CPE301 – SPRING 2019

Design Assignment 3A

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Primary Github address: <https://github.com/biscuit0x/submission_yun.git>

Directory: submission\_yun/DesignAssignments/DA3A/

**1. Components**

-Atmega 328p Xplained mini

-USB

**2. C code**

#define F\_CPU 16000000UL

#define BAUDRATE 9600

#define BAUD\_PRESCALLER (((F\_CPU / (BAUDRATE \* 16UL)))-1)

#include <avr/io.h>

#include <avr/interrupt.h>

#include <util/delay.h>

char\* string; //string pointer

void USART\_init ( void )

{

UBRR0H = (uint8\_t)(BAUD\_PRESCALLER >> 8); /\*set BAUD rate\*/

UBRR0L = (uint8\_t)(BAUD\_PRESCALLER);

UCSR0C = \_BV(UCSZ01) | \_BV(UCSZ00); /\* 8bit data \*/

UCSR0B = \_BV(RXEN0) | \_BV(TXEN0); /\* Enable RX and TX \*/

}

void USART\_send (char ch)

{

//wait until UDR0 is empty

while (! (UCSR0A & (1<<UDRE0)));

UDR0 = ch ; //transmit ch

}

void USART\_putstring (char\* StringPtr )

{

while (\*StringPtr != 0x00){

USART\_send(\*StringPtr); //send one character at a time

StringPtr++;

}

}

ISR (TIMER1\_OVF\_vect)

{

string = "random string \n"; //print random string

USART\_putstring(string);

string = "1234 \n"; //print random integer

USART\_putstring(string);

string = "5.6789 \n\n";//print random float

USART\_putstring(string);

TCNT1 = 49911; //reset timer

}

int main(void)

{

USART\_init(); //UART initialization

TIMSK1 = (1<<TOIE1); //enable overflow interrupt

TCNT1 = 49911; //set counter value for 1 sec

TCCR1B = 0X05; //begin counter with prescalar = 1024

sei(); //enable interrupts

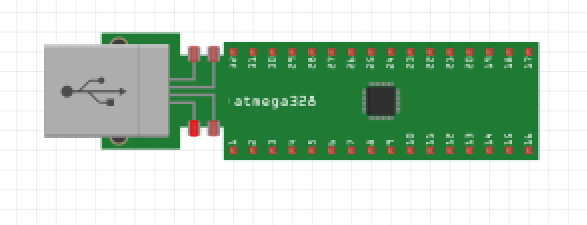
while (1)

