

AIM: Using RTC in UART print date and time with LPC2129

Source code:

MAIN FILE:

UART.c | RTC.c | header.h | main.c

```
# include <lpc21xx.h>
#include "header.h"

int main()
{
  Uart_Init();
  Uart_String("17070123120");
  Uart_Data('\n');
  Uart_String("Ventrapragada Sai Shravani");
  Uart_Data('\n');

  rtc_config();

  while(1)
  {

    Uart_Data(HOUR/10+'0');
    Uart_Data(HOUR%10+'0');
    Uart_Data(':');
    Uart_Data(MIN/10+'0');
    Uart_Data(MIN%10+'0');
    Uart_Data(':');
    Uart_Data(SEC/10+'0');
    Uart_Data(SEC%10+'0');

    Uart_Data('\n');
    Uart_Data(DOM/10+'0');
    Uart_Data(DOM%10+'0');
    Uart_Data('/');
    Uart_Data(MONTH/10+'0');
    Uart_Data(MONTH%10+'0');
    Uart_Data('/');
    Uart_Data(YEAR/1000+'0');
    Uart_Data((YEAR/100)%10+'0');
```

```
    Uart_Data(SEC%10+'0');

    Uart_Data('\n');
    Uart_Data(DOM/10+'0');
    Uart_Data(DOM%10+'0');
    Uart_Data('/');
    Uart_Data(MONTH/10+'0');
    Uart_Data(MONTH%10+'0');
    Uart_Data('/');
    Uart_Data(YEAR/1000+'0');
    Uart_Data((YEAR/100)%10+'0');
    Uart_Data((YEAR%100)/10+'0');
    Uart_Data((YEAR%10)+'0');
    Uart_Data('\n');
  }
}
```

RTC FILE:

UART.c | RTC.c | header.h | main.c

```
#include<LPC21xx.h>
#include "header.h"

void rtc_config()
{
  PREINT = 0x1C7;
  PREFRAC = 0xE1C0;
  AMR = 0xFF;
  CCR = 0x01;
  SEC = 20;
  MIN = 23;
  HOUR = 12;
  DOM = 25;
  DOW = 5;
  DOY = 268;
  MONTH = 9;
  YEAR = 2020;
}
```

HEADER FILE:

UART.c | RTC.c | header.h | main.c

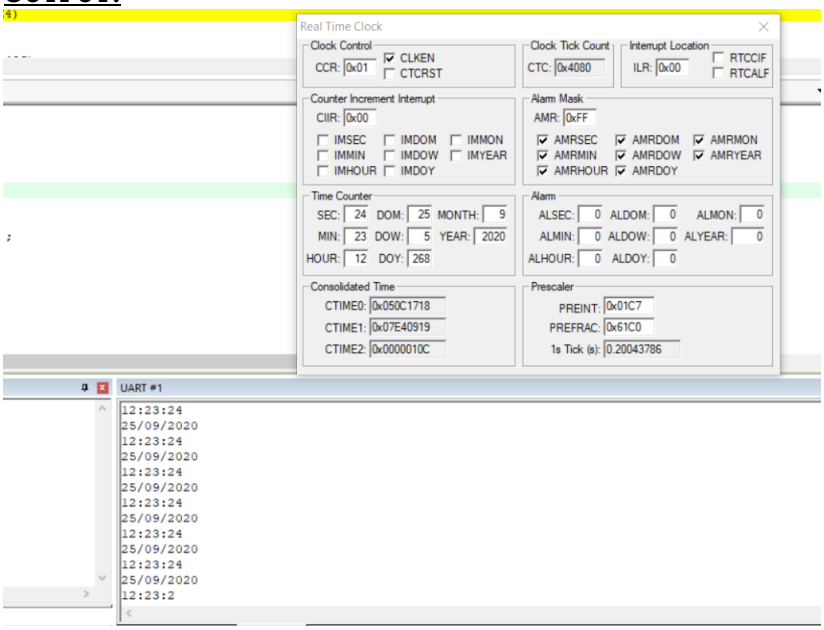
```
void Uart_Init(void);
void Uart_Data(unsigned char);
void Uart_String(unsigned char*);
void rtc_config(void);
```

UART FILE:

```c
#include<lpc21xx.h>
#include "header.h"

void Uart_Init()
{
  PINSEL0 = 0X00000005;      // selecting UART
  U0LCR = 0X83;                 // line control register  (no parity is used, only 8 bit word length and DLAB bit as 1)
  U0DLL = 0XC3;               // baud rate register (baud rate is 4800)
  U0DLM = 0X00;              // baud rate register
  U0LCR = 0X03;              // line control register  (now DLAB bit is set 0)
}
void Uart_Data (unsigned char data)
{
    U0THR = data;    //U0THR is Transmit Holding register, the data is stored in it
    while ((U0LSR & 0X20) != 0X20);  //wait until this condition is satisfied, and once it's satisfied, the data will be
  // sent to THR. U0THR is a 8 bit register, so at a time we can send only one bit data. U0LSR is a 8 bit register and THR
  // comes at 5th bit so if THR becomes empty that means U0LSR = 0X0010 0000 = 0X20
}
void Uart_String (unsigned char *dat)
{
    while (*dat != '\0')
    {
        Uart_Data (*dat);
        dat++;
    }
```

OUTPUT:



Inference:

In this code I have learnt how to print date by configuring UART file with LPC2129