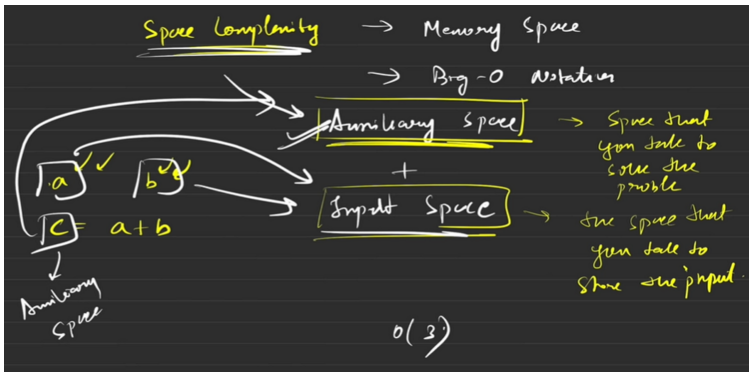
# Space Complexity

11 July 2023 02:03

## DEFINE

The total amount of memory space used by an algorithm/program, including the space of input values for execution is known as space complexity (Auxiliary space + Input Space).

Representation of Time Complexity: Big-O-Notation [O(<Input Size>)]




## NOTE

Suppose you are given a and b as input and you are told to calculate the sum.
My code is like:

```
int a=10, b=20;
b = a+b;
```

It is ok to write like this without using a third variable, because it saves space, but it is a bad practise as we should never tamper the given inputs. Instead take a third variable and solve it.
[Data should not be tampered]

## EXTRA

All servers where we run our code(like Leet code, GFG, etc) are benched at $10^8$ operations per second.
For 2 seconds servers can run $2*10^8$ operations and for 5 seconds, $5*10^8$ operations.