ECE 484W

Lab Assignment #3

Turn in your report via Blackboard (each individual needs to do it; accumulated 10 points deduction for every 12 hours window late submission)

Turn in your video clip (less than one minute; each individual needs to do it) via Blackboard to demonstrate each required task (Accumulated 10 points deduction for every 12 hours window late submission.). If you video clip does not demonstrate each required task, you will lose 10 points for each missing task. If you do not submit your video clip, we will not grade your report.
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If you submit your report/video clip multiple times, I will grade the last attempt and your submission time will be the time for your last attempt

Requirement:

Establish communication between your Qt GUI from Assignment #1 and VEEK-MT2S board via the virtual RS-232 port (mini-B USB port). The following functionalities are required:

1. When you move the brightness and contrast sliders in your Qt GUI on PC, the new values should be transmitted to the FPGA board and displayed on the 7-segment displays. Both values should be reset between 0 to 99.
2. The program on the FPGA board can be written in C++ or python.
3. You need to use source/version control software (any free software is acceptable) when collaborating on writing the code. In the Section of Design Methodology, you need to describe how your team use source/version control.

Here are some resources and tips for your reference:

- Example for a free source/version control software (https://www.perforce.com/).
- Download the VEEK-MT2S CD (http://download.terasic.com/downloads/cd-rom/veek-mt2s/VEEK-MT2S_v.1.0.3_SystemCD.zip) or you can use the DE10-Standard CD (http://download.terasic.com/downloads/cd-rom/de10-standard/DE10-Standard_v.1.2.8_SystemCD.zip) instead, (VEEK-MT2S = DE10-Standard + MTLC2) .
- Download the SD Card Linux image (http://download.terasic.com/downloads/cd-rom/veek-mt2s/linux_BSP/VEEK_MT2S_LXDE.zip) or (http://download.terasic.com/downloads/cd-rom/de10-standard/Linux/DE10-Standard_LXDE.zip).
- Download Win32 Disk Imager (https://sourceforge.net/projects/win32diskimager/).
- Download the drivers for the virtual RS232 port (mini-B USB port) (https://www.ftdichip.com/Drivers/CDM/CDM21228_Setup.zip).
- Download PuTTY (https://www.chiark.greenend.org.uk/~sgtatham/putty/latest.html).

- You may need a **ROUTER** to assist in communication.
- You may also need to install a Linux virtual machine (such as Oracle VM VirtualBox) to complete programming if you are using Windows system.

To be noted:

1. You need to put the copy of your code in the Appendix Section in your report. You can have a copy of your partial code to help you explain your experimental results and design method in other sections in your report if needed.

2. You need to put detailed comments for your code.

3. Follow the guidelines in the syllabus for writing the report. In each assignment, I put a lot of emphasis on "why" and "explain the results".

4. In the section of Alternative Design, you need to state what the problem is, how you overcome it (e.g., alternative design/solution) with proof (e.g., experimental results to compare it to the original design) to meet the basic requirement, as well as how much improvement it makes.