Java Homework (Chapter 7)

7.5

**import** java.util.Scanner;  
**public class** printDistinctNum {  
 **public static void** main(String[] Args) {  
 Scanner input = **new** Scanner(System.***in***);  
 System.***out***.print(**"Enter ten numbers (i.e. 1 2 3 2 1 6 3 4 5 2) : "**);  
 String inStr = input.nextLine();  
 String[] inStrArr = inStr.split(**" "**);  
 **int**[] distinctArr = *getDistinctArr*(inStrArr);  
 System.***out***.printf(**"The number of distinct number is "** + distinctArr.**length** + **"%nThe distinct numbers are:"**);  
 **for** (**int** e : distinctArr){  
 System.***out***.print(**" "** +e);  
 }  
 }  
 **private static int**[] getDistinctArr(String[] inArr) {  
 **int** dis = 0;  
 **for** (**int** i = 0; i < inArr.**length**; i++) {  
 **for** (**int** j = inArr.**length** -1 ; j > -1; j--) {  
 **if** (inArr[i].equals(inArr[j]) && i != j) {  
 **if** (!inArr[j].equals(**"0"**))  
 dis++;  
 inArr[j] = **"0"**;  
 }  
 }  
 }  
 **return** *getIntArr*(inArr,dis);  
 }  
 **private static int**[] getIntArr(String[] halfArr, **int** disNum){  
 **int**[] resultArr = **new int**[halfArr.**length** - disNum];  
 **int** temZero = 0;  
 **for** (**int** n = 0; n < resultArr.**length**; n++){  
 **for** (**int** m = n + temZero; m < halfArr.**length**; m++){  
 **if** (halfArr[m].equals(**"0"**)) {  
 temZero++;  
 **continue**;  
 }  
 resultArr[n] = Integer.*parseInt*(halfArr[m]);  
 **break**;  
 }  
 }  
 **return** resultArr;  
 }  
}

7.6

**public class** primeNumberArray {  
 **public static void** main(String[] args) {  
 **int** NUM = 50;  
 *getPrimeNumbers*(NUM);  
 }  
 **private static void** getPrimeNumbers(**int** NUMBER){  
 System.***out***.println(**"The first "** + NUMBER + **" prime numbers are"**);  
 **int**[] PrimeNumbers = *getPrimeNumArr*(NUMBER);  
 *recheckAndPrintPrimeNumbers*(PrimeNumbers);  
 }  
 **private static void** recheckAndPrintPrimeNumbers(**int**[] PrimeNum){  
 **int** count = 0;  
 **for** (**int** e: PrimeNum){  
 **if** ((Math.*pow*(e,2) + 1) % e != 0) {  
 System.***out***.printf(**"%-5d"**,e);  
 count++;  
 **if** (count % 10 == 0)  
 System.***out***.println();  
 }  
 }  
 }  
 **private static int**[] getPrimeNumArr(**int** num){  
 **int**[] PrimeNum = **new int**[num];  
 **int** count = 0;  
 **int** NUMB = 2;  
 **int** i =0;  
 **while** (count < num) {  
 **if** (*isPrime*(NUMB)){  
 PrimeNum[i++] = NUMB;  
 count++;  
 }  
 NUMB++;  
 }  
 **return** PrimeNum;  
 }  
 **private static boolean** isPrime(**int** number) {  
 **boolean** isPrime = **true**; *// Is the current number prime?* **for** (**int** divisor = 2; divisor <= Math.*sqrt*(number); divisor++) {  
 **if** (number % divisor == 0) { *// If true, number is not prime* isPrime = **false**; *// Set isPrime to false* **break**; *// Exit the for loop* }  
 }  
 **return** isPrime;  
 }  
}

7.10

**import** java.util.Scanner;  
**public class** findSmallestElementsIndex {  
 **public static void** main(String[] Args) {  
 **double**[] array = *getInputArray*();  
 **double** smallest = *getSmallestElement*(array);  
 System.***out***.print(**"Your array is: "**);  
 **for** (**double** e: array)  
 System.***out***.print(e + **", "**);  
 System.***out***.println();  
 System.***out***.println(**"The smallest number is "** + smallest + **" and its index is "** + *getIndex*(array,smallest));  
 }  
 **private static double**[] getInputArray() {  
 System.***out***.println(**"Please Enter ten numbers: "**);  
 Scanner input = **new** Scanner(System.***in***);  
 **double**[] NumArr = **new double**[10];  
 **for** (**int** i = 0; i < 10; i++)  
 NumArr[i] = input.nextDouble();  
 **return** NumArr;  
 }  
 **private static double** getSmallestElement(**double**[] NumberArr) {  
 **double** smallest = NumberArr[0];  
 **for** (**double** e: NumberArr)  
 smallest = Math.*min*(smallest, e);  
 **return** smallest;  
 }  
 **private static int** getIndex(**double**[] array, **double** value) {  
 **for** (**int** i = 0; i < array.**length**; i++){  
 **if** (array[i] == value)  
 **return** i;  
 }  
 **return** 0;  
 }  
}

