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Move all values equal to K to the end of the Array

Difficulty Level : Hard • Last Updated : 11 Aug, 2021

Given an array **arr[]** of size **N** and an integer **K**, the task is to print the array after moving all value equal to **K** at the end of the array.

Examples:

Input: *arr = [2, 1, 2, 2, 2, 3, 4, 2], K = 2*

Output: *[4, 1, 3, 2, 2, 2, 2, 2]*

Explanation:

2 is the number which has to be moved to the end of the array arr[]. Therefore, after making the change the array is [4, 1, 3, 2, 2, 2, 2, 2]. The numbers 4, 1, and 3 could be ordered differently.

Input: *arr = [1, 1, 3, 5, 6], K = 1*

Output: *[6, 5, 3, 1, 1]*

Explanation:

1 is the number which has to be moved to the end of the array arr[]. Therefore, after making the change the array is [6, 5, 3, 1, 1].



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Recommended: Please try your approach on **{IDE}** first, before moving on to the solution.

Approach: To solve the problem mentioned above we use Two Pointer Technique.

1. Initialize two pointers where the left pointer marks the start of the array and the other one that is right one marks the end of the array, respectively.
2. Decrement the count of right pointer long as it **points to K**, and increment the left pointer as long as it **doesn't point to the integer m**.
3. When both pointers aren't moving, swap their values in place.
4. Repeat this process until the pointers pass each other.

Below is the implementation of the above approach:

C++

```
// C++ program to move all values
// equal to K to the end of the Array

#include <bits/stdc++.h>
using namespace std;

// Function to move the element to the end
vector<int> moveElementToEnd(
    vector<int> array, int toMove)
{
```

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```
// Iterate until left pointer
// crosses the right pointer
while (i < j) {

    while (i < j && array[j] == toMove)

        // decrement right pointer
        j--;

    if (array[i] == toMove)

        // swap the two elements
        // in the array
        swap(array[i], array[j]);

    // increment left pointer
    i++;
}

// return the result
return array;
}

// Driver code
int main(int argc, char* argv[])
{

    vector<int> arr = { 1, 1, 3, 5, 6 };
    int K = 1;
```

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```
return 0;
```

```
}
```

Java

```
// Java program to move all values
// equal to K to the end of the Array
class GFG{

// Function to move the element to the end
static int[] moveElementToEnd(int []array,
                               int toMove)
{
    // Mark left pointer
    int i = 0;

    // Mark the right pointer
    int j = array.length - 1;

    // Iterate until left pointer
    // crosses the right pointer
    while (i < j)
    {
        while (i < j && array[j] == toMove)

            // Decrement right pointer
```



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```
// ...
swap(array, i, j);

// Increment left pointer
i++;
}

// Return the result
return array;
}

static int[] swap(int []arr, int i, int j)
{
    int temp = arr[i];
    arr[i] = arr[j];
    arr[j] = temp;
    return arr;
}

// Driver code
public static void main(String[] args)
{
    int []arr = { 1, 1, 3, 5, 6 };
    int K = 1;
    int []ans = moveElementToEnd(arr, K);

    for(int i = 0; i < arr.length; i++)
        System.out.print(ans[i] + " ");
}
```



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```
# Python3 program to move all values
# equal to K to the end of the Array

# Function to move the element to the end
def moveElementToEnd(array, toMove):

    # Mark left pointer
    i = 0

    # Mark the right pointer
    j = len(array) - 1

    # Iterate until left pointer
    # crosses the right pointer
    while (i < j):

        while (i < j and array[j] == toMove):

            # decrement right pointer
            j-=1

        if (array[i] == toMove):

            # swap the two elements
            # in the array
            array[i], array[j] = array[j] , array[i]

            # increment left pointer
```



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```
.....  
if __name__ == "__main__":  
  
    arr = [ 1, 1, 3, 5, 6 ]  
    K = 1  
    ans = moveElementToEnd(arr, K)  
    for i in range(len(arr)):  
        print(ans[i] ,end= " ")  
  
# This code is contributed by chitranayal
```

C#

```
// C# program to move all values  
// equal to K to the end of the Array  
using System;  
class GFG{  
  
    // Function to move the element to the end  
    static int[] moveElementToEnd(int []array,  
                                   int toMove)  
    {  
        // Mark left pointer  
        int i = 0;  
  
        // Mark the right pointer  
        int j = array.Length - 1;
```



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```
// Decrement right pointer
j--;

if (array[i] == toMove)

    // Swap the two elements
    // in the array
    swap(array, i, j);

// Increment left pointer
i++;
}

// Return the result
return array;
}

static int[] swap(int []arr, int i, int j)
{
    int temp = arr[i];
    arr[i] = arr[j];
    arr[j] = temp;
    return arr;
}

// Driver code
public static void Main(string[] args)
{
    int []arr = { 1, 1, 3, 5, 6 };
```


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```
,  
}
```

```
// This code is contributed by rock_cool
```

Javascript

```
<script>
```

```
// Javascript program to move all values  
// equal to K to the end of the Array  
  
// Function to move the element to the end  
function moveElementToEnd(array, toMove)  
{  
    // Mark left pointer  
    let i = 0;  
  
    // Mark the right pointer  
    let j = array.length - 1;  
  
    // Iterate until left pointer  
    // crosses the right pointer  
    while (i < j)  
    {  
        while (i < j && array[j] == toMove)  
  
            // Decrement right pointer
```



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```
// ... the array
swap(array, i, j);

// Increment left pointer
i++;
}

// Return the result
return array;
}

function swap(arr, i, j)
{
    let temp = arr[i];
    arr[i] = arr[j];
    arr[j] = temp;
    return arr;
}

let arr = [ 1, 1, 3, 5, 6 ];
let K = 1;
let ans = moveElementToEnd(arr, K);

for(let i = 0; i < arr.length; i++)
    document.write(ans[i] + " ");
```

</script>

Output:

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Time complexity: $O(N)$, where N is the length of the array.

Space complexity: $O(1)$

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