Data Structure Lab

Assignment-1

Date of Assignment: 27-July-2017 **Date of Submission: 02-August-2017**

1. Write a C/C++/Java/Python program to sort an array of n integers, where the only allowable operation is a *reverse* operation that reverses the array from index 0 to index i.
   If a = {5, 2, 3, 4, 2, 6}, and reverse(a, 3) is called, then a = {4, 3, 2, 5, 2, 6}.

   First read the number of test cases T. For each testcase, read n, the number of integers. Subsequently read n integers.

   Example:
   Input:
   3
   3
   3 1 2
   5
   4 8 7 9 1
   3
   2 1 2
   Output:
   Case 1: 1 2 3
   Case 2: 1 4 7 8 9
   Case 3: 1 2 2

2. A 2-D matrix A of order M X N is given where the starting cell is A[0][0] and the finishing cell is A[M-1][N-1]. Rishabh starts from the starting cell and has to reach the finishing cell where there is a CCD. He can move only towards right and up. In the matrix, 0 means jungle area through which Rishabh is reluctant to move and 1 means a valid road segment. Write a C/C++/Java/Python program that helps Rishabh to reach CCD. The output of the program is the sequence of <i,j>s in the 2-D matrix that starts from <0,0> and end at <M-1,N-1>. Note that Rishav has every reason to go to CCD, so do not make him upset.

   First read the number of test cases T. For each testcase, read M and N. Each A[i][j] = {0, 1}. Input is given in such a way that there exists at least one path from A[0][0] to A[M-1][N-1].

Example:

Input:

2

5 9

4	**0**	**0**	**1**	**1**	**0**	**1**	**1**	**1**	**1**
3	**0**	**0**	**0**	**1**	**0**	**1**	**1**	**0**	**0**
2	**0**	**0**	**1**	**1**	**1**	**1**	**1**	**0**	**0**
1	**1**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**
0	**1**	**1**	**1**	**1**	**0**	**0**	**0**	**0**	**0**
	0	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**

3 2

2	0	1
1	1	1
0	1	0
	0	**1**

Output:

Case 1: **<0,0> <0,1> <0,2> <0,3> <1,3> <2,3> <2,4> <2,5> <2,6> <3,6> <4,6> <4,7> <4,8>**

Case 2: **<0,0> <1,0> <1,1> <2,1>**