



2's complement



Problem

Submissions

Leaderboard

Discussions

Editorial

Understanding [2's complement](#) representation is fundamental to learning about Computer Science. Let's say you wrote down the **2**'s complement for each **32**-bit integer in the inclusive range from **A** to **B**; how many **1**'s would you write down in all?

Input Format

The first line contains **T**, the number of test cases.

The **T** subsequent lines each contain two space-separated integers, **A** and **B**, respectively.

Constraints

- $T \leq 1000$
- $-2^{31} \leq A \leq B \leq 2^{31} - 1$

Output Format

On a new line for each of the **T** test cases, print the number of **1**'s in the **32**-bit **2**'s complement representation for integers in the inclusive range from **A** to **B**.

Sample Input

```
3
-2 0
-3 4
-1 4
```

Sample Output

```
63
99
37
```

Explanation

Test Case 0:

-2 contains **31** ones followed by a zero.

-1 contains **32** ones.

0 contains **0** ones.

31 + 32 + 0 = 63, so we print **63** on a new line.

Test Case 1:

31 + 31 + 32 + 0 + 1 + 1 + 2 + 1 = 99, so we print **99** on a new line.

Test Case 2:

32 + 0 + 1 + 1 + 2 + 1 = 37, so we print **37** on a new line.



Submissions: [3542](#)



Max Score: 70

Difficulty: Advanced

Rate This Challenge:

[More](#)

Current Buffer (saved locally, editable)  

Java 7  

```
1 import java.io.*;
2 import java.util.*;
3 import java.text.*;
4 import java.math.*;
5 import java.util.regex.*;
6
7 public class Solution {
8
9     public static void main(String[] args) {
10         /* Enter your code here. Read input from STDIN. Print output to STDOUT. Your class should be named Solution. */
11     }
12 }
```

Line: 1 Col: 1

 [Upload Code as File](#)☐ Test against custom input

Run Code

Submit Code

Join us on IRC at [#hackerrank](#) on freenode for hugs or bugs.[Contest Calendar](#) | [Blog](#) | [Scoring](#) | [Environment](#) | [FAQ](#) | [About Us](#) | [Support](#) | [Careers](#) | [Terms Of Service](#) | [Privacy Policy](#) | [Request a Feature](#)