

CMPT 125 FIC 2024-02 Assignment 2

Due Date: Tuesday 18th June 2024 at 11:55 PM

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Read this document in its entirety and carefully before you start anything and understand it. If you have any questions, don't hesitate to email me.

In this assignment, we will work with cstrings. In order to store cstrings, we will use C++ static or dynamic arrays of characters. You are not allowed to use the C++ string or vector data types in this assignment. Read the restriction section below.

Consider the C++ program and function declarations provided in the starter code text file posted on Moodle together with this assignment.

Your Task

You are required to copy the given main program together with the function declarations exactly as they are given with no change whatsoever and then implement the functions so that the program works correctly. Each function is described in detail in the comments given together with the function declarations. The output of a sample run of the given program is provided below for your reference. You can write additional helper functions that you can call from within your functions if you like; but you are not allowed to make any changes to the given main program or the function declarations. If you write any additional helper function, then it must be included in your submission. In order to help you avoid any typo and modification of any function signature, copy and paste the code provided in the starter code text file.

Restrictions

You are required to use C++ static or dynamic arrays of characters to store cstrings. You are NOT allowed to use any C++ string or vector data type variables for any purpose. If you use a C++ string or vector data type variable for any purpose in your program, you will automatically get zero mark. Moreover, you are NOT allowed to add any include directive. Specifically you are not allowed to include string, vector, cstdlib or math libraries. Also you are not allowed to use any built-in cstring functions.

Submission Format

You are required to submit your program online through Moodle. You will find a submission link for **Assignment 2 on Moodle under Week 5** and you are required to upload the source code (.cpp) file of your C++ program containing the implementations of all of the functions and the test program. No assignment is submitted through email or hard copy; you must upload your work onto Moodle before the due date and time. Make sure to upload a source code file (i.e .cpp file) file.

Submission Due Date and Time

The due date and time to upload your program online through Moodle is **Tuesday 18th June 2024 at 11:55 PM**. Moodle will not allow you to upload after this date and time.

Marking

Your program will be tested under Microsoft Visual C++ 2010 Express and you are advised to test your program on the lab computers before submitting your assignment. A non working program will automatically get zero. A program that works but doesn't give right output or gives partial correct output will lose some marks depending on its shortcomings.

Sample Run of the program

This program is designed to help you test your functions.

Testing strlen function

The length of s1_static_array="irregular" is 9

The length of s1_dynamic_array="abcd" is 4

Moreover, the length of "" is 0

Testing countChars function

ch='r' is found in s1="irregular" 3 times.

Testing findChar function

ch='r' is found in s1="irregular" at index 1

ch='R' is found in s1="irregular" at index -1

Testing getCopy function

A copy of "irregular" is s2="irregular"

A copy of s2="irregular" is s3="irregular"

s2 is modified to s2="" but s3 is still s3="irregular"

A copy of s2="" is s3=""

Testing rotateString function

s4="asmara" rotated 7 times to the left becomes "smaraa"

s4="smaraa" rotated 2 times to the left becomes "araasm"

s4="araasm" rotated 3 times to the right becomes "asmara"

s4="asmara" rotated 9 times to the right becomes "araasm"

s4="araasm" rotated 4 times to the left becomes "smaraa"

s4="smaraa" rotated 6 times to the left becomes "smaraa"

s4="smaraa" rotated 3 times to the right becomes "raasma"

s4="raasma" rotated 2 times to the right becomes "maraas"

s4="maraas" rotated 3 times to the left becomes "aasmar"

s4="aasmar" rotated 5 times to the left becomes "raasma"

Testing empty function

Emptying s2="irregular" gives s2=""

Testing append function

Appending ch='d' to s2="" gives s2="d"

Appending ch='u' to s2="d" gives s2="du"

Appending ch='y' to s2="du" gives s2="duy"

Appending ch='v' to s2="duy" gives s2="duyv"

Appending ch='x' to s2="duyv" gives s2="duyvx"

Appending ch='j' to s2="duyvx" gives s2="duyvxj"

Appending ch='b' to s2="duyvxj" gives s2="duyvxjb"

Appending ch='z' to s2="duyvxjb" gives s2="duyvxjbz"

Appending ch='h' to s2="duyvxjbz" gives s2="duyvxjbzh"

Appending ch='q' to s2="duyvxjbzh" gives s2="duyvxjbzhq"

Appending ch='u' to s2="duyvxjbzhq" gives s2="duyvxjbzhqu"

Appending ch='p' to s2="duyvxjbzhqu" gives s2="duyvxjbzhqup"

Appending ch='x' to s2="duyvxjbzhqup" gives s2="duyvxjbzhqupx"

