

Climbing Stairs

This problem is essentially the Fibonacci sequence:

- To reach step n , you could:
 - come from step $n-1$ with a single step, or
 - come from step $n-2$ with a double step.
- So the recurrence is:
$$\text{ways}(n) = \text{ways}(n-1) + \text{ways}(n-2).$$

· Base cases:

- $\text{ways}(1) = 1$ (just one step).
- $\text{ways}(2) = 2$ (two ways: $1+1$, or 2).

Thus, the problem reduces to computing the $(n\text{-th})$ Fibonacci number with those bases.

Complexity:

- Time: $O(n)$
- Space: $O(1)$ (just two variables).