# CS 2261 Bonus Lab: Drawing the Hard Way

## (in ARM Assembly)

### Note:

**FOCUS ON THE FINAL PROJECT (and your other classes, for that matter) OVER THIS LAB**. It's not worth much and is really just an interesting endeavor for people who want to get a tiny bit of experience writing Assembly. Having said that, if you *are* near a cutoff between letter grades, this could put you over the top.

**The TAs will not help with this at all, as it is a BONUS assignment. Please let them focus on Final Project work (and their own coursework) over this lab.**

### Provided Files

- main.asm -- don't edit this! Feel free to look inside -- I actually wrote it in C and just renamed main.s to main.asm, but you don't get to do that :P

### Files to Edit/Add

- draw.asm
- Your Makefile

### Instructions

In this lab, you will be completing TODOs to draw shapes in artisanal, hard-coded ARM Assembly.

Your first shape will be a triangle and it can be any color* you want, but it must be "pointing up" and at x=50,y=22 as described by the TODOs.

Your shape should be a rectangle in the color*, size, and position of your choosing. This one must be **filled in/solid.**

Your third shape should be a letter of your choosing (X, A, Z are all easy choices), again in any size/color*/position.

***Note: Each of the three shapes should be a different color <u>none should be the basic Red/Green/Blue/White provided</u>.**

After you have completed all the TODOs and your output looks correct, you are finished with the lab and you should go ahead and submit it.

## Tips

Don't agonize over this. It's not worth much at all and it could prove too difficult.

Look at Lecture 24 and the provided links for "Further Reading" on the last slide.
You might want to try your hand at writing your own reusable functions (particularly a setPixel), in order to save some time, but you can absolutely just make drawStuff a REALLY LONG function.

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**Submission Instructions** Zip up your entire project folder, including all source files, the Makefile, and everything produced during compilation (including the .gba file). Submit this zip on Canvas. Name your submission BonusLab_FirstameLastname, for example: “BonusLab_JohnCena.zip”.