

Questions and tasks in Lecture 7

Task 7-1: Write a program that blinks a LED with a crystal clock at 4 MHz in an exact one-second rhythm using TC0 in CTC mode and its COMP-A interrupt to down-count a register. Don't forget to restart the counter register when exhausted!

Bonus question: Without counter register restart: which blink frequency would result instead of 1 Hz?

Questions and tasks in Lecture 7 - Continued

Task 7-2: Write a program with the 16-bit counter TC1 as sound generator with 1,000 Hz in CTC mode and use the COMP-A-interrupt to down-count a 16-bit double register R25:R24 to stop the sound after exactly two seconds. (Hints: 16-bit double registers can be down-counted in 16 bit mode with SBIW R24, 1 (SuBtract Immediate Word) and sound output can be stopped by clearing the pin on compare match when keeping TC1 still running).

Bonus question: What would be the COMPA values and the down-count value in R25:R24 for the whole a-to-g gambit frequencies?

Questions and tasks in Lecture 7 - Continued

Task 7-3: Write a program that provokes two interrupts at exactly the same time with the two timers TC0 and TC1 in the ATtiny24 and with the two compare A interrupts. Simulate this with avr_sim and see if the prioritization of interrupts function as desired within the simulator.