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1. Ten numbers are entered from the keyboard into an array. The number to be searched is entered through the keyboard by the user. Write a program to find if the number to be searched is present in the array and if it is present, display the number of times it appears in the array.
2. **import** java.util.\*;
3. **import** java.lang.\*;
4. **import** java.io.\*;
6. */\* Name of the class has to be "Main" only if the class is public. \*/*
7. **class** Ideone
8. {
9. **public** **static** **void** main ([String](http://www.google.com/search?hl=en&q=allinurl%3Adocs.oracle.com+javase+docs+api+string)[] args) **throws** java.lang.[Exception](http://www.google.com/search?hl=en&q=allinurl%3Adocs.oracle.com+javase+docs+api+exception)
10. {
11. *// your code goes here*
12. Scanner in = **new** Scanner([System](http://www.google.com/search?hl=en&q=allinurl%3Adocs.oracle.com+javase+docs+api+system).in);
13. **int** a[] = **new** **int**[10];
15. **for**(**int** i =0; i < 10; i++){
16. a[i] = in.nextInt();
17. }
18. **int** n = in.nextInt();
19. **int** count=0;
20. **for**(**int** i = 0; i < 10; i++){
21. **if**(a[i] == n)
22. count++ ;
23. }
25. **if**(count == 0) [System](http://www.google.com/search?hl=en&q=allinurl%3Adocs.oracle.com+javase+docs+api+system).out.println(n+ " does not appear in the array.");
26. **else**
27. [System](http://www.google.com/search?hl=en&q=allinurl%3Adocs.oracle.com+javase+docs+api+system).out.println(n+ " appears in the array " +count+ " times.");
28. }
29. }

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2 5 3 7 2 8 0 4 3 5 3

 stdout

 copy

3 appears in the array 2 times

2>

Ten numbers are entered from the keyboard into an array. Write a program to find out how many of them are positive, how many are negative, how many are even and how many are odd.

1. **import** java.util.\*;
2. **import** java.lang.\*;
3. **import** java.io.\*;
5. */\* Name of the class has to be "Main" only if the class is public. \*/*
6. **class** Ideone
7. {
8. **public** **static** **void** main ([String](http://www.google.com/search?hl=en&q=allinurl%3Adocs.oracle.com+javase+docs+api+string)[] args) **throws** java.lang.[Exception](http://www.google.com/search?hl=en&q=allinurl%3Adocs.oracle.com+javase+docs+api+exception)
9. {
10. *// your code goes here*
11. Scanner in = **new** Scanner([System](http://www.google.com/search?hl=en&q=allinurl%3Adocs.oracle.com+javase+docs+api+system).in);
12. **int** a[] = **new** **int**[10];
14. **for**(**int** i = 0; i < 10; i++)
15. a[i] = in.nextInt();
17. **int** p=0, n=0, e=0, o=0;
18. **for**(**int** i = 0 ; i < 10; i++){
19. **if**(a[i]>0) p++;
20. **if**(a[i]<0) n++;
21. **if**(a[i]%2==0) e++;
22. **else** o++;
23. }
25. [System](http://www.google.com/search?hl=en&q=allinurl%3Adocs.oracle.com+javase+docs+api+system).out.println("There are " +p+ " positive numbers, " +n+ " negative numbers, " +e+ " even numbers and " +o+ " odd numbers in the array.");
27. }
28. }

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3 -9 4 9 2 8 5 0 4 5

 stdout

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There are 8 positive numbers, 1 negative numbers, 5 even numbers and 5 odd numbers in the array

