National University of Computer and Emerging Sciences

Lab Manual # 12

Programming Fundamentals

(Section BSCS-1G)

Course Instructor	Mr. Raziuddin
Lab Instructor(s)	Mr. Muhammad Naveed Ms. Sonia Anum
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Department of Computer Science

FAST-NU, Lahore, Pakistan

Objectives

The objectives of this lab are to cover the following:

- 2D Character arrays
- File Handling

Question No 1 (File Handling)

Write a program in C++ which opens a file called input.txt (consisting of numbers, a sample is provided and you can add more numbers to it if you like) and reads the list of integers present in it. If the number being read is an odd number then it writes it in a file called odd.txt and if the number is even it writes it in a file called even.txt.
At the end your program should display the number of odd numbers written in the odd.txt file and the number of even numbers written in the even.txt file.

Question No 2 Inventory System

The file named **inventory.txt** contains three types of information [**Name, Quantity, price per unit**] and this information is space separated. Assume the number of products that the shopkeeper manages is 10. You are required to read these details from the file: **name**, (one name at a time) in a null terminated 1D char array, **quantity**, (of all 10 items) in an integer array and **price per unit**, (of all 10 items) in a float array. You don't need to store the name of all items. Read one name in an array, print it, and then overwrite. Show all the data to the shopkeeper and ask him what he wants to buy.

Code	Name	Quantity	Price per unit
1	Apple	25	3.5
2	Orange	20	5.7
3	Banana	50	2.5
4	Papaya	23	10
5	Lychee	35	1
6	Olive	56	2
7	Strawberry	125	3.5
8	Raspberry	18	1
9	Date	90	1.2
10	Mango	40	15

Ask the shopkeeper the code of the item and then quantity. Then display "Do you want to buy more items". If the shopkeeper presses 1 then continue shopping by asking the shopkeeper the code and quantity of another item. If 0 is pressed then show the bill to the shopkeeper, write the **updated inventory** to the file following the format as shown in example below, and exit program.

Sample example: Suppose the shopkeeper buys 10 apples, and 5 strawberries. Then the following updated inventory must be stored on file.

inventory.txt

Apple **35** 3.5
Orange 20 5.7
Banana 50 2.5
Papaya 23 10
Lychee 35 1
Olive 56 2
Strawberry **130** 3.5
Raspberry 18 1
Date 90 1.2
Mango 4 15

Question 3: Encryption and Decryption

The program begins with the menu:

1. Encrypt data
2. Decrypt data

If the user presses 1, read the entire data from file "input.txt" into a char array. The file cannot contain more than 100 characters (including digits, spaces, letters etc.). Encrypt the file by replacing each character with a character that has the next ascii letter. For example a with b, M with N etc. Print the updated array on screen. Also store the array in file "encrypt.txt".

Sample input.txt
Najam sheraz, the singer, is an intelligent boy.

Output in encrypt.txt
Obkbn!tifsb{-!uif!tjohfs-!jt!bo!joufmmjhfou!cpz/

If the user presses 2, read the entire data from file "encrypt.txt" into a char array. The file cannot contain more than 100 characters (including digits, spaces, letters etc.). Decrypt the file by replacing each character with a character that has the preceding ascii letter. For example b with a, N with M etc. Print the updated array on screen. Also store the array in file "decrypt.txt".

Sample data:
Input in encrypt.txt
Obkbn!tifsb{-!uif!tjohfs-!jt!bo!joufmmjhfou!cpz/

Output in decrypt.txt
Najam sheraz, the singer, is an intelligent boy.

Question No 4 (2-D char array):

Write a function in C++ called

int SearchParagraph(char paragraph[][size], char find[])

that accepts a series of sentences as a 2D character array (array of cstrings) and counts the number of times the find cstring exists in it. You may use the function you wrote in the last lab as a helper function.
Demonstrate the function in a program that asks the user to input a number of sentences (each terminated by pressing the enter key) and a word to find, passes both as parameters to the SearchParagraph function and displays the count returned by the function.