

Department of Information Systems and Technologies

CTIS 152 – Data Structures and Algorithms

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Lab Guide #10 – Week 7-2

OBJECTIVE : String Operations

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<string.h> library functions are:

- `int strlen(const char *str)`
- `char *strcpy(char *dest, const char *src)`
- `char *strncpy(char *str1, const char *str2, size_t n)`
- `char *strcat(char *dest, const char *src)`
- `char * strncat (char * destination, const char * source, size_t num);`
- `int strcmp(const char *str1, const char *str2)`
- `int strncmp(const char *str1, const char *str2, size_t n)`

Q1.

Write a C program that inputs a sentence, finds and displays the indexes of all occurrences of the given string in the sentence. If the searched string is NOT found, display an appropriate message.

Write the following function;

- **findAllOccur:** takes a sentence and a string to be searched as input parameters, finds and returns the indexes of all occurrences of the given string in the sentence.

Example Run#1:

Enter a sentence: The diligent student studied hard for the exam and achieved excellent grades for the exam.

Enter a string: exam

All occurrences of the str <exam>:

42 85

Example Run#2:

Enter a sentence: The busy bee buzzed around the colourful flowers in the garden.

Enter a string: the

All occurrences of the str <the>:

27 52

Example Run#3:

Enter a sentence: Sometimes a coffee solves all the problems such as in a time, so drink coffee.

Enter a string: coffee

All occurrences of the str <coffee>:

12 71

Project Name: LG10_Q1

File Name: Q1.cpp

Q2.

Write a C program that **deletes all occurrences of a given WORD** in a sentence and displays the new sentence. If the word doesn't exist display an appropriate message for the user.

Write the following functions;

- **findFirstOcc**: takes a string and a sentence, and returns the necessary information.
- **delAllOccur**: takes a string and a sentence, and deletes all occurrences of the given WORD if it exists.

Example Run#1:

```
Enter a sentence: the most important problem of the office there are lots of people
Enter a word: the
Final format of the sentence : most important problem of office there are lots of people
```

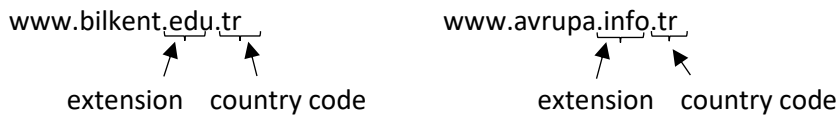
Example Run#2:

```
Enter a sentence: To take high grades from 152 course learn string matching well.
Enter a word: matching
Final format of the sentence : To take high grades from 152 course learn string  well.
```

Project Name: LG10_Q2
File Name: Q2.cpp

Q3.

The last two characters represent the country code (.tr means this website belongs to the Turkish Republic). The extension of the Website URL states the type of the website. Extensions are before the country code (.tr).



Write a C program that reads the URL of a website and displays the type of the website according to the domain name extension. If the extension is NOT in the list, the program will display a warning message. (You may use necessary string functions to find the extension of url.)

The list of domain name *extensions* and their *descriptions* are given **ascendingly sorted** by extensions in the **extensions.txt** file (e.g.: the description of “net” is “network organizations”).

Use a structure array for the extension information. That is an extension and description.

Write the following functions;

- **read:** reads the extension information from the file, stores them in the structure array, and returns the number of extensions.
- **findExtension:** takes the structure array, and finds the extension in the website url.
- **search:** takes the structure array and the extension name to be searched and returns the index of the specified extension. If the extension is NOT found in the list the function returns -1.

extensions.txt

```

biz small business web sites
com commercial business
edu educational institutions
gov government entities
info informative business
k12 Turkish primary and secondary schools
mil military
mobi mobile products and services
net network organizations

```

Project Name: LG10_Q3
File Name: Q3.cpp

Example Run#1:

Enter a website URL: www.atilim.edu.tr
edu extension is used for educational institutions

Example Run#2:

Enter a website URL: www.mayaportal.k12.tr
k12 extension is used for Turkish primary and secondary schools

Example Run#3:

Enter a website URL: www.ankara.pol.tr
The searched extension is NOT in the list

ADDITIONAL QUESTIONS

AQ1.

A Shopping Mall organized a lottery for their customers. The customers filled out coupons writing their **name, the shopping date, and the name of the store** where they made the shopping. The list of award-winning customers is stored in the **customers.txt**.

Write a C program that gets customer information from the file named **customers.txt**, which are **name, date, and store_name**, each separated by -- characters as shown in the file below. Then the program creates a report to announce the customer list in the following format:

- Date without the year information. For example; when the date info is “**29/01/2022**”, the program displays “**29/01**”.
- Name and surname column, if the total size of the name and the surname is greater than **12**, then the program displays “the first letter of the first name + dot + surname”.
For example;
 - if the name is **Ahmet Ali Cinar**, it will be shown as **A.Ali Cinar** in the coupon.
 - if the name is **Mert Lacinkaya**, it will be shown as **M.Lacinkaya** in the coupon.
- Name of the Store.

Create the given report format for the given file as in the example run.

Project Name: LG10_AQ1
File Name: AQ1.cpp

customers.txt

```
Ahmet Ali Cinar--11/02/2022--MARK AND SPENCER
Mert Lacinkaya--24/04/2022--VAKKO
Firuze Sever--13/05/2022--TEKIN ACAR
Rahmiye Tekeli--12/07/2022--SIEMENS
Attila Sengul--15/06/2022--OFFICE 1 SUPERSTORE
Fusun Lale Guler--12/04/2022--GLORIA JEAN'S COFFEES
```

Example Run:

AWARD WINNING CUSTOMERS

```
-----
11/02 A.Ali Cinar      MARK AND SPENCER
24/04 M.Lacinkaya     VAKKO
13/05 Firuze Sever    TEKIN ACAR
12/07 R.Tekeli        SIEMENS
15/06 A.Sengul        OFFICE 1 SUPERSTORE
12/04 F.Lale Guler    GLORIA JEAN'S COFFEES
```

AQ2.

ABC company wants to create email addresses for its workers. Therefore, they give their employees' names to the mail server company to create the email addresses. The mail format should be formed with the surname (all in lowercase letters), the first letter of the name, and “@abc.com.tr”. For example; **GIZEM CINAR** will be **cinarG@abc.com.tr**.

Write a C program that gets the names and surnames of the employees from the file named “**worker.txt**”. Then it creates the email addresses as explained above and writes the email addresses into the file “**mails.txt**”.

Write the following function;

- **convertLower**: gets an uppercase string and returns the same string with lowercase letters.

Hint: All the data in the file are uppercase letters.

YOU MUST READ THE NAME AND SURNAME OF A PERSON INTO A STRING FROM THE FILE.

Project Name: LG10_AQ2
File Name: AQ2.cpp

worker.txt

```
DOGAN ACAR
AHMET AYDIN
ALI BULUT
AYSE CAGLAR
SAMET DEMIR
SEDA KARAKAYA
VOLKAN OZ
MEHMET SENTURK
METIN TURKOGLU
```

mails.txt

```
acarD@abc.com.tr
aydinA@abc.com.tr
bulutA@abc.com.tr
caglarA@abc.com.tr
demirS@abc.com.tr
karakayaS@abc.com.tr
ozV@abc.com.tr
senturkM@abc.com.tr
turkogluM@abc.com.tr
```