89. Gray Code

An n-bit gray code sequence is a sequence of 2n integers where:

- Every integer is in the inclusive range [0, 2n - 1],
- The first integer is 0,
- An integer appears no more than once in the sequence,
- The binary representation of every pair of adjacent integers differs by exactly one bit, and
- The binary representation of the first and last integers differs by exactly one bit.

Given an integer n, return any valid n-bit gray code sequence.

Example 1:

Input: n = 2

Output: [0,1,3,2]

Explanation:

- The binary representation of [0,1,3,2] is [00,01,11,10].
  - 00 and 01 differ by one bit
  - 01 and 11 differ by one bit
  - 11 and 10 differ by one bit
  - 10 and 00 differ by one bit

- [0,2,3,1] is also a valid gray code sequence, whose binary representation is [00,10,11,01].
    - 00 and 10 differ by one bit
    - 10 and 11 differ by one bit
    - 11 and 01 differ by one bit
    - 01 and 00 differ by one bit

Example 2:

Input: n = 1

Output: [0,1]

Constraints:

- 1 <= n <= 16