Recursive definition of $\binom{n}{k}$

Let’s write a function $C(n, k)$

The number of ways to select $k$ objects from a set of $n$ objects.
$C(n,k)$
Select any one of the n points in the group
Let’s consider specific problem $C(n, 4)$
This point can be **included** in the 4 points we choose
Or, it can be excluded from the 4 points we choose.
Total number of solutions is

\[ \text{number of solutions including } \bigcirc \]
\[ + \]
\[ \text{number of solutions not including } \bigcirc \]
Total number of solutions is

\[ \text{number of solutions including } \bigcirc \]
\[ + \]
\[ \text{number of solutions not including } \bigcirc \]
number of solutions including \( \bigcirc \) \( C(n-1, k-1) \)
number of solutions including $\circ \quad C(n-1, k-1)$

number of solutions not including $\circ \quad C(n-1, k)$
Total number of solutions is \( C(n-1, k-1) + C(n-1, k) \)
int C(int n, int k)
{
    if (k == 0 || n == k) return (1);
    return (C(n-1, k-1) + C(n-1, k));
}