

CS 2110

Timed Lab 3

Due Date and Time

Day: Monday, October 23rd

Time: Before the end of your assigned lab section

The Assignment

You are given two null-terminated strings, str1 and str2. Each string is an array of ASCII characters that ends with the value zero.

You will be writing LC3 assembly to compare the two strings by comparing the ASCII values of their characters. For example, let's say str1="bay" and str2="boy". We first compare the first characters, which is 'b' (ASCII value of 98) for both strings. Since this is equal, we go on to the second character. Since 'a' (ASCII value 97) is less than 'o' (ASCII value 111), str1 is less than str2.

You should return 1 if str1 is greater than str2, -1 if str1 is less than str2, and 0 if they are equal. We have provided example pseudocode for accomplishing this.

Examples;

"bay", "boy" → -1

"cat", "bat" → 1

"bat", "bat" → 0

Note: You can assume that the two strings will always be the same length.

You will be given the following labels

STR1: the memory address of the first string's first character

STR2: the memory address of the second string's first character

You will be storing your results at the following labels

ANS: the results of the comparison (-1, 0, or 1)

Pseudocode

```
var i = 0;
var strCompare = 0;

while (STR1[i] != 0) {
    if (STR1[i] > STR2[i]) {
        strCompare = 1;
        break;
    }
    if (STR1[i] < STR2[i]) {
        strCompare = -1;
        break;
    }
    i ++;
}
ANS = strCompare;
```

Testing

You are given a tester, which is a .xml file, that allows you to check many cases of different arrays. If your code doesn't pass the test given in your assignment .asm file, you should debug your code through Complx. Then when you feel that your code works, try running it on the tester. Here is how:

1. Make sure timedlab3_tests.xml and timedlab3.asm are in the same folder.
2. Navigate to that folder location on the terminal.
3. Enter the command: **lc3test timedlab3_tests.xml timedlab3.asm**

The console will then output the results, what it is expected, and the actual output given. The .xml test randomizes the contents of registers and all memory, and then loads your code when it is inserted in the simulator.

Deliverables

1. timedlab3.asm (SUBMIT ONLY THIS)

Note if your file is not named this you will lose points!

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

Check over your submission after you submit it. If you submit the wrong file and leave the lab I will not be happy and we will grade what you submit so please check over what you submitted after you submit it!

Good Luck, Have Fun!

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!

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

The following 2 files from T-Square resources:

CS-2110 Resources / Assembly/REFERENCE SHEET.pdf

CS-2110 Resources / Assembly/PattPatelAppA.pdf

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.
- Textbook or notes on paper or saved on your computer.
- Dropbox (If your harddrive crashes we will let you retake it).
- 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

1. 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.
2. **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.

3. 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.

Violations

Failure to follow these rules will be in violation of the Georgia Tech Honor Code. **AND YOU WILL RECEIVE 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

1. There is partial credit given, and some of it is just following the directions.
2. We allow you to use your homework assignment.
3. Please don't get stressed out during a timed lab. You have plenty of time; however, use your time effectively
4. Again, remember: Don't get stressed. Partial credit will be given for things you have done correctly. Do the best you can!
5. If you don't know something at least TRY. Do not just walk out of the lab or submit an empty file. Partial credit!
6. 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.