Lab 18: Building an 8-bit Memory with Hexadecimal Readout.

Use the 4-bit memory and the 4-digit 7-segment LED decoder you have already developed.

Submission of the lab consists of:

- 1) (0pts) a cover sheet with you name and section,
- 2) (40 pts total) a print out of the VHDL programs (all modules included),
- 3) (10 pts total) a print out of the constraints file (*.xdc), [Delete the unused sections before printing.]
- 4) Demonstrate the working project on the Digilab board to your instructor.

Failure to demonstrate your project will cause your grade for the above to be discounted by 50%. A circuit that does not meet the required specifications will result in your lab being discounted by a minimum of 10%.

Here are the specifications your circuit must meet.

Summary. Create a new project "eight_bit_memory" and top level source to implement the 8-bit memory with hexadecimal readout. Use the 4-bit memory and 4-digit 7-segment LED decoder you developed in labs 16 and 17 as modules. Connect them to satisfy the following specifications. The data are entered using sw(0-7). The right two display digits display the hexadecimal value of the 8-bit number entered by the switches. <u>Assign the</u> <u>switches so that SW7 is the MSB and SW0 is the LSB.</u> When btnR is pressed, the data is read from the switches and appears at the left two digits. Pressing btnL clears the memory. You will need to include this statement in your xdc file.

set_property CLOCK	_DEDICATED	_ROUTE FALSE [ge	t_nets btnR]
--------------------	------------	------------------	--------------

Switch LED Assignments			
switch (binary value)	current switch state (hexadecimal)	switch state in memory (hexadecimal)	
sw7/MSB – sw0/LSB	right 2 digit2 (digits 0-1)	left two digits (digits 2-3)	