**Computer science department, Langara college**

**Digital Systems Design (with FPGAs)**

**Spring 2019**

**Delivery on March 11th (Hard deadline)**

# Project 1: Digital clock

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This is a project where you put together the bits and pieces that you have built throughout the labs and create a working project out of it. You will get two 4 hour labs (Feb. 25th and March 4th) to work on your projects. As you will notice, you will have to work on it at home too.

Project description:

We want to build a clock which:

1. Your clock will show: hours in 0-24 format, minutes and seconds on the 7 segments.
2. It will start the time from 00:00:00 and doesn’t need a reset button.
3. It will have 4 modes that are chosen by sw0 and sw1.   
   Mode 1: The clock is counting based on the inputs from modes 2 to 4  
   Mode 2: you can increase the minute by key1  
   Mode 3: you can increase the hour by key1  
   Mode 4: you can increase the second by key1
4. [Optional] Add an alarm along with what it take to set an alarm. The alarm goes off by turning an led on. The led remain on until you push on key1.
5. You can add other buttons/conditions etc to improve the quality of your clock. For instance, you will notice that modes 2 to 4 are not easy to realize (the clock might jump.) You will have to fix that using your own creativity.

Cheers

*Marking:*

0/10: If you don’t do anything

3/10: If you tried, but really don’t get anywhere near it working

7/10: If you almost got it working or if you got it working but cannot fully explain it

10/10: If you successfully demonstrate your design and can explain it

Along with presenting your work, you will also submit your codes via d2l.

I will use **turnitin** to make sure that your codes are genuinely yours.