Department of Computer Engineering

**CENG104 – Computer Programming II**

Spring 2017 - 2018

**Lab Guide #4/C – Week 6**

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| **OBJECTIVE** : String Operations, Usage of Sorting and Binary Search Algorithms, Usage of Binary Search and Merge Algorithms |
| **Instructor** : Yusuf Evren AYKAÇ<br>**Assistants** : Elif GÜL, Yusuf Şevki GÜNAYDIN, Hatice ÇATALOLUK |

**1.** **a)** Write the function **`findFirst`** which 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**.

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.

**Project Name:** LabGuide4_1a
**File Name:** Question_1a.cpp

**Example Run#1:**
```
Enter a sentence: this is a good idea

Enter a string: is
The first occurence of the string <is> is 2
```

**Example Run#2:**
```
Enter a sentence: Why your smartphone will be your next pc

Enter a string: are
The sentence does NOT contain the string <are>
```

**b)** Modify the **Question_1a.cpp**, so the program will **delete** the first occurrence of the searched string.
Write the function **`deleteFirst`** that takes a sentence, a string and the starting index of the given string in the sentence as parameters. The function will delete the given string in the sentence.

**Project Name:** LabGuide4_1b
**File Name:** Question_1b.cpp

**Example Run#1:**
```
Enter a sentence: home sweet home alabama home

Enter a string: home
The new form of the sentence after deletion: sweet home alabama home
```

**c)** Modify the **Question_1b.cpp**, so the program will **delete** the first occurrence of the searched **WORD**.
Write the function **`deleteFirst`** that takes a sentence, a word and the starting index of the given word in the sentence as parameters. The function will delete the given WORD in the sentence.

**Project Name:** LabGuide4_1c
**File Name:** Question_1c.cpp

**Example Run#1:**
```
Enter a sentence: brush your teeth before you go to bed.
Enter a word: you

The new form of the sentence after deletion: brush your teeth before go to bed.
```

**2.** Write a simple parser, which separates data from the string and store the fields in a structure. The fields are separated by a semicolon. User enters the salary increase, and displays the employee structure.

**Example Run:**

```
Enter an employee: Evren:Aykac:3462:31:6700:Sales Department
Enter increase in the salary: 250

Employee Information
--------------------
Name : Evren
Surname : Aykac
Employee ID : 3462
Age : 31
Salary : 6950
Department : Sales Department
```

**Project Name:** LabGuide4_2
**File Name:** Question_2.cpp

**Hint:** Use atoi() function for converting a string to an integer. Please examine the following code and its output.

```
int main()
{
	int number;
	char str[4];
	printf("Enter a number: ");
	scanf("%s",str);
	number = atoi(str);

	printf("Value of the number is %s\n", str);
	printf("Value of the number * 2 is %d\n", number * 2);

	return 0;
}
```

**Example Run:**

```
Enter a number: 9
Value of the number is 9
Value of the number * 2 is 18
```

3. **PhoneCorp** and **PhoneTech** are the two biggest phone companies in the US, **PhoneCorp** bought the company **PhoneTech**. They are now faced with the daunting task of merging their client data files into a single file. In particular each company has an unsorted text file with the **social security numbers**, **name** and **surname** of their clients.

Your task is to create a program that takes client information from the files into two structure arrays, sorts and merges the lists and writes the new list to the file **clients.txt**.

Write necessary functions;

**read** client info from a file into a structure array,

**sort** client list according to the social security numbers in ascending order.

**merge** client lists of both companies into the list which keeps the information of the company **phoneCorp**.

**Project_name:** LabGuide4_3
**File_name:** Question_3.cpp