Practice Question: Re-recursion

The double factorial of a positive integer $n$ is a generalization of the standard factorial that we all know. The double factorial is defined similarly, but with “steps” of two. For $n$ that are even the double factorial is

$$n!! = \prod_{k=1}^{\frac{n}{2}} (2k) = n(n-2)(n-4) \cdots 4 \cdot 2,$$

and for $n$ that are odd it is

$$n!! = \prod_{k=1}^{\frac{n+1}{2}} (2k-1) = n(n-2)(n-4) \cdots 3 \cdot 1.$$

Write a recursive C++ function to compute $n!!$, as defined above, given an $n$. It should return $n!!$ for those $n$ where double factorial is defined and print an error message otherwise.