1. 3> Write a program to copy the contents of one array into another in the reverse order. The program should take double type values from the keyboard.
2. **import** java.util.\*;
3. **import** java.lang.\*;
4. **import** java.io.\*;
6. */\* Name of the class has to be "Main" only if the class is public. \*/*
7. **class** Ideone
8. {
9. **public** **static** **void** main ([String](http://www.google.com/search?hl=en&q=allinurl%3Adocs.oracle.com+javase+docs+api+string)[] args) **throws** java.lang.[Exception](http://www.google.com/search?hl=en&q=allinurl%3Adocs.oracle.com+javase+docs+api+exception)
10. {
11. *// your code goes here*
12. Scanner in = **new** Scanner([System](http://www.google.com/search?hl=en&q=allinurl%3Adocs.oracle.com+javase+docs+api+system).in);
13. **int** n = in.nextInt();
14. **double** a[] = **new** **double**[n];
15. **double** b[] = **new** **double**[n];
17. **for**(**int** i = 0; i <n; i++)
18. a[i] = in.nextDouble();
20. [System](http://www.google.com/search?hl=en&q=allinurl%3Adocs.oracle.com+javase+docs+api+system).out.print("Before reversing : ");
21. **for**(**int** i = 0; i < n; i++)
22. [System](http://www.google.com/search?hl=en&q=allinurl%3Adocs.oracle.com+javase+docs+api+system).out.print(a[i]+ " ");
24. **for**(**int** i = 0; i < n; i++)
25. b[i] = a[n-1-i];
27. [System](http://www.google.com/search?hl=en&q=allinurl%3Adocs.oracle.com+javase+docs+api+system).out.print("**\n** After reversing : ");
28. **for**(**int** i = 0; i < n; i++)
29. [System](http://www.google.com/search?hl=en&q=allinurl%3Adocs.oracle.com+javase+docs+api+system).out.print(b[i]+ " ");
30. }
31. }

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[comments (0)](https://ideone.com/3ymtsH#comments)

 stdin

 copy

3

3.5 6.4 2.6

 stdout

 copy

Before reversing : 3.5 6.4 2.6

After reversing : 2.6 6.4 3.5

1. 4> WAP for 5 × 5 matrix (a) entered through the keyboard (b) initialized in the program and stored in a 2-dimensional array mat[5][5]. Write a program to obtain the Determinant values of this matrix
2. **import** java.lang.\*;
3. **import** java.io.\*;
5. */\* Name of the class has to be "Main" only if the class is public. \*/*
6. **import** java.util.Scanner;
8. **class** Determinant{
10. **static** **void** Cofactor(**int** mat[][], **int** temp[][], **int** p, **int** q, **int** n){
11. **int** i =0, j = 0;
12. **for**(**int** r = 0; r < n; r++){
13. **for**(**int** c = 0; c < n; c++){
14. **if**(r!=p && c!=q)
15. temp[i][j++] = mat[r][c];
16. **if**(j == n-1){
17. j=0;
18. i++;
19. }
20. }
21. }
22. }
24. **static** **int** Determinant(**int** mat[][], **int** n ){
26. **if**(n == 1) **return** mat[0][0];
28. **int** d = 0;
29. **int** temp[][] = **new** **int**[n][n];
30. **int** s = 1;
32. **for**(**int** x =0 ; x < n; x++){
33. Cofactor(mat, temp, 0, x, n);
34. d += s\*mat[0][x]\*Determinant(temp, n-1);
35. s = -s;
36. }
37. **return** d;
38. }
40. **public** **static** **void** main([String](http://www.google.com/search?hl=en&q=allinurl%3Adocs.oracle.com+javase+docs+api+string)[] args) {
41. Scanner in = **new** Scanner([System](http://www.google.com/search?hl=en&q=allinurl%3Adocs.oracle.com+javase+docs+api+system).in);
42. **int** mat[][] = **new** **int**[5][5];
44. **for**(**int** i =0 ; i < 5; i++){
45. **for**(**int** j = 0; j < 5; j++)
46. mat[i][j]= in.nextInt();
47. }
49. **int** det = Determinant(mat, 5);
51. [System](http://www.google.com/search?hl=en&q=allinurl%3Adocs.oracle.com+javase+docs+api+system).out.println("Determinant of the given matrix is " +det);
52. }
53. }

 stdin

1 0 0 0 0

0 1 0 0 0

0 0 1 0 0

0 0 0 1 0

0 0 0 0 1

 stdout

Determinant of the given matrix is 1

1. 5> Given two matrices A and B find its product using JAVA where A and B are Cartan matrices.

A Cartan matrix is a square integer matrix who elements ( Ai, j) satisfy the following conditions.

Ai, j is an integer, one of belongs to {-3, -2, -1, 0, 2}. Ai, j = 2 the diagonal entries are all 2.

Ai, j ≤0 off of the diagonal. Ai, j =0 iff Aj,i =0.

