CSC/DCSCI 2720: Data Structures
Lab 2

Instructor: Shiraj Pokharel

Due : 48 hours after release
Late Submission deadline (with 25% penalty) 24 hours after due date

You must submit your responses as a SINGLE Jupyter Notebook, where each program is put in separate Jupyter Notebook cells within that SINGLE Jupyter Notebook. Do **NOT** submit Colab links.
Failure to comply with this simple requirement will result in a score of Zero. Please, be careful not to be assigned a Zero score this way.

Few Rules to be followed, else will receive a score of ZERO

(1) Your submissions will work exactly as required.

(2) Your files shall not be incomplete or worse corrupted such that the file does not compile at all. Make sure you submit a file that compiles.

(3) Your submission will show an output. Should you recive a Zero for no output shown do not bother to email me with "but the logic is perfect" !

Note that your program's output must **exactly** match the specs(design , style) given here for each problem to pass the instructor's test cases .

Design refers to how well your code is written (i.e. is it clear, efficient, and elegant).
Style refers to the readability of your code (commented, correct indentation, good variable names).

In total, You have 2 programs to write for the same input array.

(1) (50 points)
You are given an array of integers and an index x.
Without sorting Re-arrange the array as below:
elements less than array[x], followed by elements equal to array[x], followed by elements greater than array[x]

Array, a = [3,5,2,6,8,4,4,6,4,4,3] and x = 5

Write a Python Program that re-arranges the above given array exactly as shown below without using a sorting routine of any kind

output array = [3,2,3,4,4,4,4,5,6,8,6]
Here You are allowed to use an extra array to solve the problem.

(2) (50 points)
You are given an array of integers and an index x.
Without sorting Re-arrange the array as below:
elements less than array[x], followed by elements equal to array[x], followed by elements greater than array[x]

Array, a = [3,5,2,6,8,4,4,6,4,4,3] and x = 5

Write a Python Program that re-arranges the above given array exactly as shown below without using a sorting routine of any kind
output array = [3,2,3,4,4,4,4,5,6,8,6]
Here You are not allowed to use an extra array to solve the problem