

Chapter 19

Algorithms for Interviews

19.1 Introduction

19.2 Find duplicate elements in an array

19.3 Find duplicate elements in an array

19.3. FIND DUPLICATE ELEMENTS IN AN ARRAY

Find duplicate numbers in an array

1. Array is of size of n
2. Each array element is between 0 to $(n-1)$

$n = 4$
0 1 2 3
3 2 1 0
No dup

$n = 4$
0 1 2 3
2 3 1 3
duplicate {3}

0	1	2	3	4	5	6
1	2	3	1	3	6	6
duplicate {1,3,6}						

Goal:

1. Print all duplicates exactly once.

0	1	2
1	1	1

wrong duplicate {1,1}

0	1	2
1	1	1

duplicate {1}

2. Returns exact number of unique duplicates
3. Given array should be intact at the end of your algorithm
4. We need $O(n)$ time and $O(1)$ space algorithm

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| <ol style="list-style-type: none">1. Implement $O(n^2)$ time and $O(1)$ space algorithm2. Implement $O(n)$ time and $O(n)$ space algorithm3. Implement $O(n)$ time and $O(1)$ space algorithm <p>You cannot use any library functions like hash/set/arraylist etc</p> |
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Figure 19.2: Find duplicate elements in an array