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/*****************************************************
This program was produced by the
CodeWizardAVR V1.24.7e Professional
Automatic Program Generator
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Project :
Version :
Date    : 13.06.2007
Author  : F4CG
Company : F4CG
Comments:


Chip type           : ATmega128
Program type        : Application
Clock frequency     : 11,059200 MHz
Memory model        : Small
External SRAM size  : 0
Data Stack size     : 1024
*****************************************************/

#include <mega128.h>
#include <delay.h>
#include <stdio.h>

#define RXB8 1
#define TXB8 0
#define UPE 2
#define OVR 3
#define FE 4
#define UDRE 5
#define RXC 7

#define FRAMING_ERROR (1<<FE)
#define PARITY_ERROR (1<<UPE)
#define DATA_OVERRUN (1<<OVR)
#define DATA_REGISTER_EMPTY (1<<UDRE)
#define RX_COMPLETE (1<<RXC)

// USART0 Receiver buffer
#define RX_BUFFER_SIZE0 16
char rx_buffer0[RX_BUFFER_SIZE0];

#if RX_BUFFER_SIZE0<256
unsigned char rx_wr_index0,rx_rd_index0,rx_counter0;
#else
unsigned int rx_wr_index0,rx_rd_index0,rx_counter0;
#endif
```

```
// This flag is set on USART0 Receiver buffer overflow
bit rx_buffer_overflow0;

// USART0 Receiver interrupt service routine
interrupt [USART0_RXC] void usart0_rx_isr(void)
{
char status,data;
status=UCSR0A;
data=UDR0;
if ((status & (FRAMING_ERROR | PARITY_ERROR | DATA_OVERRUN))==0)
   {
   rx_buffer0[rx_wr_index0]=data;
   if (++rx_wr_index0 == RX_BUFFER_SIZE0) rx_wr_index0=0;
   if (++rx_counter0 == RX_BUFFER_SIZE0)
      {
      rx_counter0=0;
      rx_buffer_overflow0=1;
      };
   };
}

#ifndef _DEBUG_TERMINAL_IO_
// Get a character from the USART0 Receiver buffer
#define _ALTERNATE_GETCHAR_
#pragma used+
char getchar(void)
{
char data;
while (rx_counter0==0);
data=rx_buffer0[rx_rd_index0];
if (++rx_rd_index0 == RX_BUFFER_SIZE0) rx_rd_index0=0;
#asm("cli")
--rx_counter0;
#asm("sei")
return data;
}
#pragma used-
#endif

// USART1 Transmitter buffer
#define TX_BUFFER_SIZE1 16
char tx_buffer1[TX_BUFFER_SIZE1];

#if TX_BUFFER_SIZE1<256
unsigned char tx_wr_index1,tx_rd_index1,tx_counter1;
#else
unsigned int tx_wr_index1,tx_rd_index1,tx_counter1;
#endif

// USART1 Transmitter interrupt service routine
```

```
interrupt [USART1_TXC] void usart1_tx_isr(void)
{
if (tx_counter1)
   {
   --tx_counter1;
   UDR1=tx_buffer1[tx_rd_index1];
   if (++tx_rd_index1 == TX_BUFFER_SIZE1) tx_rd_index1=0;
   };
}

// Write a character to the USART1 Transmitter buffer
#pragma used+
void putchar1(char c)
{
while (tx_counter1 == TX_BUFFER_SIZE1);
#asm("cli")
if (tx_counter1 || ((UCSR1A & DATA_REGISTER_EMPTY)==0))
   {
   tx_buffer1[tx_wr_index1]=c;
   if (++tx_wr_index1 == TX_BUFFER_SIZE1) tx_wr_index1=0;
   ++tx_counter1;
   }
else
   UDR1=c;
#asm("sei")
}
#pragma used-

// Standard Input/Output functions
#include <stdio.h>

// Declare your global variables here

void main(void)
{
// Declare your local variables here
char    cDaten;

// Input/Output Ports initialization
// Port A initialization
// Func7=In Func6=In Func5=In Func4=In Func3=In Func2=In Func1=In Func0=In
// State7=T State6=T State5=T State4=T State3=T State2=T State1=T State0=T
PORTA=0x00;
DDRA=0x00;

// Port B initialization
// Func7=In Func6=In Func5=In Func4=In Func3=In Func2=In Func1=In Func0=In
// State7=T State6=T State5=T State4=T State3=T State2=T State1=T State0=T
PORTB=0xFF;
DDRB=0xFF;
```

```
// Port C initialization
// Func7=In Func6=In Func5=In Func4=In Func3=In Func2=In Func1=In Func0=In
// State7=T State6=T State5=T State4=T State3=T State2=T State1=T State0=T
PORTC=0x00;
DDRC=0x00;

