Department of Information Systems and Technologies

CTIS 152 – Data Structures and Algorithms

Summer 2020 - 2021

Lab Guide #7 – Week 3 - 1

OBJECTIVE : String Operations

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1. Write a C program that will **input** and **display** a sentence. Try entering the sentence first with **%s** and then **%[^\n]** to see the difference. Also Use **%[^0-9]** then display the sentence.

Example Run(using %s):

```
Enter a sentence: Lab Quiz will be held on 25 June
The sentence is : Lab
```

Example Run(using %[^\n]):

```
Enter a sentence: Lab Quiz will be held on 25 June
The sentence is : Lab Quiz will be held on 25 June
```

Example Run(using %[^0-9]):

```
Enter a sentence: Lab Quiz will be held on 25 June
The sentence is : Lab Quiz will be held on
```

Project Name: LG7_Q1
File Name: Q1.cpp

2. Write a C program that reads the cartoon characters from the **"cartoon.txt"**, finds the length of each character using the **myStrLen** function and writes the character name and its size into a new text file named **"result.txt"**.

- **myStrLen** that takes a string as input parameter, finds and returns the number of characters in that string.
  Hint: A string ends with **'\0'** character

cartoon.txt	result.txt
BugsBunny	BugsBunny-9
Tweety	Tweety-6
BettyBoop	BettyBoop-9
Sylvester	Sylvester-9
TemelReis	TemelReis-9
DorlockHomes	DorlockHomes-12
MickeyMouse	MickeyMouse-11
WinnieThePooh	WinnieThePooh-13
YosemiteSam	YosemiteSam-11
DomuzPorky	DomuzPorky-10

Project Name: LG7_Q2
File Name: Q2.cpp

3. Write a C program that reads the names starting with R from the **"names.txt"**, gets a length from the user, finds the names having that length and displays them on the screen. If the name with that length on the text file doesn't exist, it will give an appropriate message as in the example run.

Example Run #1:

```
Enter the length of the name : 6

Rainah
Reatha
Rumina
```

Example Run #2:

```
Enter the length of the name : 3

There is No name with the length 3!
```

names.txt

```
Radka
Raen
Rainah
Rameesah
Ramia
Rashauna
Rava
Reatha
Rebel
Robia
Romilda
Rosalee
Rosangelica
Rumina
Ryann
```

Project Name: LG7_Q3
File Name: Q3.cpp

4. Write a C program that reads the file named **“history.txt”** and finds how many words there are in each line of the paragraph. Display the line numbers and the number of words of each line as in the example run.

history.txt

```
Then there must have been someone EOL
beside the Prime Minister, and the person who EOL
actually said it made it look like the Prime EOL
Minister had said it. This sometimes happens to me too. EOL
And sometimes I realize I've said something EOL
I wasn't supposed to say. EOL
Then I get angry, stand up, and yell EOL
"Who said that?!" EOL
```

HINT: Each line end with “EOL”, means end of line as you can see in your text files.

Example Run:

```
1. line contains 6 words
2. line contains 8 words
3. line contains 9 words
4. line contains 10 words
5. line contains 7 words
6. line contains 5 words
7. line contains 8 words
8. line contains 3 words
```

Project Name: LG7_Q4
File Name: Q4.cpp

Additional Questions

AQ1. Write a C program that reads a sentence from **“input.txt”** and writes in an **“output.txt”** as a table indicating the frequency of the occurence of letters in the words (two letter words, three letter words, etc). appearing in sentence.
(***Do not print the word lengths with zero!***)

NOTE: MAKE USE OF STRLEN(…)

input.txt

```
CTIS 152 course is more difficult than  CTIS 151
```

output.txt

```
Word length     Occurrences
------------------------------
    2                1
    3                2
    4                4
    6                1
    9                1
```

Project Name: LG7_AQ1
File Name: AQ1.cpp

AQ2. **Boredom Busters**: These activities are great for rainy days, parties, school holidays...or any time you're together. So turn off those TVs and game consoles and have fun!

All the activity information is kept in the **boredombusters.txt**. Each line of the file consists of the activity name and the detailed information of the activity and each activity name followed by the char "**:** ".

Example for an activity:

```
talent show:Pick one person to be the judge, and then spend 30 minutes perfecting your performances!
```

Write a C program that reads the information for several activities into a structure array with the maximum size **20**. Displays the activity names on the screen, reads the user's choice (full activity name) and displays the detailed information for the specified activity. If the searched activity is NOT in the list a warning message will be displayed.

Write the following functions;

- **`readFromFile`** that reads the activity information for several activities from the text file and stores them in the structure array and returns the number of activities.
- **`displayActivityLst`** that takes the structure array and the number of activites as parameters and displays the activity namelist on the screen.
- **`searchForActivity`** that takes the structure array, the number of activites and the activity name to be searched and returns the index of the specified activity. If the activity is NOT found in the list the function returns -1.

Example Run #1:

```
There are 10 activities in the Boredom Busters List
- talent show
- time capsule
- disco party
- camping
- get cosy
- family tree
- fancy dress
- fly a kite
- secret messages
- cloud watching
Write the full name of the activity that you prefer : fancy dress

Detailed Information :
First, gather up lots of materials such as paper, old clothes, face paints, scissors and glue.Then
pick a theme, and set a timer for 10 minutes.Use that time to make costumes mathcing the theme, and
when you're finished, have everyone show off their costumes and pick a winner!
```

Example Run #2:

```
There are 10 activities in the Boredom Busters List
- talent show
- time capsule
- disco party
- camping
- get cosy
- family tree
- fancy dress
- fly a kite
- secret messages
- cloud watching
Write the full name of the activity that you prefer: cosy

There is NO activity with the name <cosy>
```

Project Name: LG7_AQ2
File Name: AQ2.cpp