```
1 package in.neuron.main;
 3public class MergeSort {
       void merge(int arr[], int p, int q, int r) {
 6
 7
               int n1 = q - p + 1;
 8
               int n2 = r - q;
 9
               int L[] = new int[n1];
10
11
               int M[] = new int[n2];
12
13
               for (int i = 0; i < n1; i++)</pre>
14
                 L[i] = arr[p + i];
15
               for (int j = 0; j < n2; j++)</pre>
16
                M[j] = arr[q + 1 + j];
17
18
19
               int i, j, k;
20
               i = 0;
               j = 0;
21
22
               k = p;
23
               while (i < n1 && j < n2) {
24
                 if (L[i] <= M[j]) {
25
                   arr[k] = L[i];
26
                   i++;
27
                 } else {
28
                   arr[k] = M[j];
29
                   j++;
30
                 }
31
                 k++;
32
               }
33
34
               while (i < n1) {
35
                 arr[k] = L[i];
36
                 i++;
37
                 k++;
38
39
40
               while (j < n2) {
41
                 arr[k] = M[j];
42
                 j++;
43
                 k++;
44
               }
             }
45
46
47
             void mergeSort(int arr[], int 1, int r) {
48
               if (1 < r) {
49
50
                 int m = (1 + r) / 2;
51
52
                 mergeSort(arr, 1, m);
53
                 mergeSort(arr, m + 1, r);
54
                 merge(arr, 1, m, r);
55
               }
56
             }
57
             static void printArray(int arr[]) {
58
               int n = arr.length;
59
               for (int i = 0; i < n; ++i)</pre>
```

MergeSort.java

```
60
                System.out.print(arr[i] + " ");
61
              System.out.println();
62
63
64
            public static void main(String args[]) {
65
              int arr[] = {8,6,7,9,2,4,3,1};
66
67
              MergeSort ob = new MergeSort();
68
              ob.mergeSort(arr, 0, arr.length - 1);
69
70
              System.out.println("Sorted array:");
71
              printArray(arr);
72
73
74
      }
75
76}
77
```