Swap Two Numbers Without Using Third Variable - GeeksforGeeks

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Examples: Input: a = 2, b = 3 Output: a = 3, b = 2 Input: a = 20, b = 0 Output: a = 0, b = 20 Input: a = 10, b = 10 Output: a = 10, b = 10 Try it on GfG Practice Table of Content Using Arithmetic Operators Using Bitwise XOR Built-in Swap Using Arithmetic Operators Store the sum of a and b in a (a = a + b). Get the original value of a , that is (sum - original value of b)and store it in b (b = a - b). Get the original value of b , that is (sum - original value of a)and store it in a (a = a - b). C++ // C++ Code to swap two numbers using arithmetic operators #include <iostream> using namespace std ; int main () { int a = 2 , b = 3 ; cout << "a = " << a << " b = " << b << endl ; a = a + b ; b = a - b ; a = a - b ; cout << "a = " << a << " b = " << b << endl ; return 0 ; } C // C Code to swap two numbers using arithmetic operators #include <stdio.h> int main () { int a = 2 , b = 3 ; printf ("a = %d b = %d \n " , a , b); a = a + b ; b = a - b ; a = a - b ; printf ("a = %d b = %d \n " , a , b); return 0 ; } Java // Java Code to swap two numbers using arithmetic operators class GfG { public static void main (String [] args) { int a = 2 , b = 3 ; System . out . println ("a = " + a + " b = " + b); a = a + b ; b = a - b ; a = a - b ; System . out . println ("a = " + a + " b = " + b); } } Python # Python Code to swap two numbers using arithmetic operators if __name__ == "__main__" : a = 2 b = 3 print ("a =" , a , " b =" , b) a = a + b b = a - b a = a - b print ("a =" , a , " b =" , b) C# // C# Code to swap two numbers using arithmetic operators using System ; class GfG { static void Main () { int a = 2 , b = 3 ; Console . WriteLine ("a = " + a + " b = " + b); // Swap a and b using arithmetic operators a = a + b ; b = a - b ; a = a - b ; Console . WriteLine ("a = " + a + " b = " + b); } } JavaScript // JavaScript Code to swap two numbers using arithmetic operators let a = 2 , b = 3 ; console . log ("a = " + a + " b = " + b); a = a + b ; b = a - b ; a = a - b ; console . log ("a = " + a + " b = " + b); Output a = 2 b = 3 a = 3 b = 2 Time Complexity: O(1) Auxiliary Space: O(1) Using Bitwise XOR The idea is to use the properties of XOR to swap the two variables. a = a ^ b: Store the Bitwise XOR of a and b in a . Now, a holds the result of (a ^ b) . b = a ^ b: Bitwise XOR the new value of a with b to get the original value of a . This gives us, b = (a ^ b) ^ b = a. a = a ^ b: Bitwise XOR the new value of a with the new value of b (which is the original a) to get the original value of b . This gives us, a = (a ^ b) ^ a = b. Finally, a and b hold the swapped values. C++ // C++ Code to swap two numbers using bitwise XOR #include <iostream> using namespace std ; int main () { int a = 2 , b = 3 ; cout << "a = " << a << " b = " << b << endl ; a = a ^ b ; b = a ^ b ; a = a ^ b ; cout << "a = " << a << " b = " << b << endl ; return 0 ; } C // C Code to swap two numbers using bitwise XOR #include <stdio.h> int main () { int a = 2 , b = 3 ; printf ("a = %d b = %d \n " , a , b); a = a ^ b ; b = a ^ b ; a = a ^ b ; printf ("a = %d b = %d \n " , a , b); return 0 ; } Java // Java Code to swap two numbers using bitwise XOR class GfG { public static void main (String [] args) { int a = 2 , b = 3 ; System . out . println ("a = " + a + " b = " + b); a = a ^ b ; b = a ^ b ; a = a ^ b ; System . out . println ("a = " + a + " b = " + b); } } Python # Python Code to swap two numbers using bitwise XOR if __name__ == "__main__" : a = 2 b = 3 print ("a =" , a , " b =" , b) a = a ^ b b = a ^ b a = a ^ b print ("a =" , a , " b =" , b) C# // C# Code to swap two numbers using bitwise XOR using System ; class GfG { static void Main () { int a = 2 , b = 3 ; Console . WriteLine ("a = " + a + " b = " + b); // Swap a and b using arithmetic operators a = a ^ b ; b = a ^ b ; a = a ^ b ; Console . WriteLine ("a = " + a + " b = " + b); } } JavaScript // JavaScript Code to swap two numbers using bitwise XOR let a = 2 , b = 3 ; console . log

("a = " + a + " b = " + b); a = a ^ b ; b = a ^ b ; a = a ^ b ; console . log ("a = " + a + " b = " + b); Output a = 2 b = 3 a = 3 b = 2 Time Complexity: O(1) Auxiliary Space: O(1) Built-in Swap We can also swap using built-in functionalities like swap method in C++, tuple unpacking in Python, destructuring assignment in JavaScript. To know more about the implementation, please refer Swap Two Numbers . Comment Article Tags: Article Tags: Bit Magic Mathematical DSA Bitwise-XOR Swap-Program + 1 More