Tips for using Cadence software from your TA

1. Understand and visualize the physics behind the CMOS process

This is the key to succeed (and save time!) in this lab session.

Always remember that our layout is the transparent view from top. All paths/shapes appear to cross and overlap with each other, yet, from the cross-section view, they don’t touch unless on the same layer.

Visualize the cross-section view (3D would be more helpful but not necessary) also helps for the routing. When objects on different layers are to be connected, contact(s) and other layer(s) in-between perform a bridge function.

2. Practice

Practice, Practice, and Practice.

This is the only way to get familiar with the software, thus work faster in the lab, and the exam. Although the exam will be open-book and open-notes, you will run out of time if you have to check notes for every steps. Try to repeat lab 1 to 4, you could also find some other simple schematics for practice.

3. Use the shortcut keys

Timesaving and convenient. When you go to the menu commands, the shortcut keys (should they exist) appear next to them.

Here is a list of shortcut keys I always use:

**General (applicable in all cadence applications)**

- Esc – end the current editing mode
- f – fit all objects into one screen
- z – zoom
- m – move
- q – properties
- u – undo
- ctrl + a – select all
- ctrl + d – deselect all
- x – descent view (read only)
- X – descent (edit)
- c – copy

**Virtuoso Schematic Editing:**

- i – add instance
- w – add wire
- p – add pin

**Virtuoso Layout Editor (or XL):**

- p – add path
- s – stretch
- k – ruler
- K – remove ruler
- w – previous view