Lab 4

Goals for this Lab

1. Implement MergeSort.
2. Implement BinarySearch.

Task Description

Your goal for this lab is to write two functions; mergeSort, which implements MergeSort as dicussed in class, and binarySearch, which implements BinarySearch as dicussed in class. You will implement these as static functions inside of a class named Functions so that they can be called from another file.

Methods

For this lab we will be assuming that our data is an array of integers.

public static void mergeSort(int[] data)	Accepts an integer array as input and sorts it in place.
public static int binarySearch(int[] data, int key)	Accepts an integer array and a key to search for and returns the index of the key if it exists in the array, otherwise it returns -1.

Requirements

1. Your class must be named Functions.
2. Your class must provide the methods listed above.

Testing

This lab will be manually tested. Make sure to test all cases.

Notes

During development of this lab you will have two files. The first is your main program file which will call your functions. An example of this is below;

```
Public class Main {
    Public static void main(String[] args){
        int[] a = {1,3,5,7,9,2,4,6,8};
        Functions.mergeSort(a);
        int idx = Functions.binarySearch(a,4);
    }
}
```

The second is your Function class file. An example of this is below;

```
public class Functions{

      public static void mergeSort(int[] data){

            …

      }

      Public static int binarySearch(int[] data, int key){

            …

      }

}
```

You only need to turn in Functions.java.