Experiment No: 2

Aim:

Write a program to implement merge sort.

Name and roll no of student	Division	Date of performance	Date of submission
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Roll no: **237**			

TITLE:
Write a program to implement merge sort.

Program:

```
#include <stdio.h>



int array[10];
int tempArray[10];
int length;
void printArray(int A[], int size)
{
   int i;
   for (i = 0; i < size; i++)
   {

      printf("%d  ", A[i]);
   }
}
void mergeArray(int low, int middle, int high)
{

   for (int i = low; i <= high; i++)
   {

      tempArray[i] = array[i];
   }

   int i = low;
   int j = middle + 1;
   int k = low;

   while (i <= middle && j <= high)
   {

      if (tempArray[i] <= tempArray[j])
      {

         array[k] = tempArray[i];
         i++;
      }
```

```
        else
        {

            array[k] = tempArray[j];
            j++;
        }
        k++;
    }

    while (i <= middle)
    {

        array[k] = tempArray[i];
        k++;
        i++;
    }

}
void divideArray(int low, int high)
{

    if (low < high)
    {

        int middle = (low + high) / 2;

        divideArray(low, middle);
        divideArray(middle + 1, high);

        mergeArray(low, middle, high);
    }

}
```

```
void mergeSort(int inputArray[],int size)
{

for(int i=0;i<size;i++){

 array[i] = inputArray[i];
}

   length = size;
   tempArray[size];

   divideArray(0, length - 1);
}


void main()
{

   printf("Name : Suraj Sahani\n\n\n");

   int size, i;

   printf("Enter the size of array : ");
   scanf("%d", &size);

   int inputarray[10];

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

   for (i = 0; i < size; i++)
   {
      scanf("%d", &inputarray[i]);
   }

   printf("\nElements of array before merge sort : ");
   printArray(inputarray, size);

   mergeSort(inputarray,size);

   printf("\nElements of array after merge sort : ");
   printArray(array, size);
}
```

Output:

Name : Suraj Sahani

Enter the size of array : 5
Enter the elements of array :
88
11
99
33
66

Elements of array before merge sort : 88 11 99 33 66
Elements of array after merge sort : 11 33 66 88 99