**Program :**

//program to perform merge sorting on a given array - Visakh B - S3R2 - 34

#include<stdio.h>

//Declaring arrays as global

int a[50] , b[50]; //a --> array to be sorted , b--> temporary array

void merge(int l,int mid , int h)

{

  int i,j,k;

  i=l; //first split array counter

  j=mid+1; //second split array counter

  k=l; //temp array counter

  while(i<=mid && j<=h)

  {

    if(a[i]<=a[j])

      b[k++] = a[i++];

    else // a[j] < a[i]

      b[k++] = a[j++]; //post increment of values after assignment

  }

  //assigning remaining elements to temp array

  if(i>mid) //remaining elements in second sublist --> first traversed

  {

    while(j<=h)

      b[k++] = a[j++];

  }

  else // i< mid --> remaining elements in first sublist --> second traversed

  {

    while(i<=mid)

      b[k++] = a[i++];

  }

  for(k=l;k<=h;k++)

    a[k] = b[k]; // copying sorted elements into original array

}

void mergeSort(int l , int h)

{ int mid;

  if(l<h)

  {

    mid = (l+h)/2;

    mergeSort(l,mid);

    mergeSort(mid+1,h);

    merge(l,mid,h);

  }

}

void main()

{

  int n,i;

  printf("Enter the number of elements in array :\n");

  scanf("%d",&n);

  printf("Enter the elements in the array :\n");

  for(i=0;i<n;i++)

    scanf("%d", &a[i]);

  mergeSort(0,n-1);

  printf("Array After MergeSort : \n");

  for(i=0;i<n;i++)

    printf("%d\t", a[i]);

}

**Output :**

