National University of Computer and Emerging Sciences

Laboratory Manual

for

Programming Fundamentals

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Section	BCS-1F
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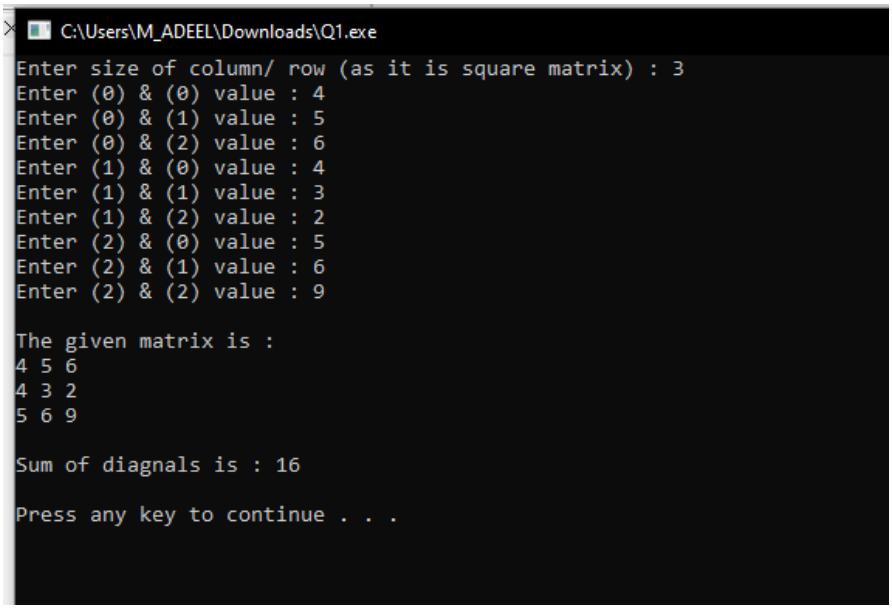
Question No 1: [5 Marks]

Write a function in C++ called ***Trace(int data[][size])*** that calculates and returns the trace of a square matrix. The trace of a square matrix is the sum of values present in its diagonal.



Question No 2: [5 Marks]

Write a user defined function named ***Upper-half()*** which takes a two dimensional array A, with size N rows and N columns as argument and prints the upper half of the array.

INPUT:	OUTPUT:
2 3 1 5 0	2 3 1 5 0
7 1 5 3 1	1 5 3 1
2 5 7 8 1	1 7 8
0 1 5 0 1	0 1
3 4 9 1 5	5

Question No 3: [10 Marks]

Write a function in C++ called ***bool Exists(int data[][6], int pattern[][3])*** that accepts a 2-dimensional integer array called data of size 6x6 and another 2-D integer array called pattern of size 3x3 as input parameters. It returns true if it finds the pattern within the array data and false otherwise.

Example:
If data carries the following values
1 2 7 8 9 6
2 2 3 4 5 6
3 2 3 4 5 6
4 2 3 4 5 6
5 2 9 8 7 6
6 2 7 4 5 6
And find has the values as below
3 4 5
3 4 5
3 4 5
Then your function should return true as the 3X3 matrix exists at data[1][2].

----------GOOD LUCK----------