package lab\_arrays;

import java.util.Scanner;

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public class Lab\_Arrays {

final int CAPACITY = 30; //Max

int size = 0; // starting amount

int[] list = new int[CAPACITY];

/\*\* Load with index

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public void loadWithIndex(){

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

list[i] = i; //

//echo

System.out.println(i);

}//for

size = list.length; // load the size

}// loadwithIndex Method

public void loadWithRandom(int number){

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

list[i] = (int) ( number \* Math.random() + 1);

System.out.println( "Index of " + i + "\n has the value of: " + list[i] );

} // for loop

size = list.length;

}// Random number method

public int CalcofSum(){

int sum = 0; // initializer

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

sum += list[i]; // accumulator

}// for loop

return sum;

}// CalcofSum

public double calcAvg(){

if (size > 0 )

return (double) CalcofSum() / size;

else

return 0;

}// avg

public void display(){

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

System.out.print(list[i] + ",");

if((i + 1) % 15 == 0) System.out.println("");

}// for

}// display

public int findLargest(){

int largest = -1;

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

if( list[i] > largest){

largest = list[i];

System.out.println("Largest is now :" + largest + "at index " + i);

}//if

}//for

return largest;

}//findLargest

public void listNumbersOver(int number){

int count = 0;

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

if(list[i] > number){

System.out.println(list[i] + ",");

count++;

}//if

}// for

System.out.println("there are " + count + " numbers over " + number);

}// listNumbersOver

public void add(int number){

if (size < CAPACITY-1){

list[size] = number;

size++;

System.out.println(number + "is added.");//echos

System.out.println("size is" + size);//echos

}//if

else { // if at capacity

System.out.println("at capacity");

}// else

}//add

public int delete(int number){

int temp = number;

//search

boolean found = false;

int i = 0;

while(!found && (i < size)){ // if the item in index isnt found and the size parameters of array aren't met

if(list[i] == number){

System.out.println("Found it!!");

for(int j = i; j < size-1; j++){// moves the other items in the array up.

list[j] = list[j+1];//move them up

}// for

found = true;

}// if found

i++;

}// while

if(!found)

System.out.println(number + "not on list");

return temp;

}// delete

public void showlist(){

System.out.println("[ ");

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

System.out.println(list[i] + ",");

if((i + 1) % 10 == 0)

System.out.println("");

}//for

System.out.println("]");

}//showlist method

public void clear(){

for (int i = 0; i < size; i++) {//index starts at zero position 1

list[i] = 0; // starting position

}// for

size = 0; // new index value for array

System.out.println("Array Cleared:"); //echo

}// clear

public void shuffle(){

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

// Generate an index randomly

int index = (int) (Math.random() \* list.length); //shuffle index values

//swap using temp switch method

int temp = list[i];

list[i] = list[index];

list[index] = temp;

}//for

}//shuffle

public int sequentualSearch(){

Scanner input = new Scanner(System.in);

int index = -1; //not found

System.out.print("Enter number to look for:");

int target = input.nextInt();

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

if(list[i] == target){

index = i;

System.out.println("Found it!!"); //echo

break;

}//if

}//for

return index;

} //search

public void bubble(){

int temp;

boolean done = false; // to continue boolean shuffle

while(!done){

done = true; //if this makes it we are done

for(int i = 0; (i < size - 1); i++){

if(list[i] > list[i+1]){ // going to swap if condition is met

//swap

temp = list[i];

list[i] = list[i+1];

list[i+1] = temp;

done = false; //

}//if

}//for

}//while

}//bubble

public static void main(String[] args) {

Scanner input = new Scanner(System.in);

Lab\_Arrays ans = new Lab\_Arrays(); // constructor for array object

ans.loadWithIndex();

ans.loadWithRandom(50);

System.out.println("the sum is: " + ans.CalcofSum()); // displaying the sum test

System.out.println("the average is: " + ans.calcAvg()); // displaying average test

ans.display(); //testing display method

int temp = ans.findLargest(); // testing the find largest method

System.out.println("The largest is " + ans.findLargest()); // displaying the largest number in a legible fromat

ans.loadWithRandom(100);

ans.numbersOver(50); // finding numbers which are over 50 form the array

ans.add(11);// adding 11 to the array

ans.add(23); // adding 23 to the array

ans.delete(11); // deleting 11 to the array

ans.display(); // displaying the list of the array

ans.clear(); // clearing the array

ans.add(23); // adding 23 to the array

ans.display(); // displaying the array thus far

ans.loadWithRandom(52); // loading numbers to capacity from 1-52

ans.showlist(); // printing the array with a 10 line format ie. three lines of 10

System.out.println(ans.CalcofSum()); //calculating the sum of the arrat with random numbers from 1-52

ans.listNumbersOver(30); // test to discover if any numbers in array are over 30.

ans.loadWithIndex(); // loading array

ans.bubble(); // test of bubble sort method

ans.showlist();// displaying the list thus far

ans.loadWithIndex(); //loading the array with various values to capacity

ans.showlist(); // showing the list prior to shuffle method test

ans.shuffle(); // testing the method

ans.showlist(); // showing the array befor another bubble test

ans.bubble(); // calling bubble sort method

ans.delete(5); // testing the delete from the array

ans.loadWithIndex(); // loading the array for find largest test

ans.findLargest(); // testing the finding largest method.

}// main

}// class