**מטלה מערכים-דוד אלקובי**

1)

public static void func(int n) {  
 Scanner in = new Scanner(System.*in*);  
 int cnt=0, num = 0, average = 0, sum = 0;  
 System.*out*.println("enter " + n + " numbers:");  
 int firstnum = in.nextInt();  
 for (int i = 1; i < n; i++) {  
 num=in.nextInt();  
 if (num<firstnum) {  
 sum += num;  
 cnt++;  
 }  
 }

1)ב

public static void func(int n) {  
 Scanner in = new Scanner(System.*in*);  
 double lastNum = 0, cnt = 0, sum = 0;  
 double average = 0;  
 System.*out*.println("enter " + n + " numbers:");  
 int arr[]=new int[n];  
 for (int i = 0; i < n; i++) {  
 arr[i]=in.nextInt();  
 }  
 for (int i = 0; i <arr.length ; i++) {  
 if (arr[i] < arr[n - 1]) {  
 sum += arr[i];  
 cnt++;  
 }  
 }  
 average= (double) (sum/cnt);  
 System.*out*.println("the average is: "+average);  
  
 }  
}

2)

public static void main(String[] args) {  
 Scanner in= new Scanner(System.*in*);  
 System.*out*.println("enter num:");  
 int n= in.nextInt();  
 int arr[]=new int[10];  
 while (n>0){  
 arr[n%10]++;  
 n/=10;  
 }  
 for (int i = 0; i < arr.length ; i++) {  
 if (arr[i]>0){  
 System.*out*.println("digit "+i+" Appears "+arr[i]+" times");  
 }  
  
 }  
  
}  
  
}

3)

public static int findMissing(int a[],int n){  
 int missing=0, arrCnt[]=new int[n+1];  
 for (int i = 0; i < a.length ; i++) {  
 arrCnt[a[i]]++;  
 }  
 for (int i = 1; i < arrCnt.length; i++) {  
 if (arrCnt[i]==0)  
 missing=i;  
 }  
 return missing;  
 }

4)

public static void main(String[] args) {  
 int cnt = 0, times = 0, num;  
 Scanner in = new Scanner(System.*in*);  
 int arr[] = new int[12];  
 int arrCnt[] = new int[12];  
 for (int i = 0; i < 12; i++) {  
 arr[i] = in.nextInt();  
 }  
 for (int i = 0; i < arr.length; i++) {  
 if (arr[i] == 1) {  
 cnt++;  
 if (i == 11) {  
 arrCnt[cnt]++;  
 }  
 }  
 else {  
 arrCnt[cnt]++;  
 cnt = 0;  
 }  
 }  
 for (int i = 0; i < arrCnt.length ; i++) {  
 if (arrCnt[i]!=0)  
 System.*out*.println(arrCnt[i]+" series of "+i+" ones");  
 }  
  
  
}

5)

א 1.0,5.0,3.0

ב 5.0,1.0,3.0

ג

public static int midMax(float a,float b,float c){  
 if (b>a&&b>c)  
 return 1;  
 return 0;  
  
}

ד

public static int countPeaks (int heights[],int size){  
 int peaks=0;  
 for (int i = 0; i < size; i++) {  
 if (size-i>=3) {  
 if (*midMax*(heights[i], heights[i + 1], heights[i + 2]) == 1)  
 peaks++;  
 }  
 }  
 return peaks;  
}

6)

א

public static float arithmeticMean(int a[], int n){  
int sum=0;  
 for (int i = 0; i <n ; i++) {  
 sum+=a[i];  
 }  
 return (sum/n);  
 }

ב

public static float geometricMean(int a[], int n){  
 int mult=1;  
 float x=n;  
 for (int i = 0; i <n ; i++) {  
 mult\*=a[i];  
 }  
 return (float) Math.*pow*(mult,1/x);  
}

ג

public static float harmonicMean(int a[], int n) {  
 float arr1[]=new float[n];  
 for (int i = 0; i <n ; i++) {  
 arr1[i]=a[i];  
  
 }  
 float x = n, sum = 0;  
 for (int i = 0; i < n; i++) {  
 sum += 1 / (arr1[i]);  
 }  
 return (x / sum);  
}

