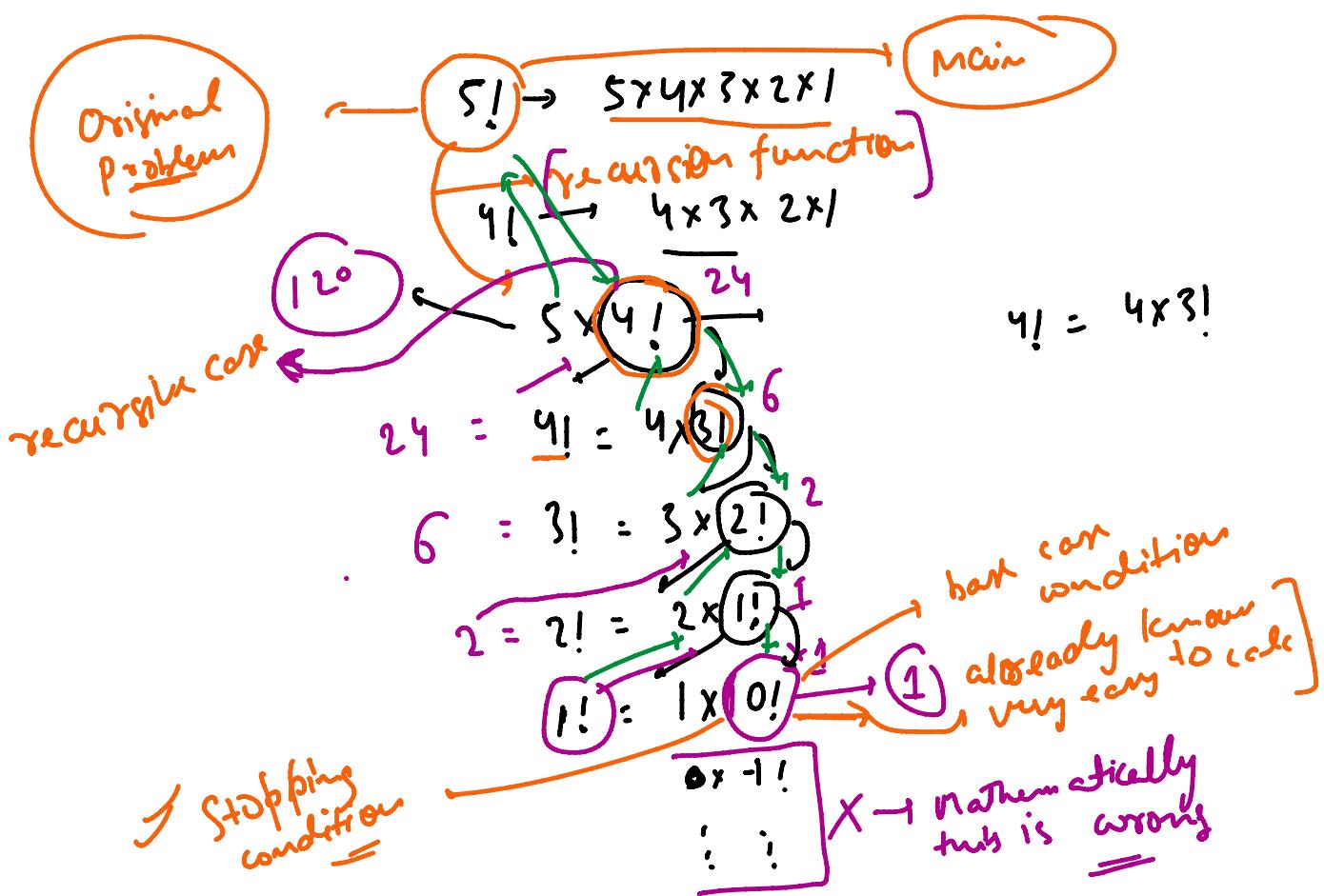


## 11 Principle of Mathematical Induction.

↳ If we want to prove sth. → let's assume it to be true for some number  $k$ , then try to do the same for  $k+1$



Recursion: It is a function calling itself (directly) indirectly to solve a problem.

That problem is solved by recursion  
1. breaking it down into similar - smaller in

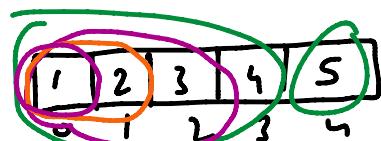
From problem  
by breaking it down into similar-smaller  
subproblems, until our base case is  
reached. Then we start building our  
solution from base case.

