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| **All repeating except two in C++** | |
| #include <iostream>  #include <vector>  using namespace std;  void solution(vector<int>& arr) {  int xxory = 0;  for(int val : arr) {  xxory = xxory ^ val;  }  int rsbm = xxory & -xxory;  int x = 0;  int y = 0;  for(int val : arr) {  if((val & rsbm) == 0) {  x = x ^ val;  } else {  y = y ^ val;  }  }  if(x < y) {  cout << x << endl;  cout << y << endl;  } else {  cout << y << endl;  cout << x << endl;  }  }  int main() {  vector<int> arr = {2, 2, 3, 3, 6, 6, 9, 1};  solution(arr);  return 0;  } | **Given:**  arr = {2, 2, 3, 3, 6, 6, 9, 1}  Pairs: 2, 2, 3, 3, 6, 6 Unique: 9, 1 ← these are the ones we need to find.  **🔍 Step-by-step Dry Run:**  **Step 1: Find xxory = XOR of all elements**   | **Iteration** | **val** | **xxory (XOR so far)** | | --- | --- | --- | | init |  | 0 | | 1 | 2 | 0 ^ 2 = 2 | | 2 | 2 | 2 ^ 2 = 0 | | 3 | 3 | 0 ^ 3 = 3 | | 4 | 3 | 3 ^ 3 = 0 | | 5 | 6 | 0 ^ 6 = 6 | | 6 | 6 | 6 ^ 6 = 0 | | 7 | 9 | 0 ^ 9 = 9 | | 8 | 1 | 9 ^ 1 = 8 |   So, xxory = 8 (binary: 1000)  **Step 2: Find the rightmost set bit of xxory**  rsbm = xxory & -xxory = 8 & -8 = 8  Rightmost set bit is in position 4 (binary 1000)  **Step 3: Divide numbers into two groups based on that bit**  Group 1: (val & rsbm) == 0 Group 2: (val & rsbm) != 0   | **val** | **Binary** | **& rsbm (1000)** | **Group** | **x or y result** | | --- | --- | --- | --- | --- | | 2 | 0010 | 0000 | x | x = 0 ^ 2 = 2 | | 2 | 0010 | 0000 | x | x = 2 ^ 2 = 0 | | 3 | 0011 | 0000 | x | x = 0 ^ 3 = 3 | | 3 | 0011 | 0000 | x | x = 3 ^ 3 = 0 | | 6 | 0110 | 0000 | x | x = 0 ^ 6 = 6 | | 6 | 0110 | 0000 | x | x = 6 ^ 6 = 0 | | 9 | 1001 | 1000 | y | y = 0 ^ 9 = 9 | | 1 | 0001 | 0000 | x | x = 0 ^ 1 = 1 |   So final values:   * x = 1 * y = 9   **✅ Final Output:**  cout << x << endl;  cout << y << endl;  Since 1 < 9, the output is:  1  9  **Summary Table:**   | **Element** | **Group** | **x / y update** | | --- | --- | --- | | 2 | x | x ^= 2 → 0 | | 3 | x | x ^= 3 → 0 | | 6 | x | x ^= 6 → 0 | | 1 | x | x ^= 1 → 1 | | 9 | y | y ^= 9 → 9 | |
| 1  9 | |