

Übung Echtzeitsysteme WS 2014 / 2015

Atmel AVR

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Exercise 0 The USART

In the following exercise we want to use the USART of the AVR. With the USART we are able to use the spare RS232 port of the STK 500. It allows us to communicate with your host PC.

- Read chapter 20 in the ATMega168 manual.
- Connect the RSR232 Spare RXD pin to PD0 and TXD to PD1.
- Enable the receiver and transmitter in the UCSR0B register in the `uart_init` function.
- Set the value in the UCSR0C register so that we are able to transfer 8 bits and 1 stop bit. We are going to use a predefined baud-rate of 115200. Change the `uart_init` function accordingly.
- Update the main program so that in the while loop one character is received and immediately send back.
- Connect the RS232 cable to the spare port and use the program `cutecom` together with the port `/dev/ttyUSB0` and the correct baud-rate, bit and stop-bit settings to test your application.
- Use the reset button to let the program run from the start in order to see the greeting message from the AVR.

Exercise 1 The USART and the LC display

In this exercise we want to send a message from the PC using `cutecom` and display it on the LC display connected to the AVR.

- Setup the display as described in sheet 6 and use the skeleton code for testing to display a message on the display.
- Use the `usart_gets` function to read a string and display it. Why do you need to provide the length of the buffer to the function? What does the function do if the maximum buffer size is reached?
- How could send special commands to the AVR to clear the display and/or to set the cursor position etc. ?