Problem #1979: Find Greatest Common Divisor of Array (Easy)

<https://leetcode.com/problems/find-greatest-common-divisor-of-array/description/>

My Solution:

Solution 1:

1. Let ‘a‘ be the minimum of nums and ‘b’ be the maximum of nums
2. Helper function getGcd takes in two integers a and b as inputs.

If b is equal to 0, then return a. Otherwise retrun getGcd of b and a%b,

This is a recursive function where modulo function is used to reduce one of the numbers until it becomes 0.

1. Return the value returned by the helper functions with a and b as inputs.

class Solution:

def findGCD(self, nums: List[int]) -> int:

a = min(nums)

b = max(nums)

def getGcd(a, b):

if b == 0:

return a

return getGcd(b, a%b)

return getGcd(a, b)

Solution 2:

1. Let ‘a‘ be the minimum of nums and ‘b’ be the maximum of nums
2. Return math.gcd with inputs a and b.

class Solution:

def findGCD(self, nums: List[int]) -> int:

a = min(nums)

b = max(nums)

return math.gcd(a, b)

Solution 3:

1. Let x be the minimum of nums and y be the maximum of nums.
2. Here we use recursion with helper function getGcd which has two integers a and b as inputs.

Base cases are:

1. If a is 0, then return b
2. If b is 0, then return a
3. If a and b are equal, then return a.
4. If a is greater than b, then return the helper function with inputs (a – b) and b.
5. Otherwise, b is greater than a. Return the helper function with inputs a, and (b – a)
6. Return getGcd with inputs x and y.

class Solution:

def findGCD(self, nums: List[int]) -> int:

x = min(nums)

y = max(nums)

def getGcd(a, b):

if a == 0:

return b

if b == 0:

return a

if a == b:

return a

if a > b:

return getGcd(a - b, b)

return getGcd(a, b - a)

return getGcd(x, y)

Solution 4:

Same as Solution 3 except in the helper function instead of using minus to reduce the numbers for recursion, the modulo function is used.

class Solution:

def findGCD(self, nums: List[int]) -> int:

x = min(nums)

y = max(nums)

def getGcd(a, b):

if a == 0:

return b

if b == 0:

return a

if a == b:

return a

if a > b:

return getGcd(a % b, b)

return getGcd(a, b % a)

return getGcd(x, y)