{

}

}

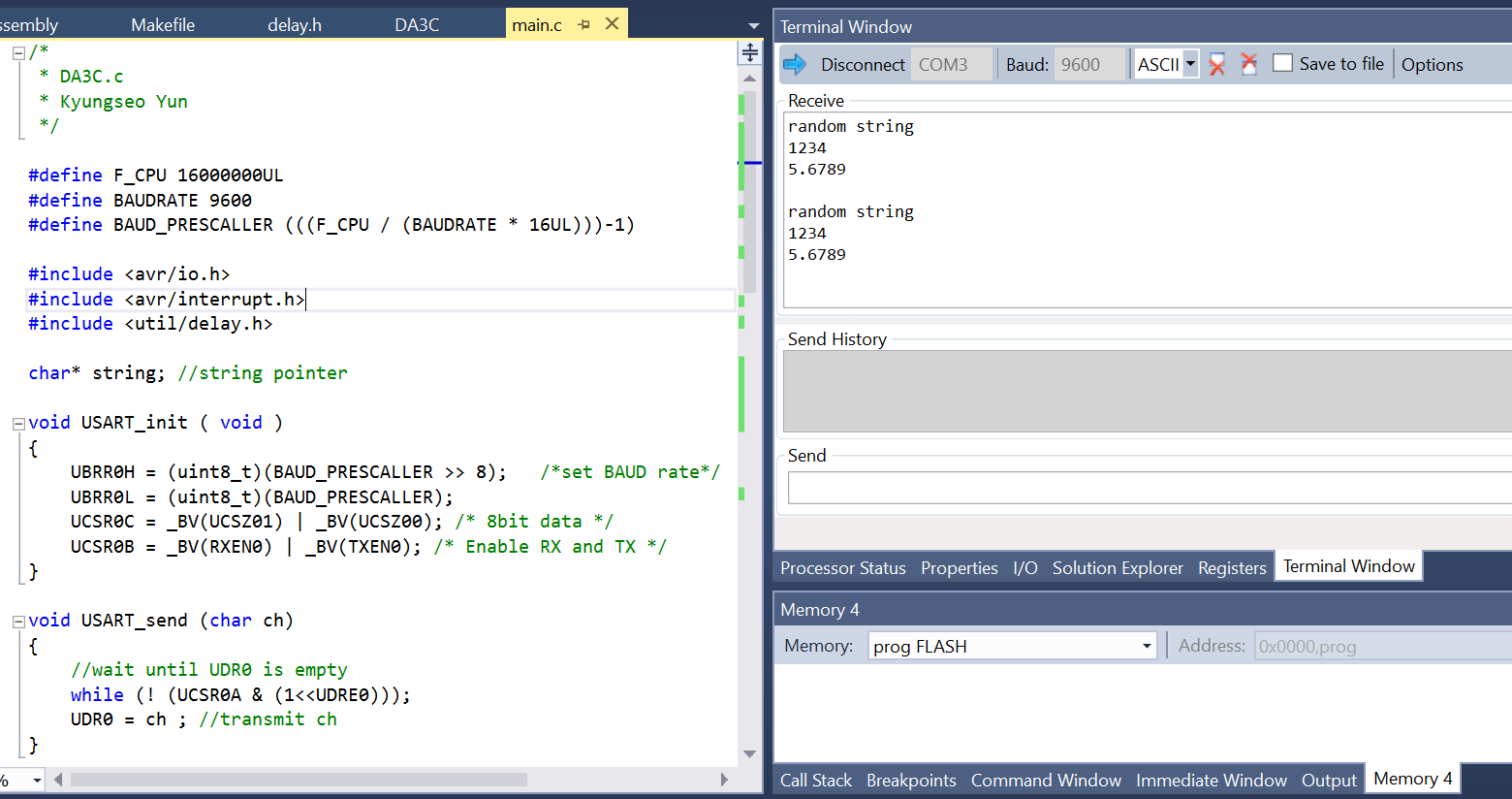
**3. Schematic**

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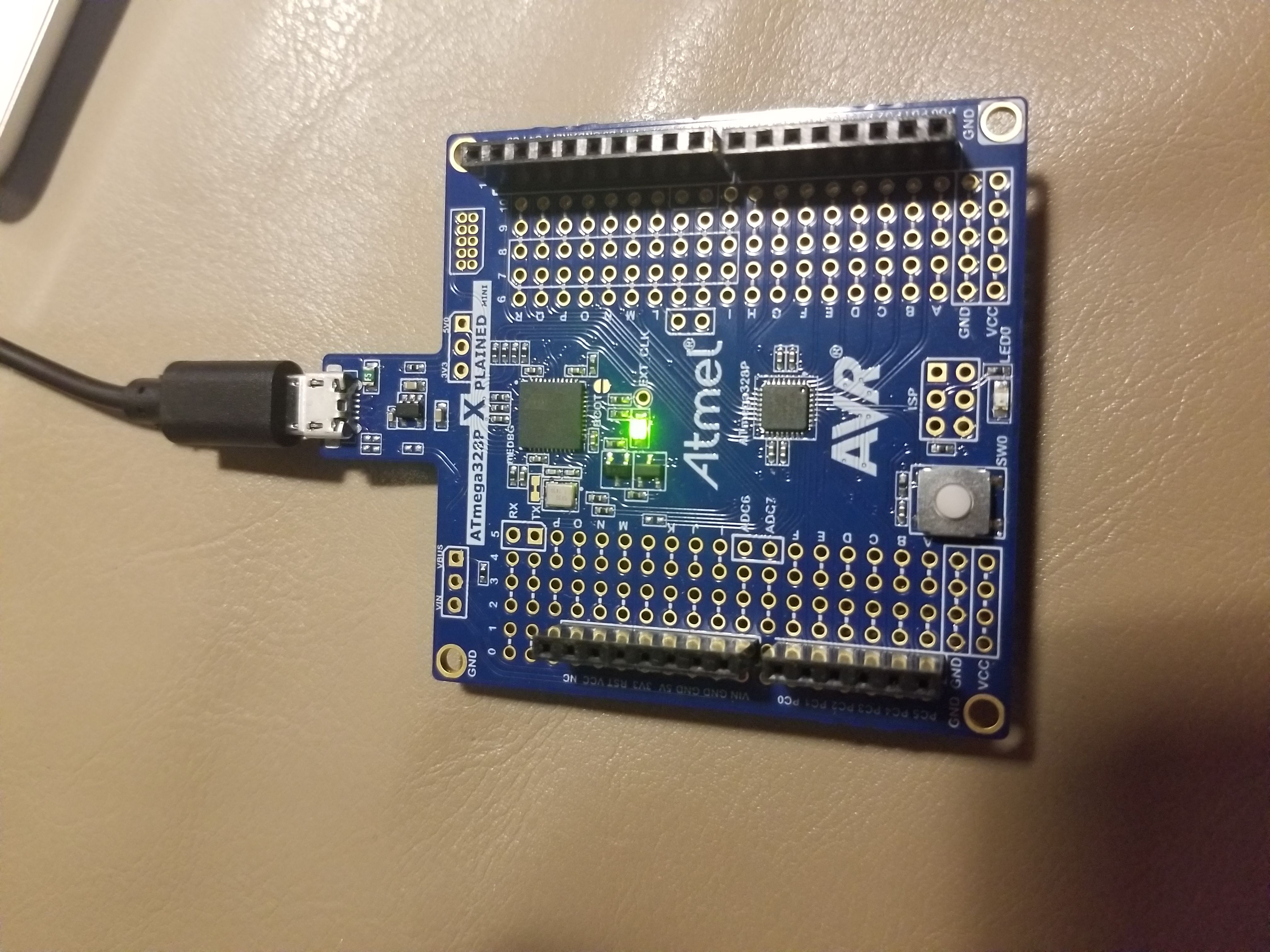
(No FTDI required as Xplained board was used)

**4. Screenshot**

Terminal window :

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**5. Photo / Video**

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video : https://youtu.be/BMZ2OXb7\_5g

**5. Github address**

<https://github.com/biscuit0x/submission_yun/tree/master/DesignAssignments/DA3A>