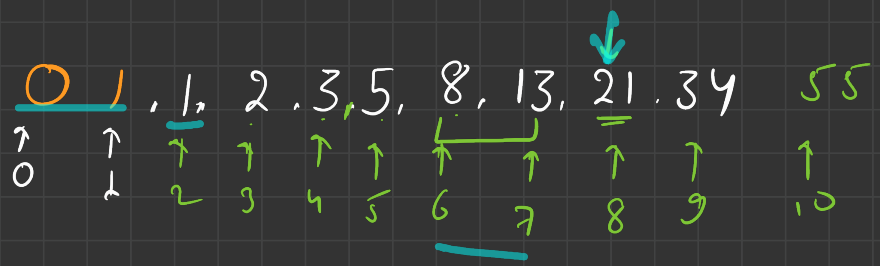
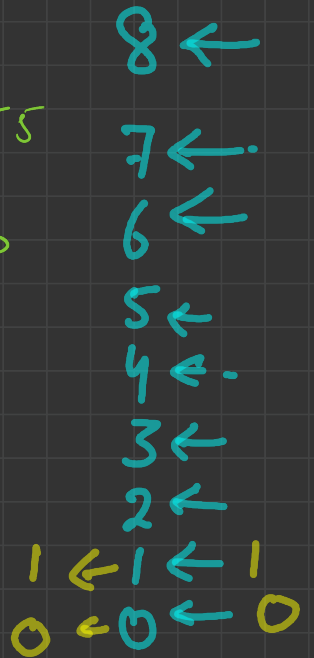
Fabonacci Series



