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//Com 210

//ADDONE

import java.util.Arrays;

import java.util.Scanner;

public class AddOne {

public static int [] digits={}; //digits array

public static int i; //index

public static void main(String[] args) {

Scanner scan = new Scanner(System.in);//scanner

int q; //int for users choice on what to do

int[] digits; //digits array to output

System.out.println("What would you like to do? ");

System.out.println("[0] for time test or [1] to add your own values:");

q = scan.nextInt();

switch (q) { //switch to do what the users needs.

case 0: {

System.out.println("What size array would you like?");

int n = scan.nextInt();

int[] a = new int[n];

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

a[i] = 9;

} //end for

long start = System.currentTimeMillis();

//method call

digits = TwoSum(a, n);

//output users array +1

System.out.println("Your array + 1 = " + Arrays.toString(digits));

// finding the time after the operation is executed

long end = System.currentTimeMillis();

float totalTime = (end - start);

System.out.println("This operation took " + totalTime + " milliseconds");

break;

}

case 1: {

// User input arrays

System.out.println("What would you like your array size to be?");

int n = scan.nextInt();

int[] initialize = new int[n]; //initial array

for (int j = 0; j < n; j++) { //iterate through array to populate it with users input

System.out.println("Enter the " + j + " index value");

int l = scan.nextInt(); // take user value

initialize[j] = l; //assign it to array index

} // end for

long start = System.currentTimeMillis();

//method call

digits = TwoSum(initialize, n);

//output users array +1

System.out.println("Your array + 1 = " + Arrays.toString(digits));

// finding the time after the operation is executed

long end = System.currentTimeMillis();

float totalTime = (end - start);

System.out.println("This operation took " + totalTime + " milliseconds");

break;

}

default:

System.out.println("Please select a valid value");

break;

} //end switch

} //end main

//method to add one to users array

public static int[] TwoSum(int[] arr, int key) {

int[] value = new int[key + 1];//return value

System.out.println("Your array is " + Arrays.toString(arr)); //print test

int i; //index

if (arr[arr.length - 1] == 9) { //Check if last value is 9.

if (arr.length == 1) { //check if array is one digit, if so create new array

//I was having an issue with only a value of 9 becoming 0,0 for some reason, this is what i came up with

int[] arr2 = new int[2]; // Create a new array with two digits

arr2[0] = 1;

arr2[1] = 0;

value = arr2;

} else { //If array is more than one digit and last index is 9, iterate through

for (i = arr.length - 1; i > 0; i--) {

if (arr[i] > 8) { //checks if other digits are 9, makes them zero then adds one to previous index

arr[i] = 0;

int p = arr[i - 1];

p = p + 1;

arr[i - 1] = p;

if (arr[0] > 9) { //if first index is 9, creates new array with +1 to users inputted length

int[] arr2 = new int[key + 1];

arr2[0] = 1;

arr2[1] = 0;

value = arr2;

} else {

value = arr;

} //end else

} //end if

} //end for

} //end else

} else { // doesnt end in 9- add 1 to last index

i = arr[arr.length - 1];

i = i + 1;

arr[arr.length - 1] = i;

value = arr;

} //end else

return value;

} //end TwoSum method

} //end class