Lab 3: using timers and interrupts - Phase 1

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Preliminary

Use the same project downloaded for the previous lab.

The aim of the lab is using the AXI Timer/Counter.

Check the component datasheet at

https://docs.amd.com/v/u/en-US/pg079-axi-timer

Interact with the timer in your program

Some library functions that can be used to implement most of the interaction with the timer are available in "xtmrctr_l.h". This functions are low-level drivers that read/write timer internal registers. An example showing how to use this functions can be found at

https://github.com/Xilinx/embeddedsw/blob/master/XilinxProcessorIPLib/drivers/tmrctr/examples/xtmrctr_low_level_example.c

Check "xparameters.h" use any macro useful to cite the addresses.

[Example

//XPAR_AXI_TIMER_0_BASEADDR

//XPAR_AXI_RGBLEDS_GPIO_BASEADDR

//XPAR_AXI_BUTTONS_GPIO_BASEADDR

//XPAR_AXI_7SEGS_GPIO_BASEADDR

//XPAR_AXI_7SEGSAN_GPIO_BASEADDR

//XPAR_AXI_INTC_0_BASEADDR

]

Use the timer to shape delays in the program

• Use Timer 0 to generate one interrupt signal for the processor.

• Set the timer to generate a pulse with a period of 1 s.

• Enable interrupts as you learned in previous labs and create an ISR that flashes one of the LEDs at every interrupt execution.

• Enable the user to change the period according to the switches configuration