

# Department of Information Systems and Technologies

## CTIS 152 – Data Structures and Algorithms

Fall 2024- 2025

### Lab Guide #9 – Week 6-2

**OBJECTIVE :** String Operations

**Instructor :** Burcu LIMAN

**Assistant :** Berk ÖNDER - Engin Zafer KIRAÇBEDEL

**Q1. a)** Write a C program that will input a sentence, find and display the position of the given **string** in the sentence. If the searched string is NOT found, display an appropriate message.

Write the following function;

- **findFirst:** takes a sentence and a string to be searched as input parameters, finds and returns the index of the **first occurrence of the given string** in the sentence. If the sentence does NOT contain the searched string the function should return -1.

**Project Name:** LG09\_Q1a

**File Name:** Q1a.cpp

**Example Run#1:**

Enter a sentence: This area is so full of wildlife

Enter a string: is

The first occurrence of the str <is> is 2

**Example Run#2:**

Enter a sentence: We remember Prof. Dogramaci with deep respect, profound gratitude and great affection

Enter a string: are

The sentence does NOT contain the string <are>

**b)** Modify the program **Q2a.cpp**, so that the program replaces the **first** occurrence of a given string in the sentence with the specified string. And then displays the new form of the sentence.

Write the following function;

- **replaceFirstOccur:** takes a sentence, a search string, a string to be replaced and the index of the first occurrence of the search string as parameters, replaces the first occurrence of the given string with the specified string.

**Project Name:** LG09\_Q1b

**File Name:** Q1b.cpp

**Example Run#1:**

Enter a sentence: What are you going to buy Sally for her birthday?

Enter a String to search: is

The sentence does NOT contain the string <is>

**Example Run#2:**

Enter a sentence: Sustainability is the balance between the environment, equity, and economy

Enter a String to search: the

Enter a String to replace: XXX

New form of the sentence:

Sustainability is XXX balance between the environment, equity, and economy

**Q2. a)** Write a C program that inputs a sentence, finds and **deletes** the first occurrence of the searched string, and displays the new sentence. If the searched string is NOT found, displays an appropriate message.

Write the following function;

- **deleteFirst:** takes a sentence, a string and the starting index of the given string in the sentence as parameters. The function deletes the given string in the sentence using the **findFirst** function in **Q1a.cpp**.

**Project Name:** LG09\_Q2a

**File Name:** Q2a.cpp

**Example Run#1:**

Enter a sentence: I saw a kitten eating chicken in the kitchen

Enter a string: see

The sentence does NOT contain the string <I saw a kitten eating chicken in the kitchen>

**Example Run#2:**

Enter a sentence: I scream, you scream, we all scream for ice cream

Enter a string: cream

The new form of the sentence after deletion: I s, you scream, we all scream for ice cream

**b)** Modify the **Q2a.cpp**, so the program inputs a sentence, finds and deletes all occurrences of the searched string, and displays the new sentence. If the searched string is NOT found, display an appropriate message.

Write the following function;

- **deleteAllOccur:** takes a string and a sentence, deletes all occurrences of the given string if it exists.  
**Hint:** Use **findFirst** and **deleteFirst** functions.

**Project Name:** LG09\_Q2b

**File Name:** Q2b.cpp

**Example Run:**

Enter a sentence: Peter Piper picked a peck of pickled peppers

Enter a string: pick

Final format of the str : Peter Piper ed a peck of led peppers

## **ADDITIONAL QUESTIONS**

**AQ.**

Write a C program that will read a sentence and a key string from the user, finds the LAST OCCURENCE of the given key string and displays the sentence back until the key string's last occurrence.

Write the following function;

- **findLastOcc:** takes a sentence and a string to be searched as input parameters, finds and returns the index of the **last occurrence of the given string** in the sentence.

**Project Name:** LG09\_AQ

**File Name:** AQ.cpp

### **Example Run #1:**

```
Enter a sentence: do not go gentle into that gentle good night
Enter a key string: gentle
Result: do not go gentle into that
```

### **Example Run #2:**

```
Enter a sentence: do not go gentle into that good night
Enter a key string: do
Result: That's an empty string, sorry.
```

### **Example Run #3:**

```
Enter a sentence: rage against the dying of the light rage
Enter a key string: rage
Result: rage against the dying of the light
```