

Add Two Matrices

Sample Input 0

3 3

1 2 3

4 5 6

7 8 9

3 3 ✓

9 8 7

6 5 4

3 2 1

1	2 ✓	3
4	5	6
7	8	9

(A)

3x3
m x n ✓

+

9	8 ✓	7
6	5	4
3	2	1

(B)

3x3
p x q ✓

=

	0	1	2
0	10	10	10
1	10	10	10
2	10	10	10

(C) ✓
=

3x3
s x t

condⁿ?

$m = p$
 $n = q$

} →

dimensions should be same

$C[i][j] = A[i][j] + B[i][j]$

```

1 import java.io.*;
2 import java.util.*;
3
4 public class Solution {
5     public static void printArr(int [][] A){
6         for(int [] d : A){
7             for(int e : d){
8                 System.out.print(e + " ");
9             }
10            System.out.println();
11        }
12    }
13
14    public static void main(String[] args) {
15        Scanner scn = new Scanner(System.in);
16        int m = scn.nextInt();
17        int n = scn.nextInt();
18
19        int [][] A = new int[m][n];
20
21        for(int i = 0; i < m; i++){
22            for(int j = 0; j < n; j++){
23                A[i][j] = scn.nextInt();
24            }
25        }
26
27        int p = scn.nextInt();
28        int q = scn.nextInt();
29
30        int [][] B = new int[p][q];
31        for(int i = 0; i < p; i++){
32            for(int j = 0; j < q; j++){
33                B[i][j] = scn.nextInt();
34            }
35        }
36

```

```

35 }
36
37 //logic
38
39 if(m == p && q == n){
40     //add
41     int [][] C = new int[m][n];
42
43     for(int i = 0; i < m; i++){
44         for(int j = 0; j < n; j++){
45             C[i][j] = A[i][j] + B[i][j];
46         }
47     }
48
49     printArr(C);
50
51 }
52 else{
53     System.out.println("-1");
54 }
55 }
56 }
57

```

Multiplication of Matrix.

	0	1	2
0	1	0	2
1	3	2	1

2x3

(A)

$m \times n$

	0	1
0	1	1
1	2	3
2	3	2

3x2

(B)

$p \times q$

$$\Rightarrow \frac{c}{m \times q}$$

$n == p \checkmark \rightarrow \text{true} \Rightarrow \text{multiplication}$

7	

2x2

$$\begin{aligned} c[0][0] &= A[0][0] * B[0][0] \\ &+ A[0][1] * B[1][0] \\ &+ A[0][2] * B[2][0] \end{aligned}$$

$$\begin{aligned} &= 1 * 1 \\ &+ 0 * 2 \\ &+ 2 * 3 \end{aligned}$$

(7)

String → Non-primitive Data Type.

→ sequence of character.

→ * is string a mutable or
im - mutable
data structure
in Java.

Print Characters

$s \rightarrow$ "geekster"

g
e
e
k
s
t
e
r

h
e
l
l
o

?

"hello"
0 1 2 3 4

$i = 0, 1, 2, 3, 4, 5$

$5 < s.length$

$(5 < 5)$

```
public static void main(String[] args) {  
    Scanner scn = new Scanner(System.in);  
  
    String s = scn.next();  
  
    for(int i = 0; i < s.length(); i++){  
        System.out.println(s.charAt(i));  
    }  
  
}
```

Is Equal?

s → "hello"

t → "hello"

s.equals(t)

```
1 import java.io.*;
2 import java.util.*;
3
4 public class Solution {
5     public static boolean isEqual(String s, String t){
6         if(s.length() != t.length()){
7             return false;
8         }
9
10        for(int i = 0; i < s.length(); i++){
11            if(s.charAt(i) != t.charAt(i)){
12                return false;
13            }
14        }
15
16        return true;
17    }
18
19    public static void main(String[] args) {
20        Scanner scn = new Scanner(System.in);
21
22        String s = scn.next();
23        String t = scn.next();
24
25        // System.out.println(s.equals(t));
26
27        boolean ans = isEqual(s, t);
28        System.out.println(ans);
29    }
30 }
```

Print Indices of Vowels

8 → "hello"
0 1 2 3 4



1 4

```
2 import java.util.*;
3
4 public class Solution {
5     public static boolean isVowel(char ch){
6         if(ch == 'a' || ch == 'e' || ch == 'i' || ch == 'o' || ch == 'u'){
7             return true;
8         }
9         return false;
10    }
11
12    public static void main(String[] args) {
13        Scanner scn = new Scanner(System.in);
14
15        String s = scn.next();
16
17        for(int i = 0; i < s.length(); i++){
18            char ch = s.charAt(i);
19            if(isVowel(ch)){
20                System.out.print(i + " ");
21            }
22        }
23    }
24 }
```

125. Valid Palindrome

Input: s = "A man, a plan, a canal: Panama"

Output: true

Explanation: "amanaplanacanalpanama" is a palindrome.

$$'F' - 'A' = 'f' - 'a'$$

$$CH - 'A' = ch - 'a'$$

$$ch = CH - 'A' + 'a'$$

8 → A _ man, a plan, a canal : Panama

↓
AmanaplanacanalPanama

↓
amanaplanacanalpanama

↑
i

↑
j


```

class Solution {
    public boolean isPalindrome(String s) {
        String t = "";

        for(int i = 0; i < s.length(); i++){
            char ch = s.charAt(i);

            if((ch >= 'a' && ch <= 'z') || (ch >= 'A' && ch <= 'Z') || (ch >= '0' && ch <= '9')){
                if(ch >= 'A' && ch <= 'Z'){
                    // convert into smallcase / lowercase
                    ch = (char)(ch - 'A' + 'a');
                }
                t += ch;
            }
        }

        //question check if t string is palindrome or not
        int i = 0;
        int j = t.length()-1;

        while(i < j){
            if(t.charAt(i) != t.charAt(j)){
                return false;
            }
            i++;
            j--;
        }
        return true;
    }
}

```