---

```
int main() {
    cout<<factorial(5); → int, long long int
    factorial(n);
}
```

---

$$arr[] = \{1, 2, 3, 4, 5\}$$

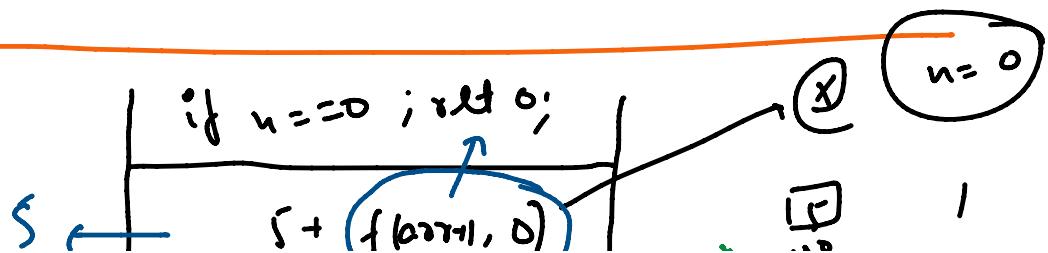
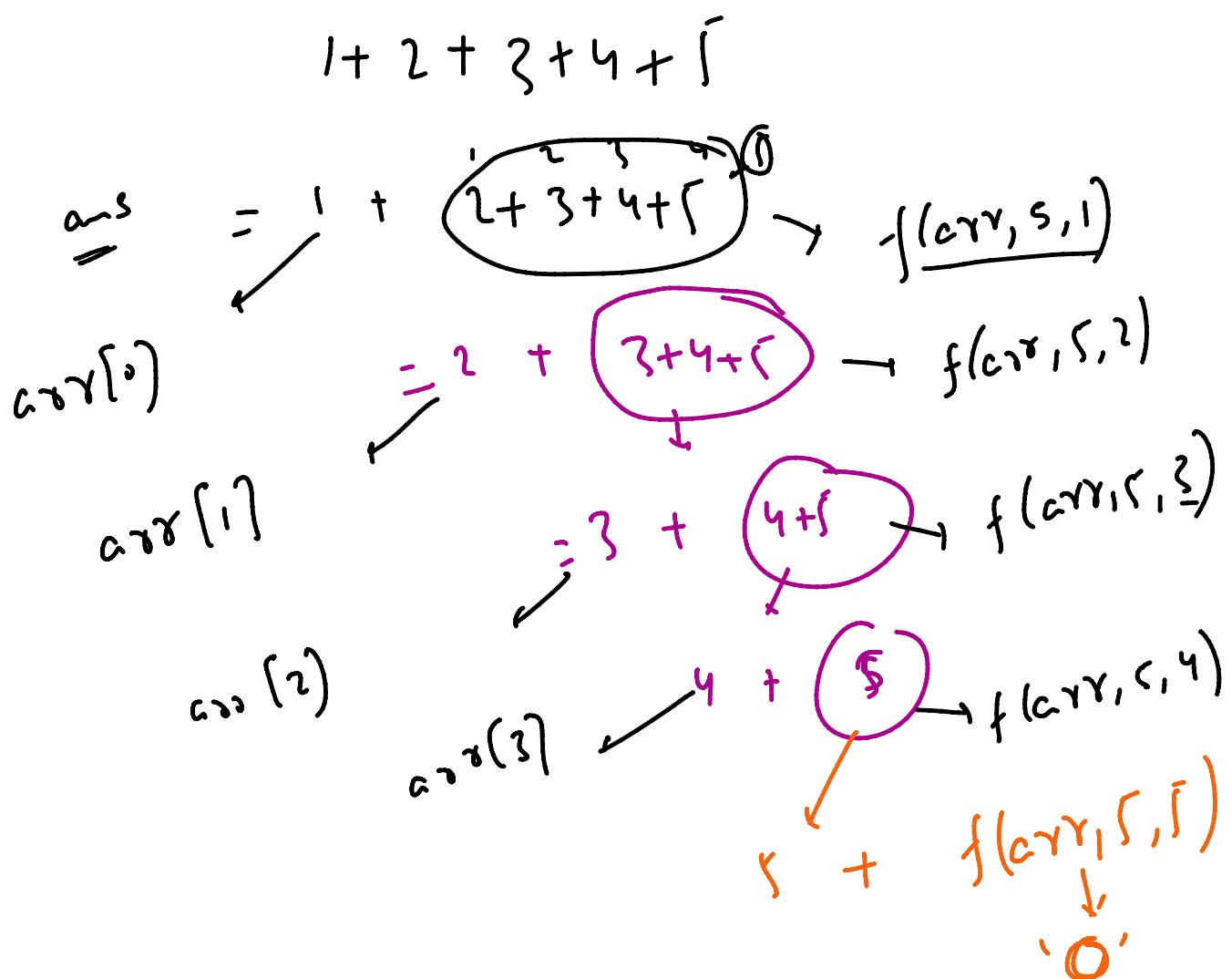


