PW SKILLS

Space Complexity

↳ space required to execute the code

- variable → O(1) → constant
- Array of size n → ↳ O(n)

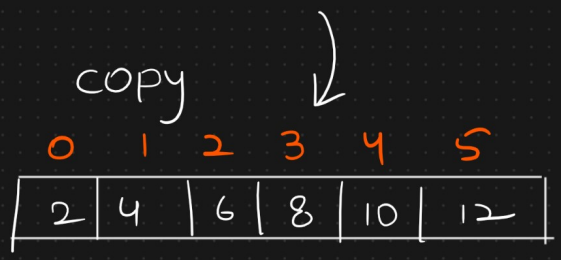
Example 1

```
display() {
    int sum = 10;
    System.out.println(sum);
}
```

Print the value of sum

O(1) constant space complexity

Example 2




```
for(i=0; i<n; i++)
{
    copy(i) = arr(i);
}
return copy
```

O(n) — Linear space complexity

Example 3

```
f(n) {
    if(n <= 0) {
        return 0;
    }
    return n + f(n-1);
}
```

n = 5

f(5) → 5 + f(4) 10

→ 4 + f(3) 6

→ 3 + f(2) 3

→ 2 + f(1) 1

→ 1 + f(0) 0

Recursion

↓

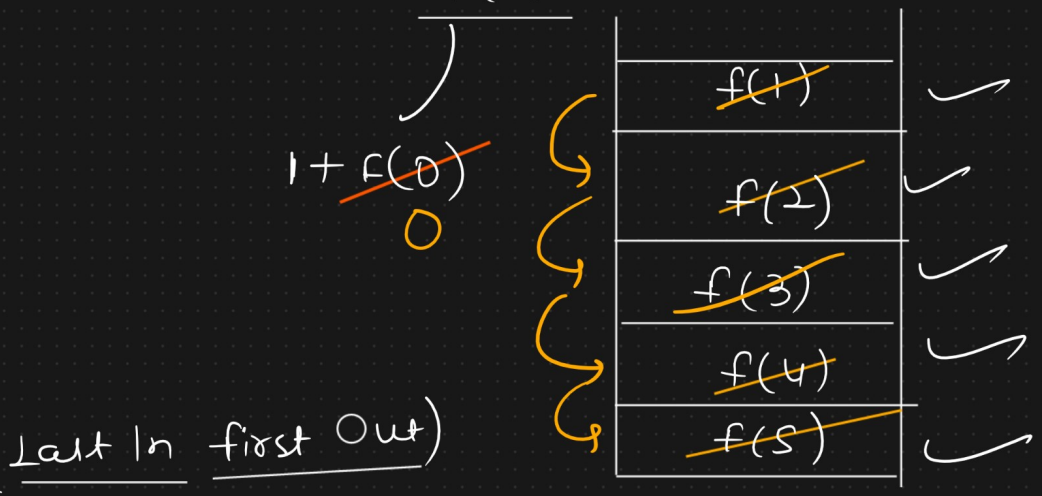
When any function calls itself

(Last In first Out)

LIFO ← Stack

↳ extra space

↳ to store all the function calls



Space complexity - O(n)

Note:

1) Time complexity ↓↓
   Space complexity ↓↓
   } Ideal case

2) Tradeoff b/w time & space complexity

↓

Reduce the time complexity