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/*
 * USART3_asynch_transmit.h
 *
 * Created: 4/26/2022 8:06:04 PM
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 */


#ifndef USART3_ASYNCH_TRANSMIT_H_
#define USART3_ASYNCH_TRANSMIT_H_

#define F_CPU 4000000
#define USART3_BAUD_RATE(BAUD_RATE) ((float)(F_CPU * 64 / (16 *(float)BAUD_RATE)))  //
  Calculation of baud rate from data sheet
#include <avr/io.h>
#include <util/delay.h>
#include <string.h>

//Header functions
void USART3_sendChar(char c);
void USART3_init (uint16_t, uint8_t, unsigned char);
void USART_sw_write(char);


//A simple function to configure a USART might have a single parameter that
//specifies the desired baud rate. The function that you must write for this task
//goes further than that, it allows both baud rate and the frame format to be
  specified
void USART3_init (uint16_t baud, uint8_t data_bits, unsigned char parity){
    PORTB_DIR |= PIN0_bm;  //To transmit the data

    //Specify the baud rate value for the USART3
    USART3.BAUD = (uint16_t)USART3_BAUD_RATE(baud);

    //Initialize the data bits and the parity bits type
    USART3_CTRLC |= data_bits | parity;
    USART3.CTRLB |= USART_TXEN_bm;  //Enable USART transmitter
}


//To be able to send the string of characters
void USART3_sendString(char* input){
    for(size_t i = 0; i < strlen(input); i++){
        USART_sw_write(input[i]);
    }
}



//Function to be able to transmit characters
//to the TX pin and display on the Tera Term
void USART_sw_write(char c)
```

```
{
    //Poll until the  transmit buffer register are empty
    //when they contain data that has not been moved to
    //transmit shift register
    while (!(USART3.STATUS & USART_DREIF_bm))
    {
        ;
    }

    //Load data to transmit shift register and
    //output each of the bits serially to the TXD pin
    USART3.TXDATAL = c;
}



#endif /* USART3_ASYNCH_TRANSMIT_H_ */
```