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import java.util.Random;

import java.util.Set;

public class ArraySorter{

    // Random Number Generator Object

    static *Random* rand = new *Random*();

    // Random Numbers Generated for alphabetical variables

    static *int* a = rand.nextInt(100);

    static *int* b = rand.nextInt(100);

    static *int* c = rand.nextInt(100);

    static *int* d = rand.nextInt(100);

    static *int* e = rand.nextInt(100);

    static *int* f = rand.nextInt(100);

    static *int* g = rand.nextInt(100);

    static *int* h = rand.nextInt(100);

    static *int* i = rand.nextInt(100);

    static *int* j = rand.nextInt(100);

    static *int* k = rand.nextInt(100);

    static *int* l = rand.nextInt(100);

    static *int* m = rand.nextInt(100);

    static *int* n = rand.nextInt(100);

    static *int* o = rand.nextInt(100);

    static *int* p = rand.nextInt(100);

    static *int* q = rand.nextInt(100);

    static *int* r = rand.nextInt(100);

    static *int* s = rand.nextInt(100);

    static *int* t = rand.nextInt(100);

    // Random Number Arrays

    static *int*[] set = {a, b, c, d, e, f, g, h, i, j};

    static *int*[] set2 = {k, l, m, n, o, p, q, r, s, t};

    static *int*[] set3 = {a, c, e, g, i, k, m, o, q, s};

    // Bubble Sort Algorithm

    public static *void* bubbleSort(*int*[] *anArray*){

*System*.out.print("\nBubble Sort Algorithm\n");

        for (*int* index = 0; index < anArray.length - 1; index ++){

            for (*int* index2 = 0; index2 < anArray.length - 1; index2 ++){

                if (anArray[index2] > anArray[index2+1]){

                    interchange(index2, index2 + 1, anArray);

                }

            }

        }

        printArray(anArray);

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

    }

    // Selection Sort Algorithm

    public static *void* selectionSort(*int*[] *anArray*){

*System*.out.print("\nSelection Sort Algorithm\n");

        for (*int* index = 0; index < anArray.length - 1; index ++)

        { // Place the correct value in anArray[index]

*int* indexOfNextSmallest = getIndexOfSmallest(index, anArray);

            interchange(index, indexOfNextSmallest, anArray);

        }

        printArray(anArray);

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

    }

    // Insertion Sort Algorithm

    public static *int*[] insertionSort(*int*[] *anArray*){

*System*.out.println("\nInsertion Sort Algorithm");

        for(*int* index = 1; index < anArray.length; index++){;

            for(*int* index2 = index; index2 >= 0; index2--){

*int* smallest = getIndexOfSmallest(index2, anArray);

                interchange(smallest, index2, anArray);

            }

        }

        printArray(anArray);

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

        return anArray;

    }

    // Print Curly Brace Array

    public static *void* printArray(*int*[] *anArray*){

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

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

*System*.out.print(anArray[i] + " ");

        }

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

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

    }

    // Smallest Value in Index

    private static *int* getIndexOfSmallest(*int* *startIndex*, *int*[] *a*)

    {

*int* min = a[startIndex];

*int* indexOfMin = startIndex;

        for (*int* index = startIndex + 1; index < a.length; index++)

        {

            if (a[index] < min)

            {

                min = a[index];

                indexOfMin = index;

            }

        }

        return indexOfMin;

    }

    // Overwrite Index Location

    private static *void* interchange(*int* *i*, *int* *j*, *int*[] *a*){

*int* temp = a[i];

        a[i] = a[j];

        a[j] = temp; //original value of a[i]

    }

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

*System*.out.println("Generated Random Set 1");

    printArray(set);

    bubbleSort(set);

*System*.out.println("Generated Random Set 2");

    printArray(set2);

    selectionSort(set2);

*System*.out.println("Generated Random Set 3");

    printArray(set3);

    insertionSort(set3);

    }

}