1. 5>**import** java.util.\*;
2. **import** java.lang.\*;
3. **import** java.io.\*;
5. */\* Name of the class has to be "Main" only if the class is public. \*/*
6. **class** Ideone
7. {
8. **public** **static** **void** main ([String](http://www.google.com/search?hl=en&q=allinurl%3Adocs.oracle.com+javase+docs+api+string)[] args) **throws** java.lang.[Exception](http://www.google.com/search?hl=en&q=allinurl%3Adocs.oracle.com+javase+docs+api+exception)
9. {
10. Scanner in = **new** Scanner([System](http://www.google.com/search?hl=en&q=allinurl%3Adocs.oracle.com+javase+docs+api+system).in);
11. [System](http://www.google.com/search?hl=en&q=allinurl%3Adocs.oracle.com+javase+docs+api+system).out.println("Enter the order of the two cartan matrices to be multiplied");
12. **int** n=in.nextInt();
13. **int**[][] a=**new** **int**[n][n];
14. **int**[][] b=**new** **int**[n][n];
15. **boolean** c=**true**;
16. **boolean** d=**true**;
17. [System](http://www.google.com/search?hl=en&q=allinurl%3Adocs.oracle.com+javase+docs+api+system).out.println("Enter the elements of the two matrices");
18. **for**(**int** i=0;i<n;i++){
19. **for**(**int** j=0;j<n;j++){
20. a[i][j]=in.nextInt();
21. }}
22. **for**(**int** i=0;i<n;i++){
23. **for**(**int** j=0;j<n;j++){
24. b[i][j]=in.nextInt();
25. }}
26. c=cartan(a);
27. d=cartan(b);
28. **if**(!c||!d){
29. [System](http://www.google.com/search?hl=en&q=allinurl%3Adocs.oracle.com+javase+docs+api+system).out.println("Please enter cartan matrices");
30. }**else**{
31. **int**[][] e=**new** **int**[n][n];
32. [System](http://www.google.com/search?hl=en&q=allinurl%3Adocs.oracle.com+javase+docs+api+system).out.println("The matrices are cartan and their product is");
33. **for**(**int** i=0;i<n;i++){
34. **for**(**int** j=0;j<n;j++){
35. **for**(**int** k=0;k<n;k++){
36. e[i][j]+=a[i][k]\*b[k][j];
37. }
38. [System](http://www.google.com/search?hl=en&q=allinurl%3Adocs.oracle.com+javase+docs+api+system).out.print(e[i][j]+" ");
39. }[System](http://www.google.com/search?hl=en&q=allinurl%3Adocs.oracle.com+javase+docs+api+system).out.println();
40. }
42. }
43. }
44. **public** **static** **boolean** cartan(**int**[][] a){
45. **boolean** b=**true**;
46. **for**(**int** i=0;b&&i<a.length;i++){
47. **for**(**int** j=0;b&&j<a.length;j++){
48. **if**(a[i][i]!=2){
49. b=**false**;
50. }
51. **else** **if**(!(a[i][j]==-3||a[i][j]==-2||a[i][j]==-1||a[i][j]==0||a[i][j]==2)){
52. b=**false**;
53. }
54. **else** **if**(i!=j&&a[i][j]>0){
55. b=**false**;
56. }**else** **if**(a[i][j]==0&&a[j][i]!=0){
57. b=**false**;
58. }
59. }} **return** b;
60. }
61. }

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3

2 0 -1

0 2 0

-1 0 2

2 0 0

0 2 0

0 0 2

 stdout

 copy

Enter the order of the two cartan matrices to be multiplied

Enter the elements of the two matrices

The matrices are cartan and their product is

4 0 -2

0 4 0

-2 0 4

6> WAP to check whether given matrix is Upper Triangular or not.