Appending ch='k' to s2="duyvxjbzhqupx" gives s2="duyvxjbzhqupxk"
Appending ch='x' to s2="duyvxjbzhqupxk" gives s2="duyvxjbzhqupxkx"
Appending ch='x' to s2="duyvxjbzhqupxkx" gives s2="duyvxjbzhqupxkxx"
Appending ch='v' to s2="duyvxjbzhqupxkxx" gives s2="duyvxjbzhqupxkxxv"
Appending ch='e' to s2="duyvxjbzhqupxkxxv" gives s2="duyvxjbzhqupxkxxve"
Appending ch='b' to s2="duyvxjbzhqupxkxxve" gives s2="duyvxjbzhqupxkxxveb"
Appending ch='m' to s2="duyvxjbzhqupxkxxveb" gives s2="duyvxjbzhqupxkxxvebm"

Testing append function

Appending s2="duyvxjbzhqupxkxxvebm" to s3="" gives s3="duyvxjbzhqupxkxxvebm"

Testing removeChar function

Removing ch='c' from s2="duyvxjbzhqupxkxxvebm" gives s2="duyvxjbzhqupxkxxvebm"
Removing ch='s' from s2="duyvxjbzhqupxkxxvebm" gives s2="duyvxjbzhqupxkxxvebm"
Removing ch='i' from s2="duyvxjbzhqupxkxxvebm" gives s2="duyvxjbzhqupxkxxvebm"
Removing ch='x' from s2="duyvxjbzhqupxkxxvebm" gives s2="duyvjzbzhqupxkxxvebm"
Removing ch='h' from s2="duyvjzbzhqupxkxxvebm" gives s2="duyvjzbzqupxkxxvebm"
Removing ch='v' from s2="duyvjzbzqupxkxxvebm" gives s2="duyjbzqupxkxxvebm"
Removing ch='d' from s2="duyjbzqupxkxxvebm" gives s2="uyjbzqupxkxxvebm"
Removing ch='h' from s2="uyjbzqupxkxxvebm" gives s2="uyjbzqupxkxxvebm"
Removing ch='c' from s2="uyjbzqupxkxxvebm" gives s2="uyjbzqupxkxxvebm"
Removing ch='j' from s2="uyjbzqupxkxxvebm" gives s2="uybzqupxkxxvebm"
Removing ch='x' from s2="uybzqupxkxxvebm" gives s2="uybzqupkxxvebm"
Removing ch='o' from s2="uybzqupkxxvebm" gives s2="uybzqupkxxvebm"
Removing ch='n' from s2="uybzqupkxxvebm" gives s2="uybzqupkxxvebm"
Removing ch='z' from s2="uybzqupkxxvebm" gives s2="uybqupkxxvebm"
Removing ch='h' from s2="uybqupkxxvebm" gives s2="uybqupkxxvebm"
Removing ch='s' from s2="uybqupkxxvebm" gives s2="uybqupkxxvebm"
Removing ch='s' from s2="uybqupkxxvebm" gives s2="uybqupkxxvebm"
Removing ch='p' from s2="uybqupkxxvebm" gives s2="uybqukxxvebm"
Removing ch='m' from s2="uybqukxxvebm" gives s2="uybqukxxveb"
Removing ch='k' from s2="uybqukxxveb" gives s2="uybquxxveb"

Testing removeCharAll function

Removing all occurrences of ch='l' from s3="duyvxjbzhqupxkxxvebm" (length = 20) gives
s3="duyvxjbzhqupxkxxvebm" (length = 20)

Testing isEqual function

s2="uybquxxveb" and s3="duyvxjbzhqupxkxxvebm" are not equal
s2="uybquxxveb" and s3="uybquxxveb" are equal

Testing isAnagram function

s2="uybquxxveb" and s3="uybquxxveb" are anagrams
s2="uxxvebuybq" and s3="uybquxxveb" are anagrams
s2="uxxvebuyb" and s3="uybquxxveb" are not anagrams

Testing zigzagMerge function

The zigzag merge of s2="frsuf1r1" and s3="TEJT" is s5="fTrEsJuTf1r1"

Testing getSubString function

A substring of s1="irregular" starting from index 5 with 2 characters is "ul"

A substring of s1="irregular" starting from index 5 with 1 characters is "u"
A substring of s1="irregular" starting from index 4 with 8 characters is "gular"
A substring of s1="irregular" starting from index 2 with 2 characters is "re"
A substring of s1="irregular" starting from index 0 with 3 characters is "irr"

Testing isSubString function

s2="frsuflr1" is a substring of s2="frsuflr1"
"" is a substring of s2="frsuflr1"
s2="frsuflr1" is not a substring of ""
s2="frsuflr1" is not a substring of s3="usfrffrr"

Testing countWords function

There are 8 words in s5="Ac to b x g aondcn s cw"

Deleting heap memories

Deleting s2. Done!
Deleting s3. Done!
Deleting s5. Done!

Press any key to continue . . .