National University of Computer and Emerging Sciences



Lab Exercise 01

For

Object Oriented Programming Lab

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| Lab Instructor(s) | Mr. Usman Ghous |
| Semester | Spring 2020 |

**FAST School of Computing**

# Instructions:

1. Make a word document with the naming convention “SECTION\_ LAB#\_ROLLNO” and put all your source code and snapshots of its output in it. Make sure your word file is formatted properly.
2. Plagiarism is strictly prohibited.
3. Do not discuss solutions with one another.

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| **Question#1** |

Write a program that inputs the size of an integer array and then starts taking input of the elements of the array, if the number of elements of the exceeds the size of the array your program should extend the size of the array. Implement functions to increase the size of your array.

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| **Question#2** |

Create 2 user defined matrices and write a menu driven program to perform addition, subtraction, multiplication over these matrices. Implement separate function to perform each operation. Implement all the checks for efficiency of your code.

Note: You need to pass arrays in each function. Global Variables are not allowed.

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| **Question#3** |

Input a string and store it in a jagged character array with a \0 at the end. Use delimiters for input, input will end at a ‘.’ And display that character array using pointer notation.

Sample input:

My name is Hassan Tariq.

Explanation:

Convert this string to 2d array it will be stored in memory like this.

My\0

Name\0

Is\0

Hassan\0

Tariq\0

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| **Question#4** |

Create a jagged array of at least 5 rows and random columns between 0 to 8. Now, with random numbers between 1 and 20, now remove the even entries from the array and sort each row in decreasing order. Create another jagged and store all these odd entries in that array.

A jagged array is an array in which number of columns in every row is different.

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| **Question#5** |

Take binary input from user in user defined array. Convert this array into hexadecimal. Ask user if he wants to add another binary digit in end of array. If yes, then resize array and update the converted value. Program should be menu driven.

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| **Question#6** |

Write a program to create a user defined 2D array and check if it is symmetric or skew symmetric.

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| **Question#7** |

Write a C++ Program to create a dynamic 2D array and convert it into 1D array.  
Your program should use the following functions.  
1. A function to input the two-dimensional array.  
2. A function to convert the two-dimensional array in a one-dimensional array  
3. A function to print the converted array.

Note: Arrays should be passed in functions.

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| **Question#8** |

Write a program that can be used to assign seats for a commercial airplane. The airplane  
has 13 rows, with random number of seats in each row (between 1 to 15). Rows 1 and 2 are first class, rows 3 through 7  
are business class, and rows 8 through 13 are economy class. Your program must prompt  
the user to enter the following information:  
a. Ticket type (first class, business class, or economy class)  
b. Desired seat

Output the seating plan in the following form:  
 A B C D E F  
Row 1 \* \* X \* X X \* \* X X  
Row 2 \* X \* X \* X X \* X \*  
Row 3 \* \* X X  
Row 4 X \* X \* X X  
Row 5 \* X \* X X \* \* X \*  
Row 6 \* X \* \* \* X X X X  
Row 7 X \* \* \* X   
Row 8 \* X   
Row 9 X \* X X \* X  
Row 10 \* X X \* X X X  
Row 11 \* \* X \*X \* X X \*  
Row 12 \* \* X X  
Row 13 \* \* \* \* X \*

Here, \* indicates that the seat is available; X indicates that the seat is occupied. Make  
this a menu-driven program; show the user’s choices and allow the user to make the  
appropriate choices.