n: 8



$fib(0) = 0$

$fib(1) = 1$ } — Base case

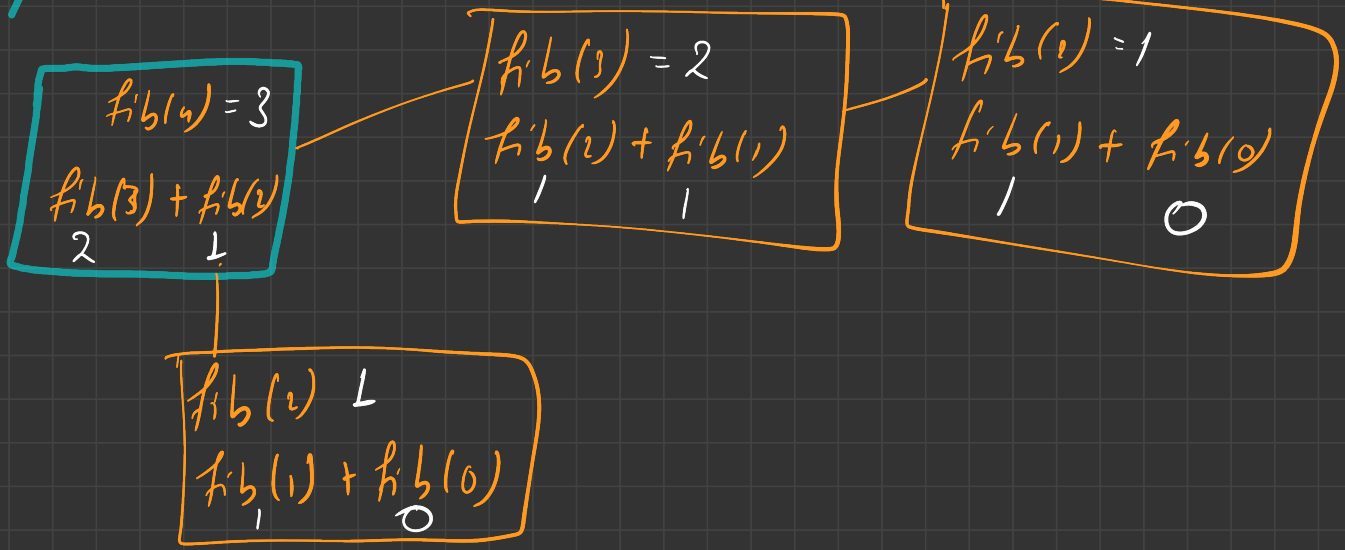
$fib(2) = fib(1) + fib(0)$

$fib(3) = fib(2) + fib(1)$

$fib(4) = fib(3) + fib(2)$

$fib(n) = fib(n-1) + fib(n-2)$

n = 4



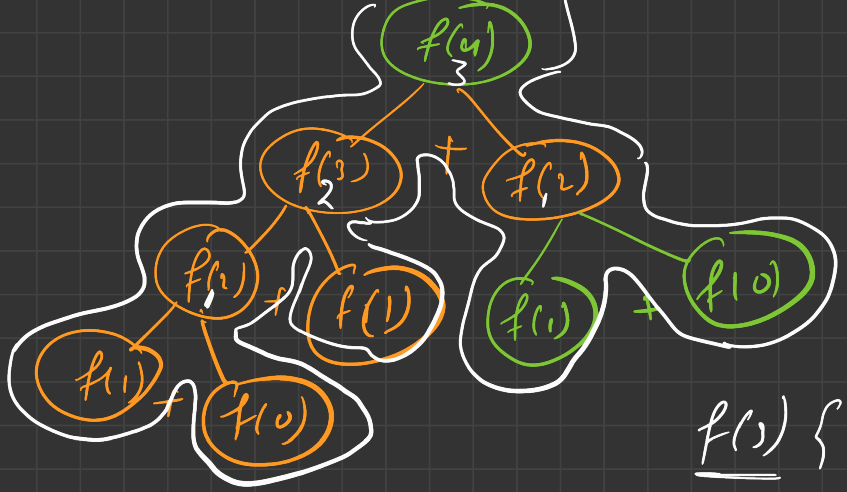
```
int fib(int n){
    if(n<=1)
        return 1;
}
```

```
return fib(n-1) + fib(n-2);
```

$fib(0) = 0$

$fib(1) = 1$

```
if(n==0)
    return 0
if(n==1)
    return 1
```



f(3) {

return f(2) + f(1)

}

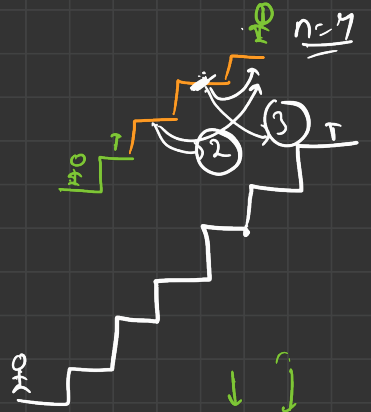
Nth Stair = n = 5 = 8

n = 1

n = 2 = 1+1, 2

n = 3

n = 4



method = 1, 2, 3, 5

way : 1, 1+1, 2, 1+1+1, 1+2, 2+1, 1+1+1+1, 2+2, 2+1+1, 1+1+2, 1+2+1

2 → 1+1+1+1+1 → 1
1+1+1+2 → 2
1+2+2 → 3
1+1+2+1 → 4
1+2+1+1 → 5
2+1+1+1 → 6
2+1+2 → 7
2+2+1 = 8

5th → 8 ways

n = 6 = 13

f(1) = 1

f(2) = 2

$$f(n) = f(n-1) + f(n-2)$$

```
Totalways (int n) {
    if (n <= 1) {
        return 1;
    }
```

return Totalways(n-1) + Totalways(n-2)

GCD of two numbers

a b → 0

(18, 48)

(48, 18) a%b

(18, 12) 48%18

(12, 6) 18%12

(6, 0) 12%6

Ans

n1 = 18001

n2 = 4842

```
void GCD(a,b){
    if(b==0){
        cout<<a;
        return;
    }
    GCD(b,a%b);
}
```

```
int GCD(a,b){
    if(b==0){
        return a;
    }
    return GCD(b,a%b);
}
```

```
int main(){
    int a=18
    int b=48
    cout<<GCD(a,b);
}
```

(18, 48)

(48, a%b)