Catalan Number :

$$C_n = C_{n-1}C_0 + C_{n-2}C_1 + C_{n-3}C_2 + \dots + C_0C_{n-1}$$

1. Different BST (Node = n) $\Rightarrow$ Catalan of n
2. Counting valleys & Mountains $\Rightarrow$ catalan of n (n pairs)
3. Combination of paranthesis $\Rightarrow$ Catalan of n (n pairs)
4. Non intersecting chords in circle (n side) $\Rightarrow$ Catalan of $\frac{n}{2}$
5. Ways of polygon triangulation $\Rightarrow$ catalan of $n-2$
6. Dyck's problem (HVVH) $\Rightarrow$ Catalon of n
7. Maze paths above diagonal $\Rightarrow$ Catalon of $n-1$.

n	$C(n)$
0	1
1	1
2	2
3	5
4	14
5	42
-	-
-	-
-	-