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| **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 |
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