Assignment - Debouncer

Programming and Development of Embedded Systems

In this assignment you are supposed to create a single-instance module(debouncer) to debounce push buttons according to the requirements below.

Requirements

1. Use TDD and follow the dual targeting strategy to develop and test the module.
    a. The module shall be testable on PC and Teensy
    b. The module shall be fully tested and the code coverage shall be 100%.
2. The module shall be able to debounce multiple buttons (max. 8 buttons)
3. The pull-up resistors of the pins connected to the buttons shall be activated
4. To take samples(read) from the pins and update the debounced state of the buttons there shall be an update function in the interface of the module. The client of your module calls this function intervally.
    a. If there are 5 consecutive states of the same value, it means that the state of the button is stable and reliable.
5. The module shall detect raising and falling edges in the debounced state of buttons

Grading

To get **G**(godkänd) all the above requirements shall be fulfilled and you need to use the link-time faking technique and an abstraction layer over Arduino to make the test double and your module testable on PC and Teensy.

To get **VG**(väl godkänd) all the above requirements shall be fulfilled and you need to use a combination of the link-time and function pointers faking techniques to make the test double and your module testable on PC and Teensy.