

D S M E

Merge Sort

Data Structures Made Easy

1. **Merge Sort**

```
class merge_Sort{

    public static void sort(int [] input){

        mergeSort(input, 0, input.length - 1);
    }

    public static void mergeSort(int [] array, int low, int high){

        merge_Sort_Test_Program test = new merge_Sort_Test_Program();

        if(low < high){

            int mid = (low + high)/2;
            mergeSort(array, low, mid);
            mergeSort(array, mid + 1, high);
            merge(array, low, mid, high);
            test.printArray(array);
        }
    }

    public static void merge(int [] array, int low, int mid, int high){

        int [] temporary = new int[high - low + 1];
        int left = low;
        int right = mid + 1;
        int element = 0;

        while(left <= mid && right <= high){

            if(array[left] < array[right]){

                temporary[element] = array[left];
                left++;
            }
            else{

                temporary[element] = array[right];
                right++;
            }

            element++;
        }
    }
}
```

```

        if(left <= mid){
            while(left <= mid){
                temporary[element] = array[left];
                left++;
                element++;
            }
        }
        else if(right <= high){
            while(right <= high){
                temporary[element] = array[right];
                right++;
                element++;
            }
        }

        for(int index = 0; index < temporary.length; index++)
            array[index + low] = temporary[index];
    }
}

```

2. **Merge Sort Test Program**

```

class merge_Sort_Test_Program{

    public static int [] readInputArray(){

        int [] merge_Array = {80, 32, 56, 37, 69, 76};
        return merge_Array;
    }

    public static void printArray(int [] array){

        for(int index = 0; index < array.length; index++)
            System.out.print(array[index] + " , ");

        System.out.println();
    }
}

```

```
public static void main(String [] args){  
  
    merge_Sort merge = new merge_Sort();  
  
    int [] input_Array = readInputArray();  
  
    System.out.println("\n' + "INPUT ARRAY");  
    System.out.println("=====");  
  
    printArray(input_Array);  
    merge.sort(input_Array);  
  
    System.out.println("\n' + "SORTED ARRAY");  
    System.out.println("=====");  
  
    printArray(input_Array);  
}
```