

**Faculty of Artificial Intelligence & Multimedia Gamming**

**Lab # 06**

**Submission Profile**

Name: Ayesha (ARI-F23-0059)

Instructor: Sir Abdul Ghafoor

Course Title : Data Structure and Algorithms

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Lab Task 01:**

● Write a Java program to implement the Bubble Sort algorithm. Your task is to sort an

array of integers in ascending order using Bubble Sort.

● Define a method bubbleSort(int[] arr) that takes an array as input and sorts it using the

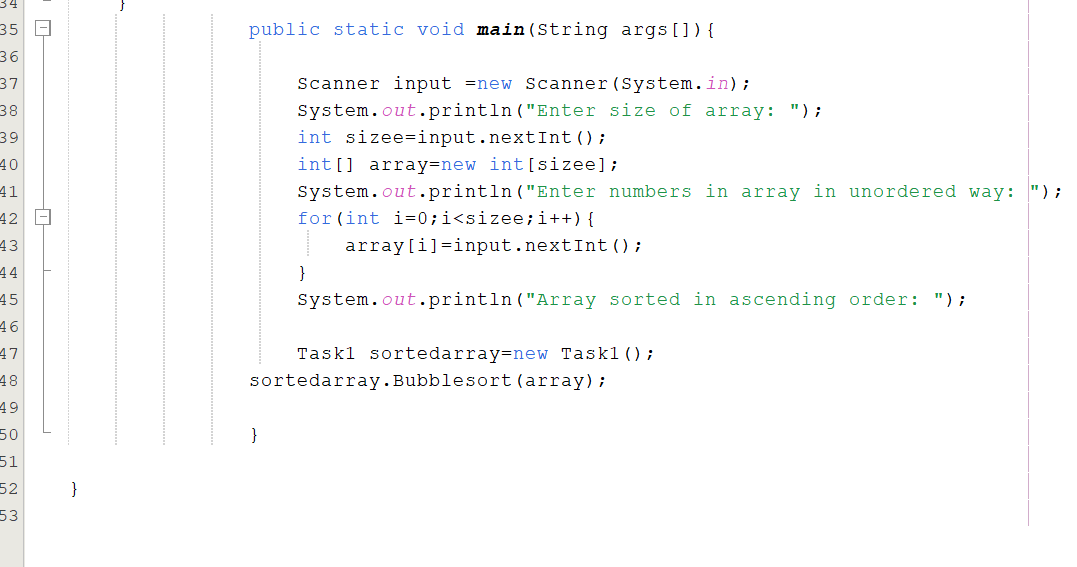
