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\* Engr220L - Lab 9

\* Date: Oct 26, 2022

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\* The Lab 09 program with counter delay.

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/\*\*\*\*\*\*\*\*\*\*\*\*/

/\* INCLUDES \*/

/\*\*\*\*\*\*\*\*\*\*\*\*/

.include "nios\_macros.s"

.include "nios\_defs.s" /\* .equ statements specific to this system \*/

/\*\*\*\*\*\*\*\*\*\*\*\*\*/

/\* CONSTANTS \*/

/\*\*\*\*\*\*\*\*\*\*\*\*\*/

.equ MS100, 5000000 /\* number of clock cycles in 100 msec provided as example \*/

.equ MS100LOW, 0x4b40 /\* 16 least signif bits \*/

.equ MS100HIGH, 0x4c /\* 16 most signif bits \*/

/\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*/

/\* TEXT SECTION \*/

/\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*/

.text

/\* Place the main routine at the reset address \*/

.org RESET\_VECTOR

/\* Program start location must be identified \*/

.global \_start

\_start:

/\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*/

/\* MAIN PROGRAM CODE \*/

/\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*/

MAIN\_PROG\_INIT:

/\* Initialize the value of i. \*/

movia r6, LEDR\_BASE

movi r7, 0

movi r8, 0x40000

movi r9, 0x500000

stwio r7, 0(r6)

MAIN\_PROG:

/\* Set up the while loop and increment the value of i each time the loop runs. \*/

LOOP\_START:

movi r10, 0

bge r7, r8, MAIN\_PROG\_END

addi r7, r7, 1

stwio r7, 0(r6)

INNER\_LOOP\_START:

bge r10, r9, INNER\_LOOP\_END

addi r10, r10, 1

br INNER\_LOOP\_START

INNER\_LOOP\_END:

br LOOP\_START

MAIN\_PROG\_END:

/\* infinite loop to keep out of global memory, useful for final breakpoint \*/

br MAIN\_PROG\_END

/\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*/

/\* DATA SECTION \*/

/\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*/

.data

/\* if any global variables are needed, place them here \*/

.end