

## COMP 610 Project 2

**Idea:** Implement the  $O(n \lg n)$  algorithm that solves the COUNTINGINVERSIONS problem from Chapter 5.

**Input Format:** The input file will be called input2.txt and be in the same directory as the java and class files. The format of input2.txt will be a standard text file containing whitespace (spaces/tabs/newlines) separated integers.

**Output:** A single number which is the inversions in the data set from the file input2.txt.

**Examples:** If input2.txt contained

```
1 12
13 24 35
46 57 58 69
```

then the output would be

0

If input2.txt contained

```
92 47 21
18 3
```

then the output would be

10

If input2.txt contained

```
21 59 98 23
1 5 97
```

then the output would be

11

**Details:** The program must be written in Java. The program must compile with the command `javac *.java` and run with the command `java Project2`. The program should be reasonably commented, indented, structured. The program should be submitted by placing all files in a directory named after you, zipping this directory and submitting via canvas (ie if the professor was submitting then all files would be placed in a directory called JohnNoga, this directory would be zipped, and uploaded in canvas). Failure to follow these directions will result in serious reductions in your score.

**How:** You must use the algorithm based upon merge sort. A submission which does the calculation in time  $O(n^2)$  will receive little credit. The test cases your program will be run against will be much larger than the ones above.