Bubble Sort algorithm

Input: 513462

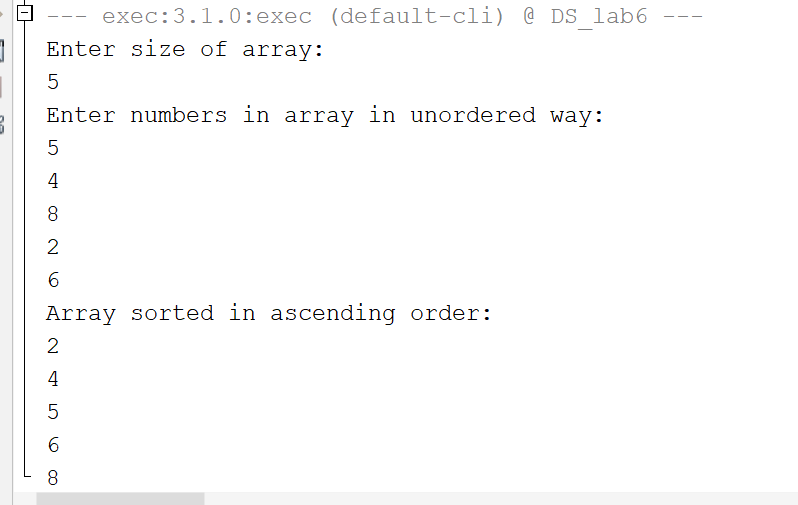
Output: 123456

**Input Code:**

****

****

**OUTPUT:**

****

**Lab Task 02:**

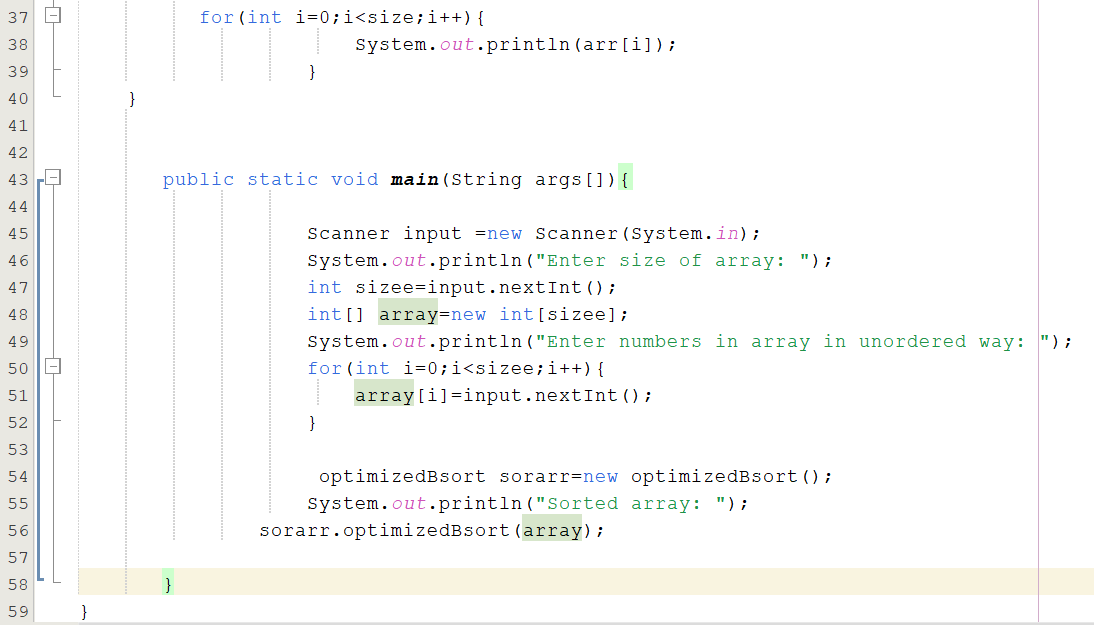
Implement Optimized Bubble Sort with Early Stopping

● Write a Java program to implement an optimized version of the Bubble Sort algorithm

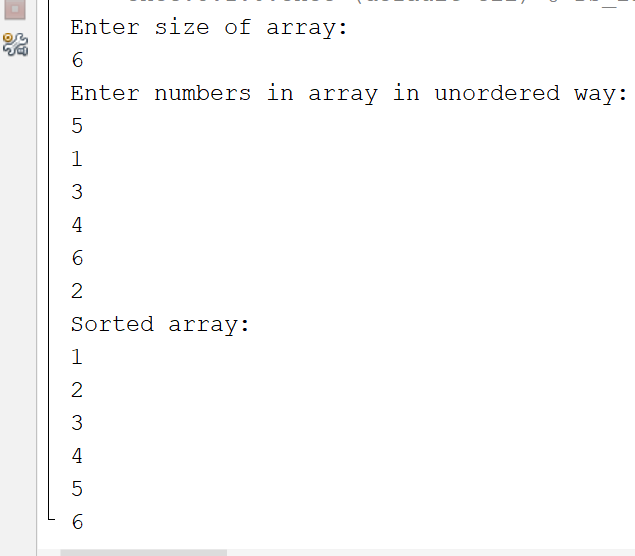
that stops early if the array is already sorted during any pass through the array.

● Define a method earlyStopBubbleSort(int[] arr) that implements Bubble Sort.

