

Counting Bits

Given an integer, n , we want to know the following:

1. How many 1-bits are in its binary representation?
2. Let's say n 's binary representation has k significant bits indexed from 1 to k . What are the respective positions (i.e., in ascending order) of each 1-bit?
3. The performance is really important in this challenge.

Example

Complete Count function in PositiveBitCounter class. It has one parameter: an integer, n . It must return an integer enumerable with the following $1 + k$ values:

- The first index (0) must contain the total number of 1 bits in n 's binary representation.
- The subsequent indices must contain the respective positions of the one-indexed 1-bits in n 's binary representation.

Output Format

Return an enumerable of integers where the first element is the total number of 1-bits in n 's binary representation and the subsequent elements are the respective one-indexed locations of each 1-bit from most to least significant.

Tips

The integer $n = 161$ converts to binary.

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|---|---|---|---|---|---|---|---|
| 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
|---|---|---|---|---|---|---|---|

Reverse the binary representation.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
|---|---|---|---|---|---|---|---|

- Count number of positive bits: 3
- Search the position: 0, 5, 7. Return [3, 0, 5, 7]

