

# 3141. Maximum Hamming Distances

## Description

Given an array `nums` and an integer `m`, with each element `nums[i]` satisfying `0 <= nums[i] < 2m`, return an array `answer`. The `answer` array should be of the same length as `nums`, where each element `answer[i]` represents the *maximum Hamming distance* between `nums[i]` and any other element `nums[j]` in the array.

The **Hamming distance** between two binary integers is defined as the number of positions at which the corresponding bits differ (add leading zeroes if needed).

### Example 1:

**Input:** `nums = [9,12,9,11]`, `m = 4`

**Output:** `[2,3,2,3]`

### Explanation:

The binary representation of `nums = [1001,1100,1001,1011]`.

The maximum hamming distances for each index are:

- `nums[0]`: 1001 and 1100 have a distance of 2.
- `nums[1]`: 1100 and 1011 have a distance of 3.
- `nums[2]`: 1001 and 1100 have a distance of 2.
- `nums[3]`: 1011 and 1100 have a distance of 3.

### Example 2:

**Input:** `nums = [3,4,6,10]`, `m = 4`

**Output:** `[3,3,2,3]`

### Explanation:

The binary representation of `nums = [0011,0100,0110,1010]`.

The maximum hamming distances for each index are:

- `nums[0]`: 0011 and 0100 have a distance of 3.
- `nums[1]`: 0100 and 0011 have a distance of 3.
- `nums[2]`: 0110 and 1010 have a distance of 2.
- `nums[3]`: 1010 and 0100 have a distance of 3.

### Constraints:

- `1 <= m <= 17`
- `2 <= nums.length <= 2m`
- `0 <= nums[i] < 2m`

