338. Counting Bits

Difficulty: Easy

https://leetcode.com/problems/counting-bits

Given an integer n, return an array ans of length n + 1 such that for each i (0 <= i <= n), ans[i] is the **number of** 1's in the binary representation of i.

Example 1:

Input: n = 2
Output: [0,1,1]
Explanation:
0 --> 0
1 --> 1
2 --> 10

Example 2:

Input: n = 5
Output: [0,1,1,2,1,2]
Explanation:
0 --> 0
1 --> 1
2 --> 10
3 --> 11
4 --> 100
5 --> 101

Constraints:

• $0 <= n <= 10^5$

Follow up:

- It is very easy to come up with a solution with a runtime of O(n log n). Can you do it in linear time O(n) and possibly in a single pass?
- Can you do it without using any built-in function (i.e., like __builtin_popcount in C++)?