National University of Computer and Emerging Sciences

Lab Manual

for

Object Oriented Programming

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Lab Manual 4

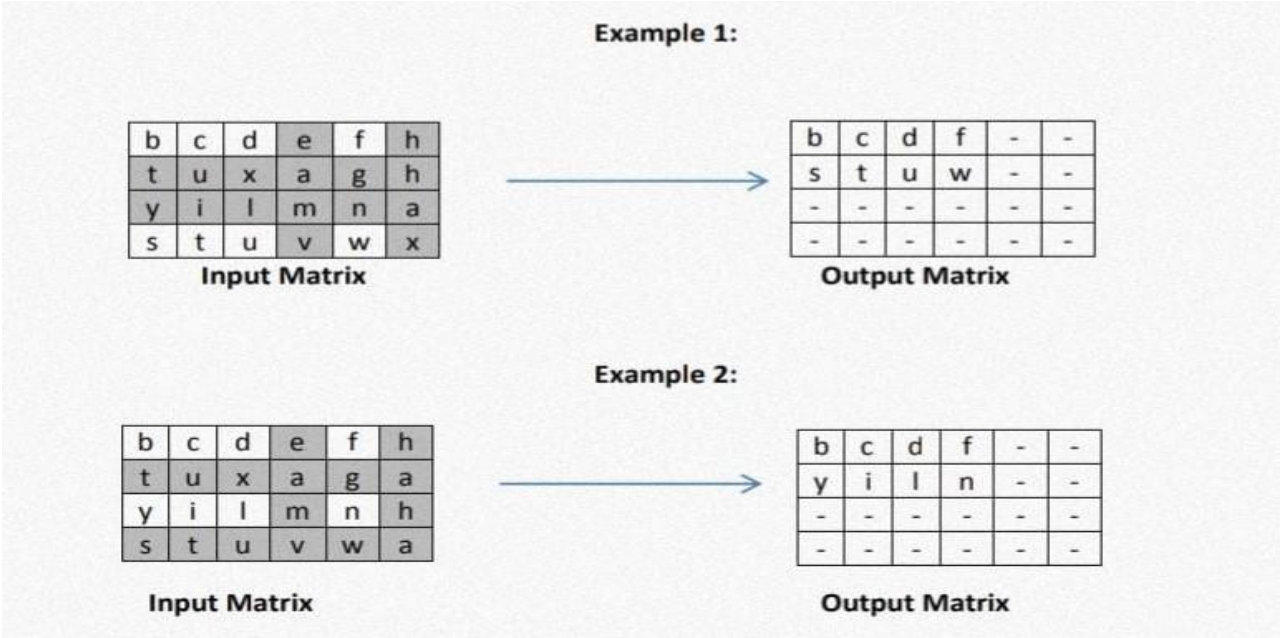
Objectives:

After performing this lab, students shall be able to:

- ✓ Dynamic 2D arrays, allocation and deallocation
- ✓ Define classes
- ✓ Overload default constructor
- ✓ Input function
- ✓ Setter and getter

Task 1

a) Write a function **char** AllocateMemory(int& rows, int& cols)** that takes size of a **char** matrix (rows and columns) from user, allocates memory for the matrix and return its pointer.
b) Write a function **void LoadMatrix(char** matrix, const int rows, const int cols)** which loads the data from a **.txt file** and store the values in the matrix.
c) Write a function **void DisplayMatrix(char** matrix, const int& rows, const int& cols)** that displays the matrix in proper format.
d) Write a function called **char** removeFromMatrix(char** matrix1, const char rchar, char** matrix2, const int rows)** to copy the given matrix to another matrix with all **rows** and **columns** containing the occurrence of a given character removed. The rows and columns at the end should be filled with '-'. In the following example, **Matrix2** is formed after removal of character 'a' from **Matrix1**.
e) Write a function **void DeallocateMemory(char** matrix, const int& rows)** that deallocates all the memory.



Task 2

As we already know that:

A class is simply a representation of a type of object. It is the blueprint/ plan/template that describes the details of an object.

Your task is to design a class for Student. You must take any 5 necessary data members:

Roll No
Name
CNIC
Degree
Address

Now implement all the required functions i.e., input function, print function. Now create an object of Student in the main and call all the functions.

Task 3

Exercise 1:

- Create a class Date having following private data members:

Int Day
Int Month
Int Year

- Create an object of Date "date1" and run your program

Exercise 2 [Default Constructor]:

- Write a default Constructor of Date that initializes the object to 1st January 1926 and prints "Default Constructor Called" in start.
- Now run your program and test what does date1 prints?

Exercise 3 [Print Function]:

- Implement a function Print in Date class which prints a date in following format: dd/mm/yyyy (e.g., 1/1/1926 for date1)
- Print object date1 in your main function and run the program.
- What does it print and how can we initialize the data of date1 at the time of creation?

Exercise 4 [Input Function]:

- Write a function Input in your Date class that takes input from user to populate a Date object.
- Call "date1.Input()" and "date1.Print()" in your driver program and test it.

Exercise 5 [Setters]:

- Create an object xmasDay using default constructor.
- Print xmasDay and see what it prints.
- Write Setters i.e., SetDay, SetMonth and SetYear in your class.
- Now set xmasDay to 25/12/2020 using Setters in main.

Exercise 6 [Getters]:

- Write Getters i.e., GetDay, GetMonth and GetYear in your date class. Now print xmasDay using Getters in your Driver program.