Q.

i	j	iterations (inner loop)
0	[0, 0)	0
1	[2, 0)	1
2	[2, 0)	2
3	[3, 0)	3
⋮		⋮
$2^N - 1$	$[2^N - 1, 0)$	$2^N - 1$

Σ iterations = $1 + 2 + 3 + \ldots + 2^N$

↳ Arithmetic Progression

↓

Sum of the first 2^N natural numbers - 1

$$S_n = \frac{n}{2}[a_1 + a_n]$$

$$= \frac{2^N}{2}[1 + 2^N]$$

$$= \frac{2^N}{2} + \frac{2^N \times 2^N}{2}$$

$$= \frac{2^N}{2} + \frac{2^{2N}}{2}$$

ignore lower order terms

$$= \frac{2^N}{2} + \frac{(2^2)^N}{2} = \frac{3^N}{2} + \frac{4^N}{2}$$

$\Rightarrow$ **T.C. = O(4^N)**