PRACTICE-PROJECT7

IMPLEMENTING THE MERGE SORT ALGORITHM –

**package** project;

**import** java.util.InputMismatchException;

**import** java.util.Scanner;

**public** **class** MergeSort {

**public** **void** merge(**int** arr[], **int** low, **int** mid, **int** high) {

**int** res[] = **new** **int**[high+1];

**int** i = low;

**int** j = mid+1;

**int** k = low;

**while**(i<=mid && j<=high) {

**if**(arr[i] < arr[j]) {

res[k] = arr[i];

i++;

k++;

}

**else** {

res[k] = arr[j];

j++;

k++;

}

}

**while**(i<=mid) {

res[k] = arr[i];

i++;

k++;

}

**while**(j<=high) {

res[k] = arr[j];

j++;

k++;

}

**for**(**int** a=low; a<=high; a++) {

arr[a] = res[a];

}

}

**public** **void** mergeSort(**int** arr[], **int** low, **int** high) {

**int** mid;

**if**(low<high) {

mid = low+(high-low)/2;

mergeSort(arr, low, mid);

mergeSort(arr, mid+1, high);

merge(arr, low, mid, high);

}

}

**public** **void** printArray(**int** arr[]) {

System.***out***.print("[");

**for**(**int** i=0; i<arr.length; i++) {

System.***out***.print(arr[i]);

**if**(i != arr.length-1) {

System.***out***.print(",");

}

}

System.***out***.print("]");

System.***out***.println();

}

**public** **static** **void** main(String[] args) {

Scanner sc = **new** Scanner(System.***in***);

MergeSort obj = **new** MergeSort();

**try** {

System.***out***.println("Enter the size of array: ");

**int** size = sc.nextInt();

**if**(size <= 0) {

System.***out***.println("Invalid input");

sc.close();

**return**;

}

**int** arr[] = **new** **int**[size];

System.***out***.println("Enter the array elements: ");

**for**(**int** i=0; i<size; i++) {

arr[i] = sc.nextInt();

}

System.***out***.println("Original array: ");

obj.printArray(arr);

obj.mergeSort(arr, 0, size-1);

System.***out***.println("\nAfter sorting: ");

obj.printArray(arr);

} **catch** (InputMismatchException e) {

System.***out***.println("Invalid input");

}

**catch**(Exception e) {

System.***out***.println(e.getMessage());

}

sc.close();

}

}