Programming assignment 4.

Due date: Friday, October 26 2018 at 11:59pm

Remember:

You can remove all the variables from the workspace by writing "clear"

Look up the description of all the functions in MATLAB by typing doc in the command window.

Part A.

Write a function called *Quick_select* to find the **k^th^ least element** on a given array. (The average running time of your algorithm should be O(n)) (***Hint***: Use partitioning algorithm)

1. Request the user to enter a positive integer, and call it **n**.
2. Generate **n** random integers between *-100* to *100* and save them in array **a**. *(You can use randi function in MATLAB)*
3. Print the generated array.
4. Request the user to enter a number between *1* to *n* (as the kth least element).
5. Call your function to find and print the kth least element.

Part B.

Modify your algorithm to return the *max k* numbers from an *unsorted* array. (The average running time of your algorithm should be *O(n)*) (***Example:*** a = [4 2 0 10 1 6], k = 3 ➔ output = [4 10 6])