



## EXPERIMENT – 2.1

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**Section/Group:** 608 (B)

**Semester:** 3<sup>rd</sup>

**Date of Performance:** 12<sup>th</sup> Sept

**Subject Name:** DS

**Subject Code:** 21CSH-211

### Aim of Practical:

Write a program to sort an array of integers in ascending/descending order using Merge sort

### Program Code:

```
#include<bits/stdc++.h>
using ll = long long;
using namespace std;

void merge(int a[], int low, int mid, int high){
    int N = high-low+1;
    int b[N];
    int left = low, right = mid+1, bIdx = 0;

    while(left<=mid && right<=high)
        b[bIdx++] = (a[left]<=a[right]) ? a[left++] : a[right++];

    while(left<=mid)
        b[bIdx++] = a[left++];

    while(right<=high)
        b[bIdx] = a[right++];

    //copy to original array
```



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```
        for(int i=0;i<N;++i)
            a[low+i]=b[i];
    }

    void mergeSort(int a[],int low, int high){
        if(low<high){
            int mid = (low + high)/2;
            mergeSort(a, low, mid);
            mergeSort(a, mid+1, high);
            merge(a, low, mid, high);
        }
    }

    int main(){
        cout<<"Enter the size of Array: ";
        int n;cin>>n;
        cout<<"Enter "<<n<<" Elements: ";
        int a[n];
        for(auto &i: a)
            cin>>i;
        mergeSort(a,0,n-1);

        cout<<"\nAccending Order: ";
        for(auto i: a)
            cout<<i<<" ";
    }
```

## Output:

```
Enter the size of Array: 5
Enter 5 Elements: 7 2 3 67 0

Accending Order: 0 2 3 7 67
```