

Introduction to competitive Programming

Assingment – 2

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B.Tech Cse(3rd Yr)

Q1.

338. Counting Bits

Easy Topics: Computers Hint

Given an integer `n`, return an array `ans` of length `n + 1` such that for each `i` ($0 \leq i \leq n$), `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` \rightarrow `0`
`1` \rightarrow `1`
`2` \rightarrow `10`

Example 2:

Input: `n = 5`
Output: `[0,1,1,2,1,2]`
Explanation:
`0` \rightarrow `0`
`1` \rightarrow `1`
`2` \rightarrow `10`
`3` \rightarrow `11`
`4` \rightarrow `100`
`5` \rightarrow `101`

Solution

</> Code

Java   Auto

```
1  class Solution {  
2      public int[] countBits(int n) {  
3  
4          int[] ans = new int[n + 1];  
5  
6          for (int i = 1; i <= n; ++i)  
7              ans[i] = ans[i / 2] + (i % 2);  
8  
9          return ans;  
10     }  
11 }
```

Output

☒ Testcase | [> Test Result](#)

Accepted Runtime: 0 ms

• Case 1

• Case 2

Input

n =

2

Output

[0,1,1]

Expected

[0,1,1]

Accepted

Runtime: 0 ms

• Case 1

• Case 2

Input

n =

5

Output

[0,1,1,2,1,2]

Expected

[0,1,1,2,1,2]

Q2.

268. Missing Number

Easy Topics Companies

Given an array `nums` containing n distinct numbers in the range $[0, n]$, return the only number in the range that is missing from the array.

Example 1:

Input: `nums = [3, 0, 1]`

Output: 2

Explanation:

$n = 3$ since there are 3 numbers, so all numbers are in the range $[0, 3]$. 2 is the missing number in the range since it does not appear in `nums`.

Example 2:

Input: `nums = [0, 1]`

Output: 2

Explanation:

$n = 2$ since there are 2 numbers, so all numbers are in the range $[0, 2]$. 2 is the missing number in the range since it does not appear in `nums`.

Solution

Java Auto

```
1 class Solution {
2
3     public int missingNumber(int[] nums) {
4
5         int n = nums.length;
6
7         int result = n;
8
9         for (int i = 0; i < n; ++i) {
10
11             result ^= i ^ nums[i];
12         }
13         return result;
14     }
15 }
```

Output

Accepted

Runtime: 0 ms

• Case 1

• Case 2

• Case 3

Input

```
nums =  
[3,0,1]
```

Output

2

Expected

2

Input

```
nums =  
[9,6,4,2,3,5,7,0,1]
```

Output

8

Expected

8

Q3.

191. Number of 1 Bits

Easy

Topics

Companies

Given a positive integer n , write a function that returns the number of [set bits](#) in its binary representation (also known as the [Hamming weight](#)).

Example 1:

Input: $n = 11$

Output: 3

Explanation:

The input binary string **1011** has a total of three set bits.

Example 2:

Input: $n = 128$

Output: 1

Explanation:

The input binary string **10000000** has a total of one set bit.

Solution

Java ▾ 🔒 Auto

```
1 class Solution {
2     public int hammingWeight(int n) {
3         int ans = 0;
4
5         for (int i = 0; i < 32; ++i)
6             if (((n >> i) & 1) == 1)
7                 ++ans;
8
9         return ans;
10    }
11 }
```

Output

Accepted Runtime: 0 ms

• Case 1 • Case 2 • Case 3

Input

n =
11

Output

3

Expected

3

Input

n =

2147483645

Output

30

Expected

30

Q4.

190. Reverse Bits

Easy

Topics

Companies

Reverse bits of a given 32 bits unsigned integer.

Note:

- Note that in some languages, such as Java, there is no unsigned integer type. In this case, both input and output will be given as a signed integer type. They should not affect your implementation, as the integer's internal binary representation is the same, whether it is signed or unsigned.
- In Java, the compiler represents the signed integers using 2's complement notation. Therefore, in **Example 2** above, the input represents the signed integer `-3` and the output represents the signed integer `-1073741825`.

Example 1:

Input: `n = 00000010100101000001111010011100`

Output: `964176192 (00111001011110000010100101000000)`

Explanation: The input binary string `00000010100101000001111010011100` represents the unsigned integer 43261596, so return 964176192 which its binary representation is `00111001011110000010100101000000`.

Example 2:

Input: `n = 11111111111111111111111111111101`

Output: `3221225471 (10111111111111111111111111111111)`

Explanation: The input binary string `11111111111111111111111111111101` represents the unsigned integer 4294967293, so return 3221225471 which its binary representation is `10111111111111111111111111111111`.