1. **import** java.util.\*;
2. **import** java.lang.\*;
3. **import** java.io.\*;
5. */\* Name of the class has to be "Main" only if the class is public. \*/*
6. **class** Ideone
7. {
8. **public** **static** **void** main ([String](http://www.google.com/search?hl=en&q=allinurl%3Adocs.oracle.com+javase+docs+api+string)[] args) **throws** java.lang.[Exception](http://www.google.com/search?hl=en&q=allinurl%3Adocs.oracle.com+javase+docs+api+exception)
9. {**int** c=0;
10. Scanner sc=**new** Scanner([System](http://www.google.com/search?hl=en&q=allinurl%3Adocs.oracle.com+javase+docs+api+system).in);**int** n=sc.nextInt();
11. **int**[][] a=**new** **int**[n][n];
12. **for**(**int** i=0;i<n;i++)
13. **for**(**int** j=0;j<n;j++)
14. a[i][j]=sc.nextInt();
15. **for**(**int** i=1;i<n;i++)
16. { **for**(**int** j=0;j<i;j++)
17. **if**(a[i][j]!=0) c++;
18. }
19. **if**(c==0)
20. [System](http://www.google.com/search?hl=en&q=allinurl%3Adocs.oracle.com+javase+docs+api+system).out.println("upper triangular");
21. **else**
22. [System](http://www.google.com/search?hl=en&q=allinurl%3Adocs.oracle.com+javase+docs+api+system).out.println("NOT upper triangular");
23. }
24. }Top of Form

Bottom of Form

 stdin

3

1 2 3

0 2 5

0 0 2

 stdout

upper triangular

7> WAP to find the maximum element of a given matrix

1. **import** java.lang.\*;
2. **import** java.io.\*;
4. **import** java.util.Scanner;
6. **class** Maxima{
8. **static** **int** Max(**int** a[][], **int** r, **int** c){
9. **int** max = a[0][0];
10. **for**(**int** i = 0; i < r; i++){
11. **for**(**int** j = 0; j < c; j++){
12. **if**(a[i][j] > max)
13. max = a[i][j];
14. }
15. }
16. **return** max;
17. }
19. **public** **static** **void** main([String](http://www.google.com/search?hl=en&q=allinurl%3Adocs.oracle.com+javase+docs+api+string)[] args) {
20. Scanner in = **new** Scanner([System](http://www.google.com/search?hl=en&q=allinurl%3Adocs.oracle.com+javase+docs+api+system).in);
21. **int** r = in.nextInt();
22. **int** c = in.nextInt();
23. **int** mat[][] = **new** **int**[r][c];
25. **for**(**int** i = 0; i < r; i++){
26. **for**(**int** j = 0; j<c ; j++)
27. mat[i][j] = in.nextInt();
28. }
30. **for**(**int** i = 0; i < r; i++){
31. **for**(**int** j = 0; j<c ; j++)
32. [System](http://www.google.com/search?hl=en&q=allinurl%3Adocs.oracle.com+javase+docs+api+system).out.print(mat[i][j]+ " ");
33. [System](http://www.google.com/search?hl=en&q=allinurl%3Adocs.oracle.com+javase+docs+api+system).out.println();
34. }
36. [System](http://www.google.com/search?hl=en&q=allinurl%3Adocs.oracle.com+javase+docs+api+system).out.println("Maximum of the Matrix is " +Max(mat, r, c));
37. }
38. }

 stdin

 copy

2 4 -5 -4 -4 -5 -9 -8 -2 -1

 stdout

 copy

-5 -4 -4 -5

-9 -8 -2 -1

Maximum of the Matrix is -1

8> WAP to find the non overlapping sub-matrix of the given matrix of given order

1. **import** java.lang.\*;
2. **import** java.io.\*;
3. **import** java.util.Scanner;
5. **class** SubMatrix{
7. **static** **void** Print(**int** a[][]){
8. **for**(**int** i = 0; i < a.length; i++){
9. **for**(**int** j = 0; j < a[i].length; j++)
10. [System](http://www.google.com/search?hl=en&q=allinurl%3Adocs.oracle.com+javase+docs+api+system).out.print(a[i][j]+ " ");
11. [System](http://www.google.com/search?hl=en&q=allinurl%3Adocs.oracle.com+javase+docs+api+system).out.println();
12. }
13. }
14. **static** **void** Divide(**int** a[][],**int** k,**int** n){
15. **int** p = n/k;
16. **for**(**int** i = 0;i <p;++i){
17. **for** (**int** j=0;j<p ;++j ) {
18. **int** temp[][] = **new** **int**[k][k];
19. **for**(**int** c = 0;c < k;++c){
20. **for**(**int** b=0;b < k; ++b)
21. temp[c][b] = a[i\*k+c][j\*k+b];
22. }
23. Print(temp);
24. [System](http://www.google.com/search?hl=en&q=allinurl%3Adocs.oracle.com+javase+docs+api+system).out.println();
25. }
26. }
27. }

