“Easy Fibonacci”

(FIBEASY)

(Codechef)

By Prince Agarwal

[“ Hello World ”]

Easy Fibonacci

Fibonacci sequence :

F0 = 0 F1 = 1 _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ Fn = Fn-1 + Fn-2

Lets say example upto N = 16, Then ,Fibonacci sequence

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
0	1	1	2	3	5	8	13	21	34	55	89	144	233	377	610

Now, We have to find D ?

$$D = (F_0 \% 10, F_1 \% 10, \ldots, F_{N-1} \% 10).$$

Then ,D sequence

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
0	1	1	2	3	5	8	3	1	4	5	9	4	3	7	0

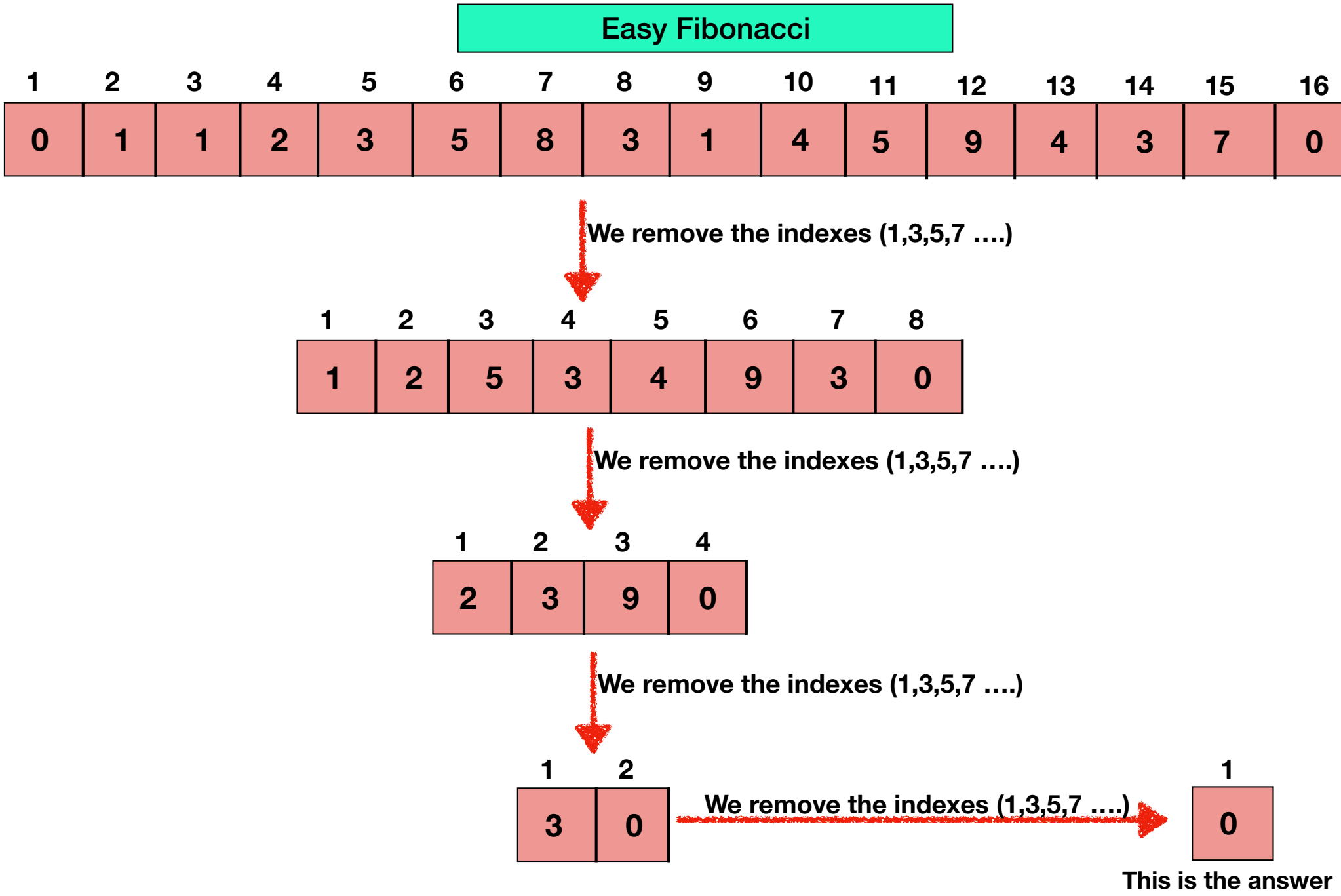
Easy Fibonacci

Then ,D sequence

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
0	1	1	2	3	5	8	3	1	4	5	9	4	3	7	0

Now, Reduce this until, D has remaining Single elements :-

→ Remove all ODD indexed numbers


Easy Fibonacci
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
0 1 1 2 3 5 8 3 1 4 5 9 4 3 7 0
We remove the indexes (1,3,5,7 ….)
1 2 3 4 5 6 7 8
1 2 5 3 4 9 3 0
We remove the indexes (1,3,5,7 ….)
1 2 3 4
2 3 9 0
We remove the indexes (1,3,5,7 ….)
1 2
3 0
We remove the indexes (1,3,5,7 ….)
1
0
This is the answer

Easy Fibonacci

Now, There's one things

If there is any number 'n' then, it is lying in between 2^x and 2^{x+1}

Powers of 2	Number	Powers of 2
2	5	3
4	16	5
1	3	2
3	15	4
5	55	6
2	4	3

Easy Fibonacci

Let N = 20

$$2^x = 4181$$

Take log2 both side ,

$$\text{Log2}(2^x) = \text{Log2}(4181)$$

$$x = \text{Log2}(4181)$$

$$x = 12....$$

$x = 12 \longrightarrow 236 \longleftarrow x = 13$

$2^{12} \longrightarrow 236 \longleftarrow 2^{13}$

One thing is clear from observation,
That,
If the for Fibonacci number upto N
We find it is belong to 2^x and 2^{x+1}

And answer is :- value of D [2^x]

2^0	–>	0
2^1	–>	1
2^2	–>	2
2^3	–>	3
2^4	–>	0
2^5	–>	9
2^6	–>	2
2^7	–>	3
2^8	–>	0
2^9	–>	9
2^{10}	–>	2
2^{11}	–>	3
2^{12}	–>	0
2^{13}	–>	9

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“ If you feel any problem then comments in my video
I will reply as soon as possible “

- Prince Agarwal