// Port D initialization
// Func7=In Func6=In Func5=In Func4=In Func3=In Func2=In Func1=In Func0=In
// State7=T State6=T State5=T State4=T State3=T State2=T State1=T State0=T
PORTD=0x00;
DDRD=0x08;

// Port E initialization
// Func7=In Func6=In Func5=In Func4=In Func3=In Func2=In Func1=In Func0=In
// State7=T State6=T State5=T State4=T State3=T State2=T State1=T State0=T
PORTE=0x00;
DDRE=0xFE;

// Port F initialization
// Func7=In Func6=In Func5=In Func4=In Func3=In Func2=In Func1=In Func0=In
// State7=T State6=T State5=T State4=T State3=T State2=T State1=T State0=T
PORTF=0x00;
DDRF=0x00;

// Port G initialization
// Func4=In Func3=In Func2=In Func1=In Func0=In
// State4=T State3=T State2=T State1=T State0=T
PORTG=0x00;
DDRG=0x00;

// Timer/Counter 0 initialization
// Clock source: System Clock
// Clock value: Timer 0 Stopped
// Mode: Normal top=FFh
// OC0 output: Disconnected
ASSR=0x00;
TCCR0=0x00;
TCNT0=0x00;
OCR0=0x00;

// Timer/Counter 1 initialization
// Clock source: System Clock
// Clock value: Timer 1 Stopped
// Mode: Normal top=FFFFh
// OC1A output: Discon.
// OC1B output: Discon.
// OC1C output: Discon.
// Noise Canceler: Off
// Input Capture on Falling Edge
// Timer 1 Overflow Interrupt: Off
// Input Capture Interrupt: Off
```

```
// Compare A Match Interrupt: Off
// Compare B Match Interrupt: Off
// Compare C Match Interrupt: Off
TCCR1A=0x00;
TCCR1B=0x00;
TCNT1H=0x00;
TCNT1L=0x00;
ICR1H=0x00;
ICR1L=0x00;
OCR1AH=0x00;
OCR1AL=0x00;
OCR1BH=0x00;
OCR1BL=0x00;
OCR1CH=0x00;
OCR1CL=0x00;

// Timer/Counter 2 initialization
// Clock source: System Clock
// Clock value: Timer 2 Stopped
// Mode: Normal top=FFh
// OC2 output: Disconnected
TCCR2=0x00;
TCNT2=0x00;
OCR2=0x00;

// Timer/Counter 3 initialization
// Clock source: System Clock
// Clock value: Timer 3 Stopped
// Mode: Normal top=FFFFh
// Noise Canceler: Off
// Input Capture on Falling Edge
// OC3A output: Discon.
// OC3B output: Discon.
// OC3C output: Discon.
// Timer 3 Overflow Interrupt: Off
// Input Capture Interrupt: Off
// Compare A Match Interrupt: Off
// Compare B Match Interrupt: Off
// Compare C Match Interrupt: Off
TCCR3A=0x00;
TCCR3B=0x00;
TCNT3H=0x00;
TCNT3L=0x00;
ICR3H=0x00;
ICR3L=0x00;
OCR3AH=0x00;
OCR3AL=0x00;
OCR3BH=0x00;
OCR3BL=0x00;
OCR3CH=0x00;
OCR3CL=0x00;
```

```
// External Interrupt(s) initialization
// INT0: Off
// INT1: Off
// INT2: Off
// INT3: Off
// INT4: Off
// INT5: Off
// INT6: Off
// INT7: Off
EICRA=0x00;
EICRB=0x00;
EIMSK=0x00;

// Timer(s)/Counter(s) Interrupt(s) initialization
TIMSK=0x00;
ETIMSK=0x00;

// USART0 initialization
// Communication Parameters: 8 Data, 1 Stop, Even Parity
// USART0 Receiver: On
// USART0 Transmitter: Off
// USART0 Mode: Asynchronous
// USART0 Baud rate: 9600
UCSR0A=0x00;
UCSR0B=0x90;
UCSR0C=0x26;
UBRR0H=0x00;
UBRR0L=0x47;

// USART1 initialization
// Communication Parameters: 8 Data, 1 Stop, Even Parity
// USART1 Receiver: On
// USART1 Transmitter: On
// USART1 Mode: Asynchronous
// USART1 Baud rate: 9600
UCSR1A=0x00;
UCSR1B=0x48;
UCSR1C=0x26;
UBRR1H=0x00;
UBRR1L=0x47;

// Analog Comparator initialization
// Analog Comparator: Off
// Analog Comparator Input Capture by Timer/Counter 1: Off
ACSR=0x80;
SFIOR=0x00;

// Global enable interrupts
#asm("sei")
```

```
while (1)
 {
  if(rx_counter0 > 0)
  {
    cDaten = getchar();
    putchar1(cDaten);

    if(cDaten == 'C')
    {
      PORTB = 0x00;
    }
    else
    {
      PORTB = 0x08;
    }
  }
 }
}
```