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M03 Tutorial – Functional vs OOP Programming

Sort an Array of 0s, 1s, and 2s

class Solution:

#Function to sort an array of 0s, 1s, and 2s.

def sort012(self,arr,n):

low=0

mid=0

high=n-1

#iterating until mid pointer is less than or equal to high.

while mid<=high:

#if element at mid is 0, swap with element at low & move both pointers.

if arr[mid]==0:

arr[mid] , arr[low] = arr[low] , arr[mid]

mid+=1

low+=1

#if element at mid is 1, move mid pointer.

elif arr[mid]==1:

mid+=1

#if element at mid is 2, swap with element @ high & move high pointer.

else:

arr[mid] , arr[high] = arr[high] , arr[mid]

high-=1

Binary Search

class Solution:

def bin\_search(self, arr, left, right, key):

#check if left index is greater than right index

#which means key is not found in the array

if left > right:

return -1

#calculate the middle index

mid = (left + right) // 2

#check if the element at the middle index is equal to the key

if arr[mid] == key:

return mid

#if the element is greater than the key, search in the left half of the array

elif arr[mid] > key:

return self.bin\_search (arr, left, mid - 1, key)

#if the element is smaller than the key, search in the right half of the array

else:

return self.bin\_search (arr, mid + 1, right, key)

def binarysearch(self, arr, n, k):

#call the recursive binary search function

return self.bin\_search(arr, 0, n-1, k)