Hamming Distance in C++

```
#include <iostream>
using namespace std;

int hammingDistance(int x, int y) {
    int xorResult = x ^ y;
    int count = 0;
    while (xorResult != 0) {
        count += xorResult & 1;
        xorResult >>= 1;
    }
    return count;
}

int main() {
    cout << hammingDistance(10, 12) << endl; // Output: 2

    return 0;
}
```

Input:

x = 10 (1010 in binary)
y = 12 (1100 in binary)

Step 1: XOR the inputs

```
  1010  (10)
^ 1100  (12)
-------
  0110  (6)
```

So, xorResult = 6 → binary: 0110

📜 **Dry Run Table:**

Step	xorResult (bin)	xorResult (dec)	xorResult & 1	count	After >>= 1
1	0110	6	0	0	3 (0011)
2	0011	3	1	1	1 (0001)
3	0001	1	1	2	0 (0000)

🎯 **Final Output:**

Hamming Distance = 2

2