Topic to discuss

How to find space Complexity Of the Algorithm ?

①

```
int a = 20;
int b = 30;
int sum = a+b;
print(sum);
```

a — 1
b — 1
sum — 1

Space complexity = O(1)

(2)

```
Algorithm sum (A[], n) input
{
  sum = 0;

for (i = 1 ; i ≤ n ; i++)
{
   sum = sum + A[i];
 }
```

A[] , n } input

sum , i } extra variables.

Space complexity = O(1)

(3) Algorithm sum (A[][], B[][], n)

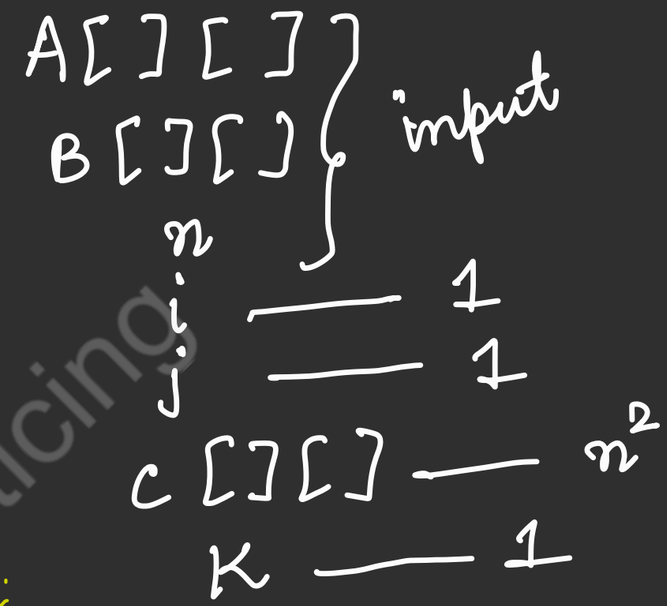
```
{
    for (i=1 ; i<=n ; i++)
    {
        for (j=1 ; j<=n ; j++)
        {
            c[i][j] = A[i][j] + B[i][j];
        }
    }
}
```

A[][] }
B[][] } input
n
i —— 1
j —— 1
c[][] —— n^2

Space complexity = $O(n^2)$

(4)

```
Algorithm Multiply (A[][] , B[][] , n)
{
    for (i=1  ; i<=n ; i++)
    {
        for (j=1  ; j<=n  ; j++)
        {       c[i][j] = 0;
                for (k=1 ; k<=n ; k++)
                {
                        c[i][j] = c[i][j] + A[i][k] * B[k][j];
                }
        }
}
```



Space complexity = $O(n^2)$

(5)

```
for (i=1 ; i<=n ;i++){
    a = a+2;
}
```

Space complexity = O(1)

(6)

```
for (i=1 ; i<=n ;i=i+2)
{
    a= a+2;
}
```

Space complexity = O(1)

(7)

```
a=0
for (i=1 ; a<=n ; i++)
{
    a = a+i;
}
```

Space complexity = O(1)

(8)

```
for (i=1 ; i*i <=n ; i++)
{
    a = a+2;
}
```

Space complexity = O(1)

(9)

```
for (i=1 ; i<=n ; i++)
{
    for (j=1 ; j<=i ; j++)
    {
        statement;
    }
}
```

$i \longrightarrow 1$

$j \longrightarrow 1$

$n \longrightarrow$ input

Space complexity = O(1).

10

```
for (i=1 ; i<=n ; i++)
{
    a=a+2;
}
for (j=1 ; j<=n ; j++)
{
    b= b+2;
}
```

i —— 1
j —— 1
a —— 1
b —— 1
n ⟶ input

space complexity = O(1)

Follow Now

Start Practicing

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