S.No: 6	Exp. Name: ***Sort a list using Merge Sort Technique.***	Date:2023-09-15

Aim:

Write a java program to sort the given list of elements using **Merge Sort**.

Source Code:

q36416/MergeSort.java

```
package q36416;
import java.io.*;
import java.util.*;
class MergeSort
{
   public static void main(String args[])
   {
      int n;
      System.out.print("Enter no of elements: ");
      Scanner s = new Scanner(System.in);
      n = s.nextInt();
      int a[] = new int[n];
      System.out.println("Enter the elements:");
      for(int i=0;i<n;i++)
      a[i] = s.nextInt();
      MergeSort x = new MergeSort();
      MergeSort.mergesort(a,0,n-1);
      System.out.println("Sorted array: " );
      for(int i=0;i<n;i++)
      System.out.print(a[i]+" ");
   }
   static void mergesort(int a[],int low,int high)
   {
      if(low<high)
      {
         int mid = (low+high)/2;
         MergeSort.mergesort(a,low,mid);
         MergeSort.mergesort(a,mid+1,high);
         MergeSort.merge(a,low,mid,high);
      }
   }
static void merge(int a[],int low,int mid,int high)
{
   int i=low,temp,j=mid+1,k=low;
   int b[] = new int[20];
   while(i<=mid && j<=high)
   {
      if(a[i] <a[j])
      {
         b[k]=a[i];
         i++;
      }
      else
      {
         b[k]=a[j];
         j++;
```


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```
      }
      k++;
   }
   if(i > mid)
   {
      while(j<=high)
      {
         b[k]=a[j];
         k++;
         j++;
      }
   }
   else
   {
      while(i<=mid)
      {
         b[k]=a[i];
         i++;
         k++;
      }
   }
   i=0;
   for(i=low;i<=high;i++)
   a[i]=b[i];
}
}
```

Execution Results - All test cases have succeeded!

Test Case - 1
User Output
Enter no of elements: 3
Enter the elements: 100 50 75
Sorted array:
50 75 100

Test Case - 2
User Output
Enter no of elements: 4
Enter the elements: 1 3 5 2
Sorted array:
1 2 3 5

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