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Lab 4

Description:

In this lab, I was supposed to transmit my redID through the built-in USART port on the AVR. To do this, I created a program that sets the baud rate to 9600. I then set the UBRR to ((F_CPU)/(BAUD * 16UL) - 1) since the UBRR is the baud rate of USART. F_CPU represents the clock speed. I then created a USART_Init() that sets the UBBRH and UBBRL. It also enables the transmitter, since the code will transmit my redID, and an 8-bit 1-stop bit mode. Then, in the main, I will call the USART_Init() function and have an infinite while loop with another while loop inside that loops through my redID, set as a char[], and transmits every character/number in it.

Results:

After connecting my AVR to the FT232R Breaker and installing PuTTY, I was able to transmit my redID through the port COM6. It displays it in a diagonal way and repeats infinitely because of my infinite while loop. I can also display my redID by using the Data Visualizer and just the AVR. Here my redID is displayed infinitely in loop as well.

Source Code:

```
/*
 * Lab3a.c
 *
 * Created: 2/17/2020 1:27:45 PM
 * Author : Ethan
 */
#define F_CPU 16000000// Clock Speed
#define BAUD 9600
#define MYUBRR ((F_CPU)/(BAUD * 16UL) - 1)
#include <avr/io.h>
#include <util/delay.h>

void USART_Init()
{
/*Set baud rate */
 UBRR0H = (MYUBRR>>8);
 UBRR0L = MYUBRR;
 UCSR0B = (1<<TXEN0); //enable transmitter
```

```c
 UCSR0C = (0<<USBS0)|(1<<UCSZ00)| (1<<UCSZ01);// 8-bit 1-stop
}

int main()
{
   USART_Init();
   int i = 0;
   unsigned char data[] = "821234668 \n";

   while(1)
   {
      i = 0;
      while(data[i] != 0)
      {
         while (!( UCSR0A & (1<<UDRE0)));
         UDR0 = data[i];

         //_delay_ms(600);
         i++;
      }
   }
}
```