Interview Cake

← course home (/table-of-contents#section_sorting-searching-logarithms_question_find-duplicate-optimize-for-space)

Find a duplicate, *Space Edition*™.

We have a list of integers, where:

1. The integers are in the range $1..n$
2. The list has a length of $n + 1$

It follows that our list has *at least* one integer which appears *at least* twice. But it may have *several* duplicates, and each duplicate may appear *more than* twice.

Write a function which finds an integer that appears more than once in our list. Don't modify the input! (If there are multiple duplicates, you only need to find one of them.)

We're going to run this function on our new, super-hip MacBook Pro With Retina Display™. Thing is, the damn thing came with the RAM soldered right to the motherboard, so we can't upgrade our RAM. **So we need to optimize for space!**