***PROBLEMS***
***TOPIC: char 2d arrays &File Handling***

## *Q No. 1*

Write a program in C++ which opens a file called Numbers.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 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.

## *Q No. 2*

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.

## *Q No. 3*

The file named inventory.txt contains three types of (space separated) information [Name, Quantity, price per unit] about items available in a shop for sale. Assume the maximum number of products that

the shopkeeper manages is 10. You are required to read these details from the file whose format is: name in an array of cstrings, quantity in an integer array and price per unit in a float array. Show all the data to the customer 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 customer the code of the item and then quantity. Then display "Do you want to buy more items". If the customer presses 1 then continue shopping by asking the customer the code and quantity of another item. If 0 is pressed then show the bill to the customer, write the updated inventory to the file following the format as shown in example below, and exit program.
Sample example: Suppose the customer buys 10 apples, and 5 strawberries. Then the following updated inventory must be stored on file.

**inventory.txt**
Apple 15 3.5
Orange 20 5.7
Banana 50 2.5
Papaya 23 10
Lychee 35 1
Olive 56 2
Strawberry 120 3.5
Raspberry 18 1
Date 90 1.2
Mango 4 15

## *Q No. 4*

Write a program in C++ to search a word in a given puzzle: a 2D array size 10 of letters given by user. Your program should ask user for a word he wants to search. If the word is found, display the location of the word and direction the word from that point. You have to search for the words in horizontal and vertical direction only.

For Example: You might be given a following array:

a s j l I x a p e
j h b x e e n p p
h o t t h b s w y
r o a i n u y z h
p t f x r d z k q
t p n l q o y j y
a n h a p f g b g
h x a s h w a b s
a b c d e f m c e

**Enter a word you want to search**
**Input:** Shoot
**Output:** Word Found at location 0, 1 in downward direction.

## *Q No. 5*

Write a program in C++ which opens a file Data.txt (consisting of 4 x 4 Matrix of integers, Read and load the data into a 2D array. Then it takes transpose of 4 x 4 array and stores back into the original file. The program should print both original and transposed matrix.

## *Q No. 6*

Write a C++ function which reads the data from 2 files (record1.txt, and record2.txt) Load the data into 2D char arrays as arryR1[6][6] and arryR2[6][6]. Compare each element index by index and find the unique elements in the arrays. Open a file Output.txt in append mode and write all the unique elements in that array.