Write a program to given a fixed-length integer array arr, duplicate each occurrence of zero, shifting the remaining elements to the right.

CODE:

import java.util.Scanner;

public class DuplicateZeros {

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

System.out.print("Enter the length of the array: ");

int length = scanner.nextInt();

int[] arr = new int[length];

System.out.println("Enter the elements of the array:");

for (int i = 0; i < length; i++) {

arr[i] = scanner.nextInt();

}

scanner.close();

duplicateZeros(arr);

System.out.println("Array after duplicating zeros:");

for (int num : arr) {

System.out.print(num + " ");

}

}

public static void duplicateZeros(int[] arr) {

int possibleDups = 0;

int length = arr.length - 1;

// Count the number of zeros to be duplicated

for (int i = 0; i <= length - possibleDups; i++) {

if (arr[i] == 0) {

if (i == length - possibleDups) {

// For cases where there are no more space left to duplicate zeros

arr[length] = 0;

length--;

break;

}

possibleDups++;

}

}

// Start from the last element and move elements to their correct positions

for (int i = length - possibleDups; i >= 0; i--) {

if (arr[i] == 0) {

arr[i + possibleDups] = 0;

possibleDups--;

arr[i + possibleDups] = 0;

} else {

arr[i + possibleDups] = arr[i];

}

}

}

}

OUTPUT:

C:\javap>javac DuplicateZeros.java

C:\javap>java DuplicateZeros

Enter the length of the array: 8

Enter the elements of the array:

1 0 2 3 0 4 5 0

Array after duplicating zeros:

1 0 0 2 3 0 0 4