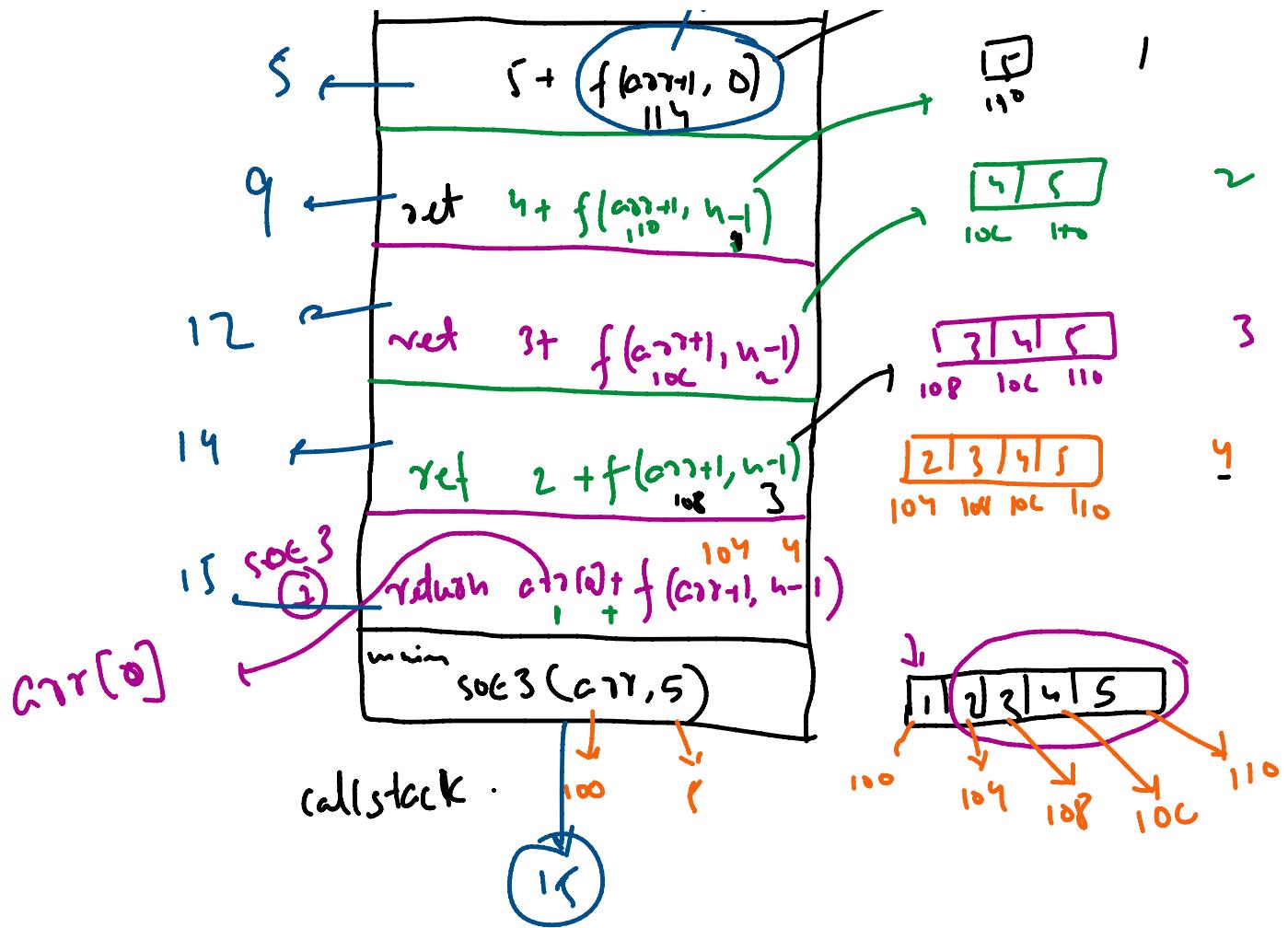
) It will sum all the elements  
of this array.

