INTERNAL PRACTICAL

DAA PRACTICAL

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G1

Ques: Program for Merge sort.

Ans:

```
#include<iostream>
using namespace std;

void merge (int arr[], int l, int m, int r)
{
    int n1 = m-l+1;
    int n2 = r-m;
    int L[n1], R[n2];
    for(int i=0; i<n1; i++)
        L[i] = arr[l+i];
    for (int j=0; j<n2; j++)
        R[j] = arr[m+1+j];

    int i=0, j=0, k=l;
    while( i<n1 && j<n2) {
        if (L[i] <= R[j]){
            arr[k] = L[i];
            i++;
        }
        else{
            arr[k]= R[j];
            j++;
        }
        k++;
    }
```

```
while (i<n1){
    arr[k] = L[i];
    i++;
    k++;
  }

while (j<n2) {
    arr[k] = R[j];
    j++;
    k++;
  }
}

void mergeSort (int arr[], int l, int r) {
    if (l>=r){
        return;
    }
    int m = (l+r-l)/2;
    mergeSort(arr, l, m);
    mergeSort(arr, m+1, r);
    merge(arr, l, m, r);
}

void printArr (int A[], int S)
{   for(int i=0; i<S; i++)
        cout<< A[i] << " ";
}
```

```
//Main function
int main()
{
    int arr[] = {12, 58, 17, 14, 18, 36, 45}
    int arrSize = sizeof(arr) / sizeof(arr[0]);
    cout<<" Given array elements :" ; printArr(arr, arrSize);
    mergeSort (arr, 0, arrSize -1);
    cout<<endl;
    cout<<" Sorted array is :" ;
    [illegible]
    printArr( arr, arrSize);
    return 0;
}
```

Output:

Given array elements: 12 58 17 14 18 36 45

Sorted array is: 12 14 17 18 36 45 58