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optimization to make Ackermann more efficient

⇒ to solve this problem, we use Dynamic programming

First: create 2d Array of size $[m+1][n+1]$ that will hold the values of $Ack(0,0)$ until $Ack(m,n)$.

second: Filling the first row of 2d Array using the first case $Ack = n+1$ as $m=0$

		n			
m \ n	0	1	2	3	
	0	1	2	3	4
	1	2	3	4	5
	2	3	5	7	
	3	5			

Space Complexity $O(m \times n)$.

Time Complexity $O(m \times n)$.

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20190050

محمد صالح بن الفلاح ابوالمصطفى

P.2 Ackermann Funct.

- why base Ackermann is so heavy to compute?

⇒ For recursive solution that terminates with a value greater than $(4,1)$, in each recursive call either "m" decrease or "m" remains the same and "n" decrease.

So it has $O(m)$ space complexity, and $O(m \cdot ack(m,n))$ time complexity.

when "m" decrease there is no idea about the maximum value "n" will increase.

Ackermann Function will grow relatively slowly when $n \in \{1, 2, 3, 4\}$ but when $m \geq 4$ it will grow extremely fast in unobserved order.