****

****

**OUTPUT:**

****

**Lab Task 03:**

Sort a List of Strings by Length

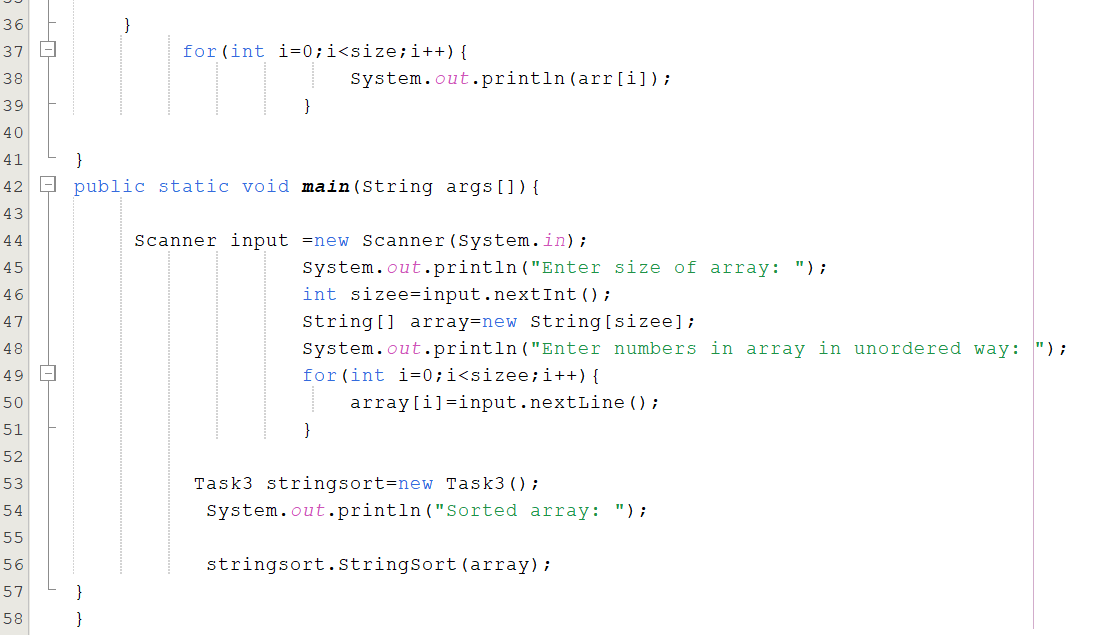
● Modify the Bubble Sort algorithm to sort a list of strings by their lengths in ascending

order.

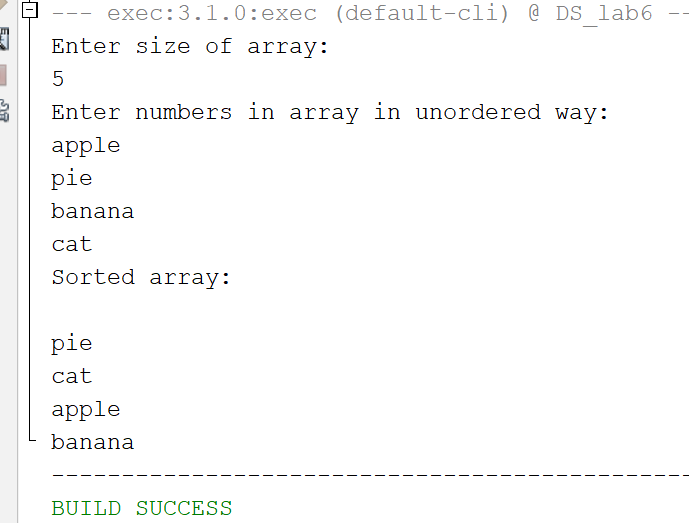
Input: ["apple", "pie", "banana", "cat"]

