Exceptions and Recursion

Assignment 9: Due date/time is Thursday, April 28th, at 11:59 PM.

Part 1: (30 Points): (Recursion and Binary Search)

Write a full java program to create class "Search" to conduct sequential search and (binary search using recursion and unrecursion style). This program is expected to use Five functions

1- Function **fillArrayFromFile()**

This void function is expected to read all the integer numbers from the attached file **"UniqueIntegers.txt**" and store them in the array.

2- Function **sortArray(int[] arr)**

This function is expected to receive integer array and sort numbers in an ascending way (from the smallest to the highest).

3- Function **sequentialSearch(int[] arr , int key)**

Using **sequential Search concepts,** this function is expected to receive the array and a key value of type integer and return **true** if the key is existed in the array or return **false** if the number does not exist.

4- Function **recursionBinarySearch(int[] arr , int key)**

Using recursion and binary search, This function is expected to receive the array and a key value of type integer and return **true** if the key has existed in the array or return **false** if the number does not exist.

5- Function **BinarySearch(int[] arr , int key)**

Using non-recursion function to conduct a binary search, This function is expected to receive the array and a key value of type integer and return **true** if the key has existed in the array or return **false** if the number does not exist.

Note:

1- The binary search needs to have the array ordered either ascending or descending

2- Finally, to enahance your system please use exceptions concepts **try()catch(){}** statement as needed