

**Program:**

```
def merge_sort(arr):  
    if len(arr) > 1:  
        mid = len(arr) // 2  
        left_half = arr[:mid]  
        right_half = arr[mid:]  
  
        # Recursive call to sort the two halves  
        merge_sort(left_half)  
        merge_sort(right_half)  
  
        # Merging the sorted halves  
        i = j = k = 0  
  
        while i < len(left_half) and j < len(right_half):  
            if left_half[i] < right_half[j]:  
                arr[k] = left_half[i]  
                i += 1  
            else:  
                arr[k] = right_half[j]  
                j += 1  
            k += 1  
  
        # Check if any element was left  
        while i < len(left_half):  
            arr[k] = left_half[i]  
            i += 1  
            k += 1  
  
        while j < len(right_half):  
            arr[k] = right_half[j]
```

```
j += 1
```

```
k += 1
```

```
# Input
```

```
arr = list(map(int, input("Enter the elements of the array separated by space: ").split()))
```

```
# Perform merge sort
```

```
merge_sort(arr)
```

```
# Display the sorted array
```

```
print("Sorted array is:", arr)
```

**Output:**

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

Python + v

```
● PS C:\Users\katur\Music\DAA practicals> & C:/Users/katur/AppData/Local/Programs/Python/Python312/python.exe "c:/Users/katur/Music/DAA practicals/practical13.py"
Enter the elements of the array separated by space: 11 12 13 34 45 56 67 78 89 99 10 9
Sorted array is: [9, 10, 11, 12, 13, 34, 45, 56, 67, 78, 89, 99]
○ PS C:\Users\katur\Music\DAA practicals> █
```