

UNI CS 3430

Operating Systems

Project 0 – C Warm-Up (Due 1/19 at 11:00am)

Assignment Weight:

This assignment is worth 5% of your total class grade.

Assignment Description:

This project must be completed individually (no partners yet).

Before you begin, be sure your name is at the top of the program and there are at least 3 comments in the code. If either of these things are missing, points may be deducted.

After reading the short C language tutorial found on the resources class page, log onto the class Linux server (student.cs.uni.edu) and write a small C program called “counter” that:

- a. Takes a string as input.
- b. Prints each word and the number of occurrences of each letter of the alphabet in the word.
- c. Prints the number of words found.
- d. Re-prompts for another group of words (e.g. starts the program again).

The program should continue prompting for sentences until the user types the word “quit” by itself at the prompt. You can assume that there will be no punctuation or numbers in the string, but you must count the capital and lowercase version of the same letter differently.

For example, if the program is called counter, you should be able to run it like this:

```
$> ./counter
Please enter a sentence: All your base
All
[A] -> 1
[l] -> 2

your
[o] -> 1
[r] -> 1
[u] -> 1
[y] -> 1

base
[a] -> 1
[b] -> 1
[e] -> 1
```

Number of words found: 3

Please enter a sentence: Aaabcc

Aaabcc

[A] -> 1

[a] -> 2

[b] -> 1

[c] -> 2

Number of words found: 1

Please enter a sentence: quit

Exiting!

Hints:

- Don't try to use a hash table/dictionary. They aren't part of the C standard libraries.
- The strtok() function may be useful. Google it to see what it does.
- Even though this assignment looks easy, C string manipulation may be difficult if you haven't had much practice. It is very different from C++, and you can't avoid pointers. Work on it in different pieces.
- Try to make your output look exactly like mine above.

Grading:

- Submission grade: 60% of the project grade will be based on your final deliverable.
- Quiz grade: 40% of the project grade will be based on the project quiz in class after the project has been completed.

I will assign a zero to your submission grade if:

- The code does not compile.
- You submit a C++ program instead of a C program.
- You submit a binary without the actual source code.

The submission grading rubric is as follows (points out of 60 total):

Project element	Points
Correctly prompts for a sentence	10 fully working, 5 partially working
Breaks up sentence into words	10 fully working, 5 partially working
Counts total number of words found	10 fully working
Program restarts automatically	10 fully working
Counts letters in each word	10 fully working, 5 partially working
Program quits on exit	10 fully working
Deductions	Points
Prompt or prints become garbled	Deduction of 5 or 10 points, depending on severity
No name on program	Deduction of 10 points

Less than three comments inside code	Deduction of 10 points
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Submission Instructions:

Please submit a single file called counter.c to the “Project Submissions” area on the eLearning website. It is your responsibility to be sure that the project file has been uploaded correctly by the deadline.