3015. Count the Number of Houses at a Certain Distance I

Description

You are given three **positive** integers `n`, `x`, and `y`.

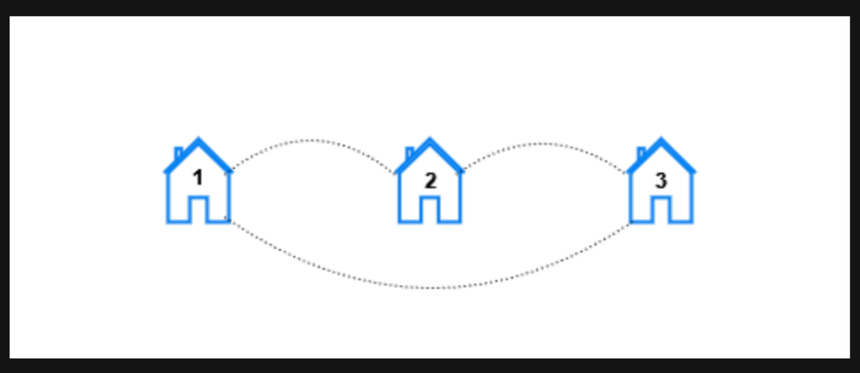
In a city, there exist houses numbered `1` to `n` connected by `n` streets. There is a street connecting the house numbered `i` with the house numbered `i + 1` for all `1 <= i <= n - 1`. An additional street connects the house numbered `x` with the house numbered `y`.

For each `k`, such that `1 <= k <= n`, you need to find the number of **pairs of houses** `(house 1, house 2)` such that the **minimum** number of streets that need to be traveled to reach `house 2` from `house 1` is `k`.

Return *a **1-indexed** array* `result` *of length* `n` *where* `result[k]` *represents the **total** number of pairs of houses such that the **minimum** streets required to reach one house from the other is* `k`.

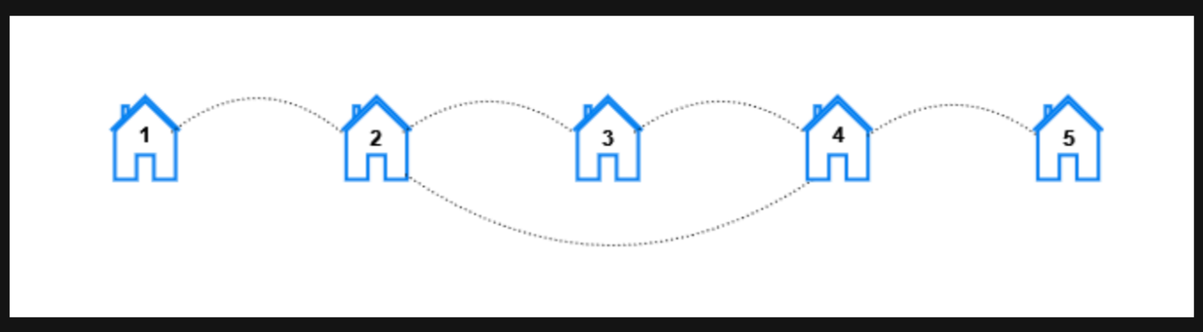
Note that `x` and `y` can be **equal**.

Example 1:



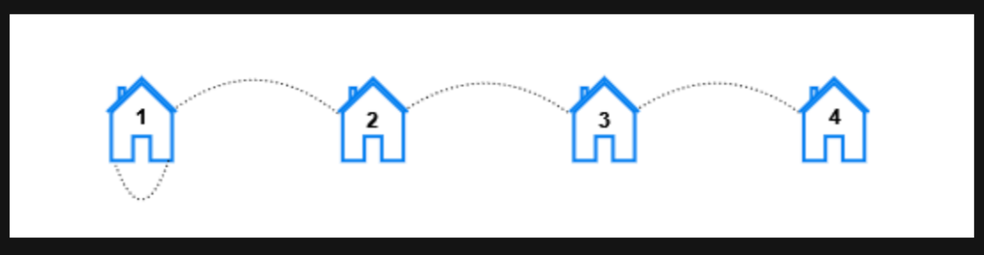

```
Input: n = 3, x = 1, y = 3
Output: [6,0,0]
Explanation: Let's look at each pair of houses:
- For the pair (1, 2), we can go from house 1 to house 2 directly.
- For the pair (2, 1), we can go from house 2 to house 1 directly.
- For the pair (1, 3), we can go from house 1 to house 3 directly.
- For the pair (3, 1), we can go from house 3 to house 1 directly.
- For the pair (2, 3), we can go from house 2 to house 3 directly.
- For the pair (3, 2), we can go from house 3 to house 2 directly.
```

Example 2:




```
Input: n = 5, x = 2, y = 4
Output: [10,8,2,0,0]
Explanation: For each distance k the pairs are:
- For k == 1, the pairs are (1, 2), (2, 1), (2, 3), (3, 2), (2, 4), (4, 2), (3, 4), (4, 3), (4, 5), and (5, 4).
- For k == 2, the pairs are (1, 3), (3, 1), (1, 4), (4, 1), (2, 5), (5, 2), (3, 5), and (5, 3).
- For k == 3, the pairs are (1, 5), and (5, 1).
- For k == 4 and k == 5, there are no pairs.
```

Example 3:




```
Input: n = 4, x = 1, y = 1
Output: [6,4,2,0]
Explanation: For each distance k the pairs are:
- For k == 1, the pairs are (1, 2), (2, 1), (2, 3), (3, 2), (3, 4), and (4, 3).
- For k == 2, the pairs are (1, 3), (3, 1), (2, 4), and (4, 2).
- For k == 3, the pairs are (1, 4), and (4, 1).
- For k == 4, there are no pairs.
```

Constraints:

- `2 <= n <= 100`
- `1 <= x, y <= n`