# Rajalakshmi Engineering College

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## NeoColab_REC_CS23231_DATA STRUCTURES

## REC_DS using C_Week 6_COD_Question 3

Attempt : 1
Total Mark : 10
Marks Obtained : 10

## Section 1 : Coding

1.  Problem Statement

You are the lead developer of a text-processing application that assists writers in organizing their thoughts. One crucial feature is a character-sorting service that helps users highlight the most critical elements of their text.

To achieve this, you decide to enhance the service to sort characters in descending order using the Quick-Sort algorithm. Implement the algorithm to efficiently rearrange the characters, ensuring that it is sorted in descending order.

### *Input Format*

The first line of the input consists of a positive integer value N, representing the number of characters to be sorted.

The second line of input consists of N space-separated lowercase alphabetical characters.

*Output Format*

The output displays the set of alphabetical characters, sorted in descending order.

Refer to the sample output for the formatting specifications.

*Sample Test Case*

Input: 5
a d g j k
Output: k j g d a

*Answer*

```c
#include <stdio.h>
#include <string.h>
```

```python
# You are using Python
def quick_sort(arr):
    if len(arr) <= 1:
        return arr
    pivot = arr[len(arr) // 2]
    left = [x for x in arr if x > pivot]  # Elements greater than pivot
    middle = [x for x in arr if x == pivot]  # Elements equal to pivot
    right = [x for x in arr if x < pivot]  # Elements smaller than pivot
    return quick_sort(left) + middle + quick_sort(right)  # Sort recursively

# Read input
N = int(input())  # Number of characters
chars = input().split()  # Space-separated lowercase alphabetical characters

# Sort the characters in descending order using Quick-Sort
sorted_chars = quick_sort(chars)

# Print the sorted characters
print(" ".join(sorted_chars))
```

```c
int main() {
```

```c
    int n;
    scanf("%d", &n);

    char characters[n];

    for (int i = 0; i < n; i++) {
        char input;
        scanf(" %c", &input);
        characters[i] = input;
    }

    quicksort(characters, 0, n - 1);

    for (int i = 0; i < n; i++) {
        printf("%c ", characters[i]);
    }

    return 0;
}
```

*Status :* Correct                                              *Marks : 10/10*