Lab 5. Advanced Sorting Algorithms - MergeSort

Implement MergeSort in Java and use the test cases to verify your algorithm

- In your ***MergeSort*** class, you should have a ***merge*** and a ***mergeSort*** function. Users can call ***mergeSort*** function to sort an array of integer in an increasing order.

    - *merge(int arr[], int l, int m, int r)*
        - It is used to combine two arrays into one sorted array
        - ***arr[]*** is the array
        - First subarray is ***arr[l..m],*** which is already in a sorted order
        - Second subarray is ***arr[m+1..r]***, which is already in a sorted order

    - *mergeSort(int arr[], int l, int r)*
        - ***arr[]*** is the array
        - ***l*** is for left index and ***r*** is right index of the sub-array of ***arr[]*** to be sorted

Test Case 1:

```
31   33   27   15   42   11   40   5   19   21
```

Test Case 2:

```
98   34   100  36   44   64   3   99   59
20   88   55   91   14   58   25  29   44
66   62   4    65   49   71   71  24   12
14   3    58   23   12   66   11  45   36
55   64   35   24   85   73   33  85   46
94   76   23   36   57   26   8   92   17
85   68   52   34   53   93   4   37   34
70   9    15   42   31   16   72  61   62
11   38   34   21   81   9    45  68   11
20   83   27   6    69   26   5   31   8
74   97   11   60   1    68   14  27   46
```

Submission:

One Single File named *MergeSort.java*