

National University of Computer and Emerging Sciences



Lab Manual 05 Object Oriented Programming

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Objectives

After performing this lab, students will practice:

- ✓ Classes, Constructors, Destructors
- ✓ Dynamic arrays in classes

TASK:

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

1. A pointer to a 2D integer array
2. An integer variable to store the dimension of matrix

(Your matrix will have equal number of rows and columns)

Your class should have following functions:

1. **Getters/setters:** To get and set the data members
2. **Default Constructor:** Initialize the values of rows and columns to zero and assign Null to pointer variable
3. **void InputMatrix(int dimension):** It takes input the values from user(console) and save the values in 2D matrix (declared in class).

Note: You have to take dimension of matrix as input from user in main function and then pass it to InputMatrix function

4. **void DisplayMatrix():** Displays the matrix in proper format.
5. **rotateOuterLayerBy1:** This function should rotate the outermost layer of matrix by one place, anti-clockwise. Your code cannot create an extra array to accomplish the given task. But you can create one or two extra integers.
6. **void DeallocateMemory:** Deallocates all the memory.

Example:

A 4x4 array

0	1	2	3
4	5	6	7
8	9	10	11
12	13	14	15

Outer layer rotated once

1	2	3	7
0	5	6	11
4	9	10	15
8	12	13	14