

## 7. Writing a program in Java implementing the merge sort algorithm

```
package javafsd4;
```

```
import java.util.Arrays;
```

```
public class mergeSort {  
    public static int[] sort(int[] arr) {  
        if(arr.length==1)  
            return arr;  
        int mid=arr.length/2;  
        int[] left=sort(Arrays.copyOfRange(arr, 0, mid));  
        int[] right=sort(Arrays.copyOfRange(arr,mid,arr.length));  
  
        return merge(left,right);  
  
    }  
  
    public static int[] merge(int[] first, int[] second) {  
        int[] joined = new int[first.length+second.length];  
        int i=0,j=0,k=0;  
  
        while(i<first.length && j<second.length) {  
            if(first[i]<second[j])  
                joined[k++]= first[i++];  
            else  
                joined[k++] =second [j++];  
        }  
  
        while(i<first.length)  
            joined[k++] = first[i++];  
        while(j<second.length)  
            joined[k++] = second [j++];  
  
        return joined;  
  
    }  
}
```

```

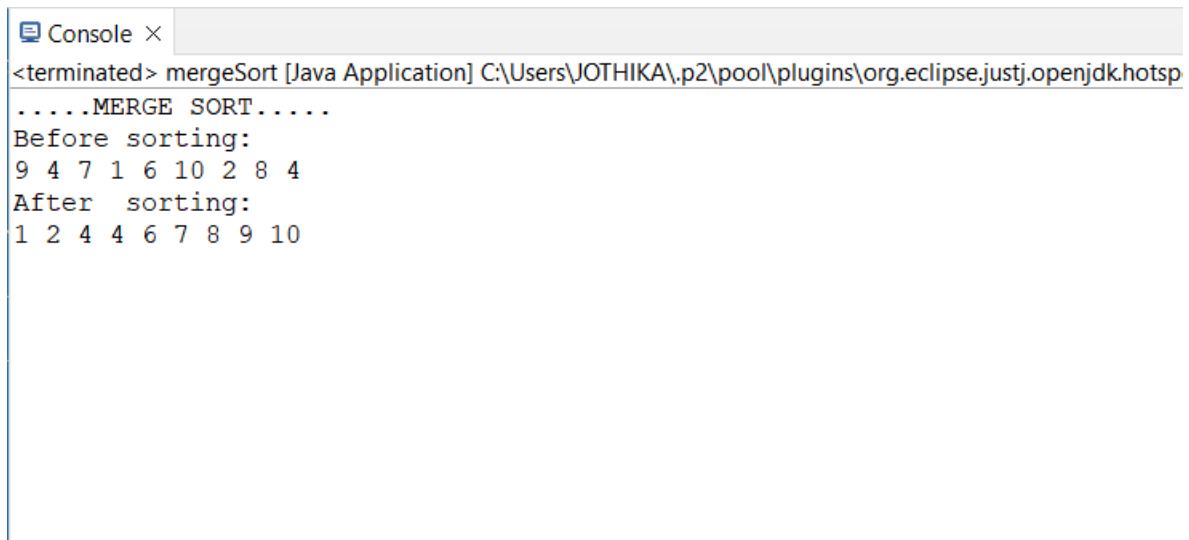
public static void main(String[] args) {
    // TODO Auto-generated method stub
    int[] arr= {9,4,7,1,6,10,2,8,4,};
    System.out.println(".....MERGE SORT.....");
    System.out.println("Before sorting:");
    for(int num:arr) {
        System.out.print(num+" ");
    }

    int[] result= mergeSort.sort(arr);

    System.out.println();
    System.out.println("After sorting:");
    for(int num:result) {
        System.out.print(num+" ");
    }
}
}

```

## OUTPUT



```

Console x
<terminated> mergeSort [Java Application] C:\Users\JOTHIKA\.p2\pool\plugins\org.eclipse.justj.openjdk.hotsp
.....MERGE SORT.....
Before sorting:
9 4 7 1 6 10 2 8 4
After sorting:
1 2 4 4 6 7 8 9 10

```