National University of Computer and Emerging Sciences, Lahore Campus

Course:	**OOP Lab**	**Course Code:**	**CL1004**
Program:	**BS (Computer Science)**	**Semester:**	**Spring 2023**
Duration:	**1 Hour**	**Total Marks:**	**30**
Paper Date:	**21st March, 2023**	**Weight:**	
Section:	**BCS-2H**	**Page(s):**	**2**
Exam:	**Lab Midterm**	**Reg. No.**	

Read below Instructions Carefully:

- Understanding the question statement is also part of the exam, so do not ask for any clarification. In case of any ambiguity, make suitable assumptions.
- You have to complete exam in 2 hrs. No extra time will be given for submission.
- Submit a single **.cpp file** for each question named as **21L-1122 (Q#)**
- Submit folder on **cactus** by following path: \\cactus1\ Xeon\ Spring 2023\ Fariha Maqbool\ BCS-2H\ Mid\YourSection
- Your code should be **intended** and **commented** properly. Use **meaningful variable names**.
- It is your responsibility to save your code from being copied. All matching codes will be considered cheating cases. **PLAGIARISM** will result in forwarding of **case to Disciplinary Committee** and **negative marks** in Midterm.

Question:

Design a class **Matrix** which contains following data members:

1. A pointer to a 2D integer array
2. Integer variables to store the rows and columns of matrix

Write following functions:

a) **Default Constructor:** Initialize the values of rows and columns to zero and assign Null to pointer variable

b) **void AllocateMemory( ):** that takes size of a **char** matrix (rows and columns) from user, allocates memory for the matrix

c) **void InputMatrix( ):** which inputs the data from console and store the values in the matrix

d) **void DisplayMatrix( ):** that displays the matrix in proper format

e) **void removeFromMatrix(const char rchar, char** matrix2)** to copy the given matrix to another matrix (**matrix2**) with all **rows** and **columns** containing the occurrence of a given character removed. The rows and columns at the end should be filled with '-'.

Example:

In the following example, **Matrix2** is formed from **Matrix1** when input character is ‘a’**.** All the rows and columns which contains character ‘a’ have been removed in the new matrix.