

CS 2110

Timed Lab 6

Due Date and Time

Day: Wednesday November 5h

Time: Before the end of lab

Policy

Submission

TURN IN THIS ASSIGNMENT ELECTRONICALLY USING T-SQUARE. SUBMISSIONS WHICH ARE LATE WILL NOT BE ACCEPTED. EMAIL SUBMISSIONS WILL NOT BE ACCEPTED UNDER ANY CIRCUMSTANCES! IN ADDITION IF YOU FORGET TO HIT THE SUBMIT BUTTON YOU WILL GET A ZERO.

Questions

If you are unsure of what questions mean, the TA's will clarify them to the best of their ability. We will not be able to answer any questions about how to reach a solution to the timed lab questions. You should know how by now!

What's Allowed

- The assignment files
- Your Previous homework and lab submissions
- Your mind
- Blank paper for scratch work

What's Not Allowed

- The Internet (except the T-Square Assignment page to submit)
- Any resource on T-Square that is not given in the assignment.
- Notes on paper or saved on your computer.
- Dropbox (If your harddrive crashes we will let you retake it).
- Textbook
- Email
- IM
- Contact in any form with any other person besides TAs
- If you have any questions on what you may not use then assume you can't use it and ask a TA.

Other Restrictions

- You may not leave the classroom until we have verified that you have submitted the lab. If you leave the classroom without submitting you will receive a zero.
- **YOU MUST SUBMIT BY THE END OF YOUR LAB PERIOD.** Bear in mind that the clock on your computer may be a few minutes slow. You are supposed to have a full class period to work, and we are letting you use the 10 minutes between classes to make sure you have submitted your work. **WE WILL NOT ACCEPT LATE SUBMISSIONS**, be they 1 second or 1 hour late.
- The timed lab has been configured to accept one submission. If you accidentally submit or submit the wrong version flag one of the TAs and we will reopen submission for you.
- If you are in the 3pm lab DO NOT discuss the timed lab with anyone until 6pm.

Violations

Failure to follow these rules will be in violation of the Georgia Tech Honor Code. **AND YOU WILL RECIEVE A ZERO** and you will be reported to Bill and the Office of Student Integrity.

We take cheating and using of unauthorized resources **VERY SERIOUSLY** and you will be in serious trouble if you are caught.

Remember

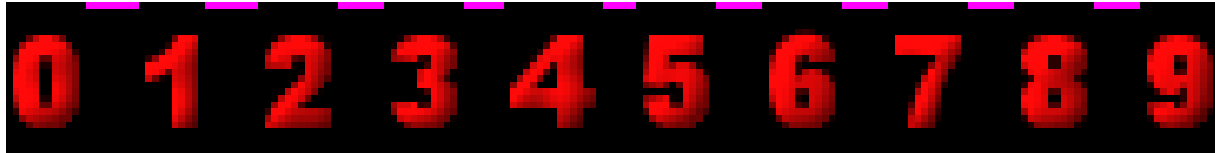
- There is a lot of partial credit given and most of it is following the directions.
- We allow you to use your homework and lab assignments.
- Please don't get stressed out during a timed lab. You have plenty of time however use your time effectively
- Remember don't get stressed partial credit will be given for things you have done correctly. Do the best you can!
- If you don't know something at least **TRY** do not just walk out of the lab or submit an empty file Partial credit!
- Remember what you can and can't use if you don't know then don't use it and ask a TA if you can use it. If we catch you with unauthorized resources we will give you a zero, so better to be safe than sorry.

The assignment

You are now going to implement the FFFont Utility library! That is the FANCY FANCY FONT UTILITY library.

FFFONTs?

These are simply specially formatted images here is an example of an fffont



Notice the FIRST row of that image, see that pink? The pink tells us where one character ends and the next begins.

Look carefully at the first row of this image. The character zero begins at column zero and ends at the column BEFORE the first pink pixel on row 1.

The reasoning for these pink areas is to have a variable width font because not all characters are the same width. This also gives you the ability to determine how much spacing to give each of the characters.

Your first job will be to determine what column (x) each character starts AND the width of each character. To make this simpler you only have to do this for the characters '0' through '9' our fonts only support these 10 characters. This will be done via the function `initialize_fffont` along with initializing the other fields of the structure.

Your next job is to implement `draw_fffchar` which is responsible for drawing one character from the above image onto the screen at a given location. You must draw the character from the above image using DMA. Remember that you will be passed in an ASCII character, remember that '0' is 48, '1' is 49 and so on.

Your last job is to implement `draw_fffstring` which is responsible for drawing an fffstring onto the screen. An fffstring is composed of the characters 0-9 and the new line character '\n'. When you see a new line character you must adjust the coordinates to start printing one line down starting at the same x coordinate as the first line was drawn.

All of the functions can be found in the `main.c` file. You should not modify any functions that are not contained in the `main.c` file.

Hints:

- Remember that DMA operates on ADDRESSES.
- Remember ASCII characters. '0' is 48
- Remember strings in C end with the NULL character, this is the value 0. So if you read a 0 from the string you are done. Do not draw the NULL character.
- Be sure to double check that you are drawing the character correctly. You can change the background color of the screen and then visibly see if the character that was drawn matches the one in the image.

Restrictions:

- Your submission must compile. Remember that we do not grade comments so don't go commenting your entire file.
- You may not hardcode charpos and charwidth. There are four different fonts you can use and each will work out differently. Do this with your code!
- You must submit every .c file, .h file and the Makefile nothing more nothing less.

Deliverables

- 1) All .c files and .h files and the Makefile.

You may submit only the files listed above. We will not accept any internet links we want the files above and only these files!

Warning

Please double check over your submission after you submit it please download what you submit and check over it to ensure you have submitted the correct file. Failure to do so will result in an automatic zero (in the case of an empty file) on the timed lab.

Have fun and good luck