ד

public static void main(String[] args) {  
 int arr[] = {1, 2, 4};  
 int n = 3;  
 System.*out*.println(*arithmeticMean*(arr, n));*//=2.3333333* System.*out*.println(*geometricMean*(arr, n));*//=2.0* System.*out*.println(*harmonicMean*(arr, n));*//=1.7142857* }  
}

7)

א

public static void reverse(int a[],int size){  
 for (int i = 0,j=size-1; i !=j&&i<j ; i++,j--) {  
 *swap*(a,i,j);  
 }  
}

8)

*public static int* [][] func(*int* arr[][]) {  
 *int* k, l;  
 *int* arrNew[][] = *new int*[arr.**length**][arr.**length**];  
  
 *for* (*int* i = 0; i < arrNew.**length**; i++) {  
 *for* (*int* j = 0; j < arr[0].**length**; j++) {  
 *for* (k = -1; k < 2; k++) {  
 *if* (k + j < 0 || k + j > arr[0].**length** - 1)*continue*;  
 *for* (l = -1; l < 2; l++) {  
 *if* (l + i < 0 || l + i > arr.**length**-1)*continue*;  
 arrNew[i][j]+=arr[i+l][k+j];  
 }  
  
 }  
  
  
 }  
  
 }  
 *return* arrNew;  
  
}

9)

*public static void* func() {  
 *int* N = 4;  
 Random rnd = *new* Random();  
 *int* arr1[][] = *new int*[N][N];  
 *int* arr2[][] = *new int*[N][N];  
 *for* (*int* i = 0; i < arr1.**length**; i++) {  
 *for* (*int* j = 0; j <arr1[0].**length** ; j++) {  
 arr1[i][j]= rnd.nextInt(1)+1;  
 arr2[i][j]= rnd.nextInt(1)+1;  
 }  
 }  
 printArray(arr1);  
 printArray(arr2);  
 *for* (*int* i = 0; i < arr1.**length** ; i++) {  
 *for* (*int* j = 0; j <arr1[0].**length** ; j++) {  
 *if* (arr1[i][j]!=arr2[j][i])*break*;  
 *if* (j==arr1[0].**length**-1)  
 System.***out***.println("in matrix A, row number "+i+" equals to column "+i+" in matrix B" );  
 }  
  
 }  
  
  
}

10)

*public static int*[][] func (*int* arr[][]){  
  
  
 *int* arrTemp[][]=*new int*[arr.**length**][arr[0].**length**];  
 *for* (*int* i = 0; i < arr.**length** ; i++) {  
 *for* (*int* j = 0; j <arr[0].**length** ; j++) {  
 arrTemp[i][j]=arr[i][j];  
 }  
 }  
 arr =*new int*[arrTemp[0].**length**][arrTemp.**length**];  
  
 *for* (*int* i = 0 ; i < arr.**length**; i++) {  
 *for* (*int* j = 0,k=arrTemp.**length**-1; j <arr[0].**length** ; j++,k--) {  
 arr[i][j]=arrTemp[k][i];  
 }  
 }  
*return* arr;  
 }

11)

*public static void* func(*int*[][] arr) {  
 *int* minIndexJ = 0, min = 0;  
  
 *for* (*int* i = 0; i < arr.**length**; i++) {  
 *for* (*int* j = 0; j < arr[0].**length**; j++) {  
 *if* (j == 0) {  
 min = arr[i][j];  
 minIndexJ = j;  
 }  
 *if* (arr[i][j] < min) {  
 min = arr[i][j];  
 minIndexJ = j;  
 }  
 }  
 swap(arr, i, i, i, minIndexJ);  
  
  
 }

*public static void* swap(*int*[][] arr, *int* a, *int* b, *int* c, *int* d) {  
 *int* temp = arr[a][b];  
 arr[a][b] = arr[c][d];  
 arr[c][d] = temp;  
}

13)

*public static int* countRectangles(*int* picture[][]){  
  
 *for* (*int* i = 0; i < picture.**length**; i++) {  
 *for* (*int* j = 0; j <picture[0].**length** ; j++) {  
 *if* (picture[i][j]==0)  
  
 }  
  
 }  
  
}

14)