**AIM:** To write a java program to implement Merge Sort.

**PROGRAM:**

import java.util.\*;

class MerSor

{

ArrayList<Integer> inp=new ArrayList<>();

MerSor(ArrayList<Integer> inp)

{

this.inp=inp;

}

public ArrayList<Integer> getAr()

{

return inp;

}

public void sortArray()

{

mSort(0,this.inp.size()-1);

}

public void mSort(int left,int right)

{

if(left<right && (right-left)>=1)

{

int mid=(left+right)/2;

mSort(left,mid);

mSort(mid+1,right);

merge(left,mid,right);

}

}

public void merge(int first,int middle,int last)

{

int i=first;

int j=middle+1;

ArrayList<Integer> m=new ArrayList<>();

while(i<=middle && j<=last)

{

if(inp.get(i)<=inp.get(j))

{

m.add(inp.get(i));

i++;

}

else

{

m.add(inp.get(j));

j++;

}

}

while(i<=middle)

{

m.add(inp.get(i));

i++;

}

while(j<=last)

{

m.add(inp.get(j));

j++;

}

i=0;j=first;

while(i<m.size())

{

inp.set(j,m.get(i++));

j++;

}

}

}

class MergeSor

{

public static void main(String arg[])

{

ArrayList<Integer> arr=new ArrayList<>();

Scanner s=new Scanner(System.in);

System.out.println("enter no.of elements:");

int n=s.nextInt();

System.out.println("enter elements:");

for(int i=0;i<n;i++)

{

int g=s.nextInt();

arr.add(g);

}

System.out.println("Before Sorting:"+arr);

MerSor ms=new MerSor(arr);

ms.sortArray();

arr=ms.getAr();

System.out.println("After Sorting:"+arr);

}

}

**OUTPUT:**

