# Assignment 3

Schoelen EET122, Spring 2020 Remote

revB: 04/15/2020

revB: Added Arduino option.

## Contents



## Week3-4: Start 04/16/20 - End 04/30/20

### Objectives:

1. Continue to gain familiarity with Ki Cad schematic capture by doing more KiCad tasks
2. Continue to gain knowledge of circuits by building and debugging.
3. More exposure to synchronous circuits (flip-flops)

## Read / Watch:

Please note these videos are not applicable to this lab. We need to build up our KiCad knowledge for a lab later in the term. We will watch videos each week to gain more knowledge, we can't leave it all to the end.

Watch two videos for each week of this Assignment 3
Footprint: https://www.youtube.com/watch?v=ZHH4G_EWhm0
Association: https://www.youtube.com/watch?v=Ghv0bGiZFL8
Board: https://www.youtube.com/watch?v=dM5b_s2ysVk
Route: https://www.youtube.com/watch?v=jaQPr7Pglmk

## Do:

*Use the Lab3 Discussion board if you need help.*

1. Load into KICad: EET122_Lab3 from D2L
2. Complete the schematic. A jpeg image is supplied for reference in D2L. Make sure all power is properly connected and that you annotate the schematic***. Please reference the supplied JPEG and get the schematic complete and exact.***
3. Do a sketch of your breadboard layout before you build
4. Build the circuit on a breadboard, use the Arduino for the +5V supply. (that's all we need from the Arduino for this lab. You can use the DVM pin-8 for debugging of course)
5. ***Optional or In place of***. Use the provided Arduino sketch to replace:
    a. DIP switch
    b. The three inverters that create the inverted version of A,B, and C.
    c. The SR latch that makes the clock.
6. Deliverables to be uploaded to D2L for grading

Note: Item 5 is optional. It's for students who want to play more with the Arduino. If you choose to do this option, be sure to make your KiCad schematic reflect that.

For the deliverable use this this naming convention please: LastNameFirstName_L3

# ***** This is a two week Lab *****

## Deliverables to be uploaded to D2L for grading Week1 (4/23)

1. Upload the completed KiCad schematic: both the .pro and the .sch

2. Scan or shoot a picture of your pre-layout sketch

3. Document the combination lock sequence. The lock sequence is four three bit numbers.

3. A narrated video of your progress on the build showing your build to date. Show the circuit build and explain where you are at in the process. Your build should be 30% - 60% complete by the end of the first week.

## Deliverables to be uploaded to D2L for grading Week2 (4/30)

1. Shoot a video of the circuit operation. You will enter the four lock combinations and at the last entry the UNLOCK led should light.

2. Document a conclusion. The conclusion is free from, it's a reflection on the lab. There's no minimum length. What you write is completely up to you. Please include total time to complete the lab.