[Hamming Distance 汉明距离](http://www.cnblogs.com/grandyang/p/6201215.html)

The [Hamming distance](https://en.wikipedia.org/wiki/Hamming_distance) between two integers is the number of positions at which the corresponding bits are different.

Given two integers x and y, calculate the Hamming distance.

Note:  
0 ≤ x, y < 231.

Example:

Input: x = 1, y = 4

Output: 2

Explanation:

1 (0 0 0 1)

4 (0 1 0 0)

↑ ↑

The above arrows point to positions where the corresponding bits are different.

解法一：

class Solution {

public:

int hammingDistance(int x, int y) {

int res = 0;

for (int i = 0; i < 32; ++i) {

if ((x & (1 << i)) ^ (y & (1 << i))) {

++res;

}

}

return res;

}

};

解法二：

class Solution {

public:

int hammingDistance(int x, int y) {

int res = 0, exc = x ^ y;

for (int i = 0; i < 32; ++i) {

res += (exc >> i) & 1;

}

return res;

}

};

解法三：

class Solution {

public:

int hammingDistance(int x, int y) {

int res = 0, exc = x ^ y;

while (exc) {

++res;

exc &= (exc - 1);

}

return res;

}

};

解法四：

class Solution {

public:

int hammingDistance(int x, int y) {

if ((x ^ y) == 0) return 0;

return (x ^ y) % 2 + hammingDistance(x / 2, y / 2);

}

};