30. **public** **static** **void** main([String](http://www.google.com/search?hl=en&q=allinurl%3Adocs.oracle.com+javase+docs+api+string)[] args) {
32. Scanner in = **new** Scanner([System](http://www.google.com/search?hl=en&q=allinurl%3Adocs.oracle.com+javase+docs+api+system).in);
33. **int** n = in.nextInt();
34. **int** a[][] = **new** **int**[n][n];
35. **for** (**int** i = 0; i < n; i++){
36. **for**(**int** j=0 ; j< n; j++)
37. a[i][j] = in.nextInt();
38. }
39. **int** k = in.nextInt();
40. **if**(n%k != 0) [System](http://www.google.com/search?hl=en&q=allinurl%3Adocs.oracle.com+javase+docs+api+system).out.println("Not possible to print the non overlapping sub-matrix of the given matrix of given order.");
41. **else**
42. Divide(a, k, n);
43. }
44. }

 stdin

4

1 2 3 4

3 4 1 2

1 2 3 4

3 4 1 2

2

 stdout

1 2

3 4

3 4

1 2

1 2

3 4

3 4

1 2

1. 9> Write and test the function that rotate 90 and 180 degrees clockwise a two dimensional square array of integers.
2. **import** java.lang.\*;
3. **import** java.io.\*;
5. **import** java.util.Scanner;
7. **class** Rotate{
8. **static** **int**[][] Rotate90(**int** a[][], **int** n){
9. **int** temp[][] = **new** **int**[n][n];
10. **for**(**int** i =0; i<n;i++){
11. **for**(**int** j=0;j<n;j++){
12. temp[j][n-i-1] = a[i][j];
13. }
14. }
15. **return** temp;
16. }
18. **static** **int**[][] Rotate180(**int** a[][], **int** n){
19. **return** Rotate90(Rotate90(a, n), n);
20. }
22. **static** **void** Print(**int** a[][]){
23. **for**(**int** i = 0; i < a.length; i++){
24. **for**(**int** j = 0; j < a[i].length; j++)
25. [System](http://www.google.com/search?hl=en&q=allinurl%3Adocs.oracle.com+javase+docs+api+system).out.print(a[i][j]+ " ");
26. [System](http://www.google.com/search?hl=en&q=allinurl%3Adocs.oracle.com+javase+docs+api+system).out.println();
27. }
28. }
30. **public** **static** **void** main([String](http://www.google.com/search?hl=en&q=allinurl%3Adocs.oracle.com+javase+docs+api+string)[] args) {
31. Scanner in = **new** Scanner([System](http://www.google.com/search?hl=en&q=allinurl%3Adocs.oracle.com+javase+docs+api+system).in);
32. **int** n = in.nextInt();
33. **int** a[][] = **new** **int**[n][n];
34. **for** (**int** i = 0; i < n; i++){
35. **for**(**int** j=0 ; j< n; j++)
36. a[i][j] = in.nextInt();
37. }
39. [System](http://www.google.com/search?hl=en&q=allinurl%3Adocs.oracle.com+javase+docs+api+system).out.println("Original Matrix : ");
40. Print(a);
42. **int** b[][] = **new** **int**[n][n];
43. **int** c[][] = **new** **int**[n][n];
45. b = Rotate180(a, n);
46. [System](http://www.google.com/search?hl=en&q=allinurl%3Adocs.oracle.com+javase+docs+api+system).out.println("After rotating 180 degree : ");
47. Print(b);
49. c = Rotate90(a, n);
50. [System](http://www.google.com/search?hl=en&q=allinurl%3Adocs.oracle.com+javase+docs+api+system).out.println("After rotating 90 degree : ");
51. Print(c);
53. }
54. }

 stdin

 copy

3

3 5 7

4 7 3

3 6 4

 stdout

 copy

Original Matrix :

3 5 7

4 7 3

3 6 4

After rotating 180 degree :

4 6 3

3 7 4

7 5 3

After rotating 90 degree :

3 4 3

6 7 5

4 3 7