Objective:

- The purpose of this quiz is to focus on the very basic fundamental concepts learned so far in previous lectures.

Question No 1: **(5)**

Write binary search function for such an array, which is sorted but may have duplicate values. If 'key' is found then it return the smallest index of item matching the 'key' otherwise it returns -1.
e.g. if array is 12, 31, 34, 34, 56, 90, 90, 100 and key = 34 then it returns 2
e.g. if array is 12, 12, 12, 12, 12, 12, 12, 12 and key = 12 then it returns 0
The time bound of your function should be O(logN).

```cpp
int binarySearch(int * arr, int N, int key)
{
    int lb=0, ub=N-1, mid=0, lastKeyOccur=-1;
    while( lb <= ub )
    {
        mid = (lb + ub) / 2;
        if (arr[mid] == key)
        {
            lastKeyOccur = mid;
            lb=0;
            ub=mid-1;
        }
        else if (arr[mid]>key)
            ub = mid - 1;
        else
            lb = mid + 1;
    }
    return lastKeyOccur;
}
```