If I just  
odd 2 numbers  
minimum work

$$\begin{aligned}
 & 1 + 2 + 3 + 4 + 5 = 15 \\
 & (1 + 2 + 3 + 4) + 5 = 15 \\
 & n - 1 + 1 = 10
 \end{aligned}$$

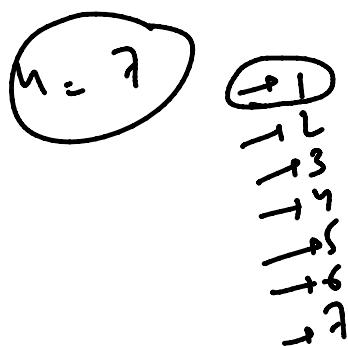
$$\begin{aligned}
 & 6 \leftarrow (1+2+3) + 4 = 10 \\
 & (1+2) + 3 = 6 \\
 & (1) + (2) = 3
 \end{aligned}$$



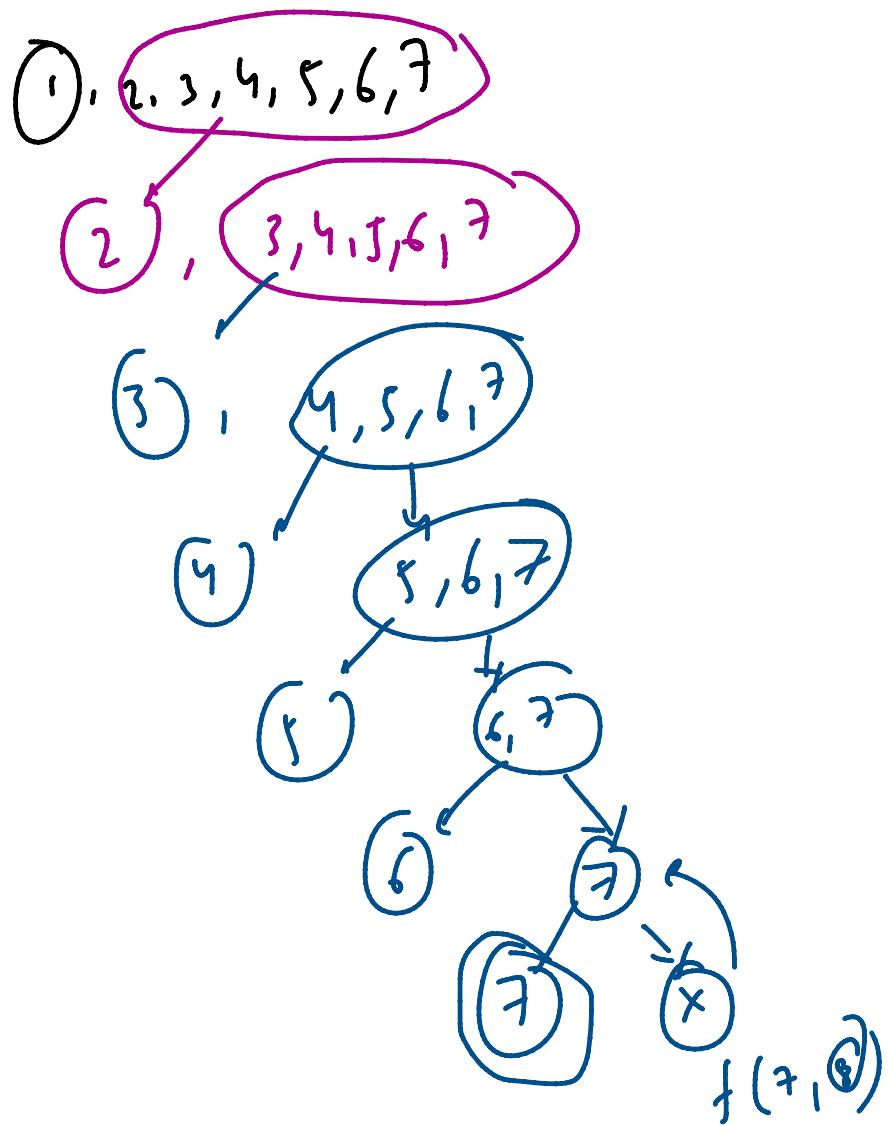


Given 'n'

- ① print values from 1 to n.



g will print only 1 value  
rest recursion will do.



② print values from  $n=1$  to  $1$ .

