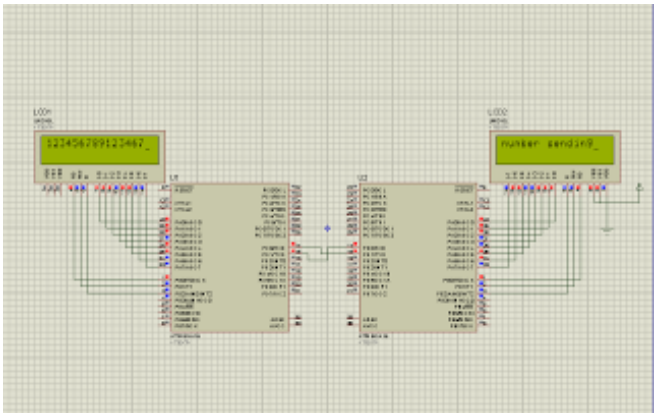
usart string transmission via atmega 16



[http://2.bp.blogspot.com/-Nq0-tkQv_k4/UQLB9xx9DZI/AAAAAAAAAGY/ZvLhOJt1vAY/s1600/Untitled.png]

we try to send string vith usart in this project
http://www.youtube.com/watch?v=dGXEt33xQ6A&feature=youtu.be
[http://www.youtube.com/watch?v=dGXEt33xQ6A&feature=youtu.be]

this two chip send and receive chars and we put them in a array, then print to lcd

while a chip sending data other one is lissening until '\0' byte is received,
'\0' this char is terminating the string so we understand with this char data is ready.
lets explain on code
_____usart_text_transmit.c_____

```
/*
 * usart_text_transmit.c
 *
 * Created: 25.01.2013 12:55:44
 *  Author: alibas
 */

#include <avr/io.h>
#include "usart.h"
#include <avr/interrupt.h>
#include <avr/delay.h>
#include "lcd.h"//can be find previous projects
#include <string.h>
```

```
int main(void)
{
   DDRA=0xff; //for lcd
   DDRB=0x0f;//for lcd
    USART_Init(25);//we use 1 MHz clck and 2400 baud and our ubrr is
25
   init_LCD();


   LCD_write_string("lcd ready");
   _delay_ms(200);

   char str2[]="data 1 received!";//first string to send
   char str_s[]={"data 2 received!"};//second string to send
   char str1[100];  //our buffer to record received bytes

   while(1)
   {


      LCD_clear();
      LCD_write_string("sending data 1");
      WriteStringData(str2);//usart commad to send string
         _delay_ms(1000);//a little wait for other chip execute received
bytes
      LCD_clear();
      LCD_write_string("sending data 2");
      WriteStringData(str_s);
      _delay_ms(100);
        LCD_clear();//if we are waiting data dont use delay as we wait
delay we cant read received bytes
//actualy usart waiting for data
      LCD_write_string("number waiting!");
      ReadStringData(str1);//usart command to receive string
      LCD_clear();
      LCD_write_string(str1);
      _delay_ms(1000);

   }
}
```

_____usart.h_____

```
/*********************this header is common ****************************/
/*
 * usart.h
 *
 * Created: 25.01.2013 12:56:44
 *  Author: alibas
 */
```

```
#include <avr/delay.h>


void USART_Init( unsigned int ubrr)//initialize usart with ubrr value
{
/* Set baud rate */
UBRRH = (unsigned char)(ubrr>>8);
UBRRL = (unsigned char)ubrr;
/* Enable receiver and transmitter */
UCSRB = (1<<RXEN)|(1<<TXEN);
/* Set frame format: 8data, 2stop bit */
UCSRC = (1<<URSEL)|(1<<USBS)|(3<<UCSZ0);
}

char ReadData( void )// this function read onyl one byte
{
/* Wait for data to be received */
while ( !(UCSRA & (1<<RXC)) )
;
/* Get and return received data from buffer */
return UDR;
}


void WriteData(char data)//this function write only one byte
{
   //Wait For Transmitter to become ready
   while(!(UCSRA & (1<<UDRE)));

   //Now write
   UDR=data;
}

//this function receive long string chars
//make sure buffer size is enough
//firsly read from usart the data and write to string array
//after compare last data with '\0' if it is null teminate the reading
void ReadStringData(char *str){

      char c;
      do{
         c=ReadData();
         *str=c;
         str++;
      }
      while(c!='\0');
      LCD_clear();

   return;

}
```

```
//this function send string daha via usart byte by byte
//firsly read from byte pointer adress
//make sure readed char is not null char
//send data and increase pointer to read next char
//if readed char is null ('\0') end the transmisson after sent terminater
null char
void WriteStringData(char *strData)
{
   while(*strData!='\0')
   {
      WriteData(*strData);
      strData++;
   }
   WriteData('\0');
   return;

}
```

_____usart_text_receive.c_____

```
/*
 * usart_text_receive.c
 *
 * Created: 25.01.2013 12:56:27
 *  Author: alibas
 */

#include <avr/io.h>
#include "usart.h"
#include <avr/interrupt.h>
#include <avr/delay.h>
#include <string.h>
#include "lcd.h"

int main(void)
{
   DDRA=0xff;
   DDRB=0x0f;
   USART_Init(25);
   init_LCD();
   sei();


   LCD_write_string("lcd ready");
   _delay_ms(200);

   char str1[100];
   char str_s="12345678912346789";
```

```
    while(1)
    {

        ReadStringData(str1);

        LCD_clear();
        LCD_write_string(str1);

        ReadStringData(str1);

        LCD_clear();
        LCD_write_string(str1);
        _delay_ms(500);
        LCD_clear();
        LCD_write_string("number sending");
        WriteStringData(str_s);




    }
}
```

26th January 2013, Ali Başpınar tarafından yayınlandı

Etiketler: AVR Tutorial

2 Yorumları görüntüle

shawon 30 Ocak 2014 22:09

Where is the LCD_clear() function defined??? atmel studio can not find it while building the program. Thanks

Yanıtla

Ali Başpınar 31 Ocak 2014 08:43

you are right this is not updated you can use to clear lcd,
LCD_cmd(1); // clear LCD
_delay_ms(1);
,instead of LCD_clear() or simple add to your lcd source file.

Yanıtla