7.15

**import** java.util.Scanner;  
**public class** eleminateDuplicates {  
 **public static void** main(String[] Args){  
 **int**[] array = *getInputArray*();  
 **int**[] disNum = *eliminateDuplicates*(array);  
 System.***out***.print(**"The distinct numbers are:"**);  
 **for** (**int** e: disNum)  
 System.***out***.print(**" "** + e);  
 }  
 **private static int**[] eliminateDuplicates(**int**[] list) {  
 **int** dis = 0;  
 **for** (**int** i = 0; i < list.**length**; i++) {  
 **for** (**int** j = list.**length** -1 ; j > -1; j--) {  
 **if** (list[i] == list[j] && i != j) {  
 **if** (list[j] != 0)  
 dis++;  
 list[j] = 0;  
 }  
 }  
 }  
 **return** *getIntArr*(list,dis);  
 }  
 **private static int**[] getInputArray() {  
 System.***out***.println(**"Please Enter ten numbers: "**);  
 Scanner input = **new** Scanner(System.***in***);  
 **int**[] NumArr = **new int**[10];  
 **for** (**int** i = 0; i < 10; i++)  
 NumArr[i] = input.nextInt();  
 **return** NumArr;  
 }  
 **private static int**[] getIntArr(**int**[] halfArr, **int** disNum){  
 **int**[] resultArr = **new int**[halfArr.**length** - disNum];  
 **int** temZero = 0;  
 **for** (**int** n = 0; n < resultArr.**length**; n++){  
 **for** (**int** m = n + temZero; m < halfArr.**length**; m++){  
 **if** (halfArr[m] == 0) {  
 temZero++;  
 **continue**;  
 }  
 resultArr[n] = halfArr[m];  
 **break**;  
 }  
 }  
 **return** resultArr;  
 }  
}

7.17

**import** java.util.Scanner;  
**public class** sortStudents {  
 **public static void** main(String[] Args) {  
 Scanner input = **new** Scanner(System.***in***);  
 System.***out***.print(**"Enter the number of students: "**);  
 **int** number = input.nextInt();  
 String[] names = **new** String[number];  
 **double**[] scores = **new double**[number];  
 **for** (**int** i = 0; i < number; i++) {  
 System.***out***.println(**"Enter the name of student "** + (i +1));  
 names[i] = input.next();  
 System.***out***.println(**"Enter the score of "** + names[i]);  
 scores[i] = input.nextDouble();  
 }  
 **for** (**int** k = 0; k < number; k++) {  
 **double** currentMax = scores[k];  
 **int** currentMaxIndex = k;  
 **for** (**int** m = 0; m < number; m++){  
 **if** (currentMax < scores[m]){  
 currentMax = scores[m];  
 currentMaxIndex = m;  
 }  
 }  
 System.***out***.println(**"Student "** + names[currentMaxIndex] + **"'s score is "** + currentMax);  
 scores[currentMaxIndex] = -1;  
 }  
 }  
  
}

7.31

**import** java.util.Scanner;  
**public class** mergeTwoSortedLists {  
 **public static void** main(String[] Args) {  
 Scanner input = **new** Scanner(System.***in***);  
 System.***out***.print(**"Enter Array1 elements: "**);  
 String inputValues = input.nextLine();  
 String[] array1 = inputValues.split(**" "**);  
  
 System.***out***.print(**"Enter Array1 elements: "**);  
 inputValues = input.nextLine();  
 String[] array2 = inputValues.split(**" "**);  
  
 **int**[] array3 = *merge*(*convert*(array1), *convert*(array2));  
 System.***out***.print(**"The merged list is "**);  
 **for** (**int** e : array3)  
 System.***out***.print(e + **" "**);  
 }  
  
 **private static int**[] convert(String[] inputarray) {  
 **int**[] convertedArray = **new int**[Integer.*parseInt*(inputarray[0])];  
 **for** (**int** i = 1; i < convertedArray.**length** + 1; i++)  
 convertedArray[i - 1] = Integer.*parseInt*(inputarray[i]);  
 **return** convertedArray;  
 }  
  
 **private static int**[] merge(**int**[] list1, **int**[] list2) {  
 **int**[] array3 = **new int**[list1.**length** + list2.**length**];  
 **int** i = 0, j = 0, k = 0;  
 **while** (i < list1.**length** && j < list2.**length**) {  
 **if** (list1[i] < list2[j])  
 array3[k++] = list1[i++];  
 **else** array3[k++] = list2[j++];  
 }  
 **while** (i < list1.**length**)  
 array3[k++] = list1[i++];  
 **while** (j < list2.**length**)  
 array3[k++] = list2[j++];  
 **return** array3;  
 }  
}