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- [Tavas & Sadas] Codeforces Lucky Number problem

- a lucky no is one which consists of only 4s and 7s.
- given a lucky no; calculate its index in the lucky no series.

eg series =

i		i		i	
1	4	7	444	13	774
2	7	8	447	14	777
3	44	9	474		
4	47	10	477		
5	74	11	744		
6	77	12	747		

(1–2: 2^1; 3–6: 2^2; 7–14: 2^3)

① My approach –
- No of ① digit numbers = 2^1
  " " ② digit numbers = 2^2
  " " ③ digit numbers = 2^3
  so on
- if a number of digits 4 is given, then ~~index~~ all the 1-digit, 2-digit and 3 digit numbers must be there.

so, initially index = $2^0 + 2^1 + 2^2 + 2^3$ = ~~15~~ 14

$2^0 +$ → because indexing starts from ① ⩵

as i kao

1 1 1 1
8 4 2 2

→ ⑦

index of 1st n digit number

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- example - (474) $2^n - 1$

initially index = $2^3 - 1$ = 8-1 = (7)

- Then evaluate the index of the n-digit no among all n-digit numbers.

adding 1 initially compensates here

eg -0	444	→	000
1	447	→	001
2	(474)	→	(010) → (2)
3	477	→	011
4	744	→	100
5	747	→	101
6	774	→	110
7	777	→	111

7 → 1
4 → 0

so index = 7+2 = (9) // correct

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example - 774

initially - index = $2^3 - 1$ = (7)

774 ⇒ 110 ⇒ 6

7+6 = (13)

Tip - Keep on getting the digits of the number from back and generate power of the index of digit

4	(7)	4
2	1	0

index = (2^1)

4747 ⇒ index = $(2^4 - 1) + 2^0 + 2^2$
3 2 1 0

= 15 + 1 + 4 = (20)