This assignment addresses:

**Learning Objective #3:**

*Design advanced application specific function units with HDL. (Criteria 3a, 3b, 3c, 3e, 3i, 3j, 3k)*

- Question A and B

**Learning Objective #1:**

*Demonstrate proficiency coding in HDL (Hardware Design Language). (Criteria 3a, 3e, 3j, 3k)*

- Question C

**Problem set 4**

The slide and pushbutton switches on the prototyping board are mechanical devices. When pressed they usually bounce back and forth a few times before settling. The bounces lead to glitches in the signal associated to the switches. It is safe to assume that bounces usually settle within 20 ms. Use VHDL to design and test a debouncing circuit that filter out the glitches.

Grading will be based on:

A. Correctness of the design [40 %]
B. Effectiveness of testing [40 %]
C. Coding style [20%]

Make sure to include:

- All VHDL files
- Waveforms illustrating the behavior of the circuit. Comment the waveforms and illustrate that the system works as expected

Hint:
instead of tackling the design of the system as a “whole” unit you may find convenient to divide it in sub-units such as counters, edge detectors, etc.