DCP #4 : Find First Missing Positive Number in linear time + Constant space

Ex [3,-4,1,4] -> 2 [2,3,4] -> 1 [1,2,3] -> 4

Algorithm:

i = 0, Negatives = 0, loop = true, temp

while (loop)

  if arr[i] < 0, Negatives ++

  if arr[i] < 0, insert arr[i] to arr[0]

  else if arr[i] != 0 {

    if arr[arr[i]] == arr[i], arr[i] = 0

    else {

      if arr[i] >= len(arr) + Negatives, arr[i] = 0

      else {

        temp = arr[arr[i]]

        arr[arr[i]] = arr[i]

        arr[i] = temp

      }

    }

    i++

  }

  if i >= len(arr) loop = false

}

i = Negatives + 1

while (true) {

  if arr[i] >= len(arr) return 1

  if arr[i] == 0 return i - Negatives

  i ++

}

[3,-4,1,4]

[4,-4,1,3]

[4,-4,1,3]

[0,-4,1,3]

[-4,0,1,3]

[-4,0,1,0]