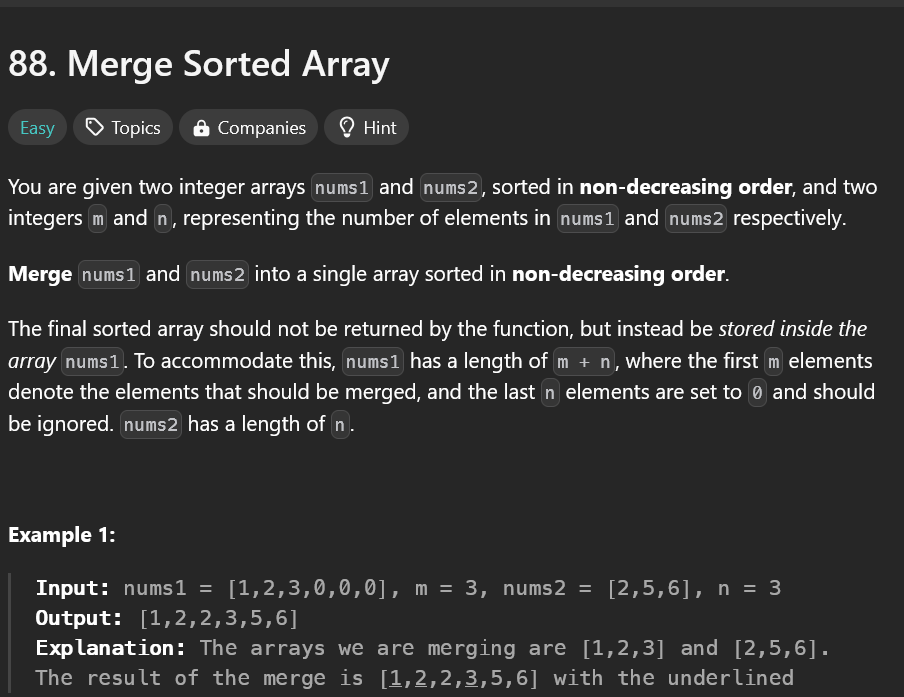
Output: ["pie", "cat", "apple", "banana"]



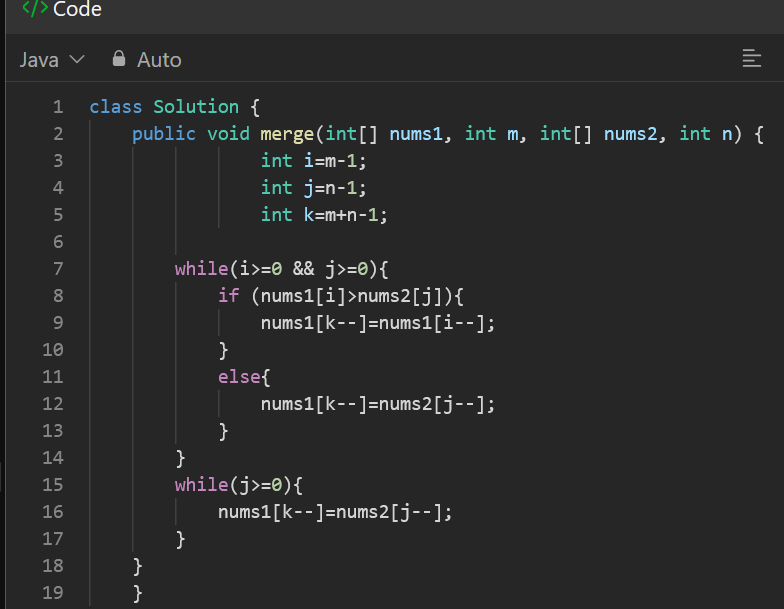


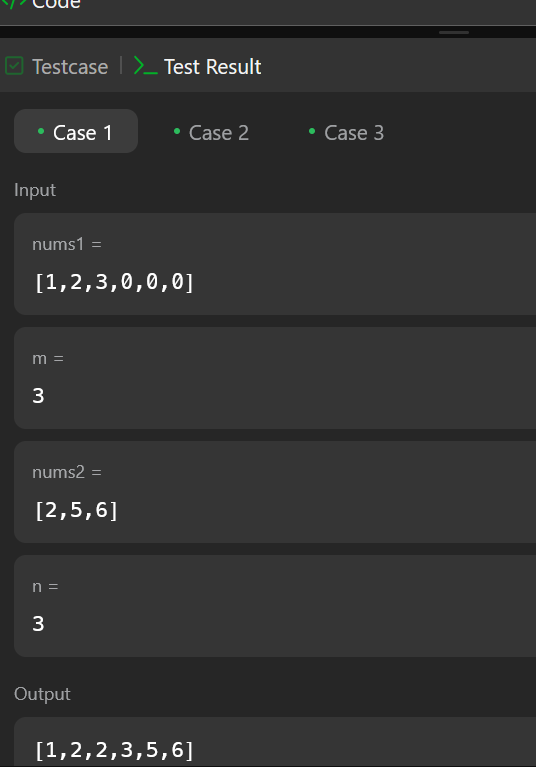
**OUTPUT:**

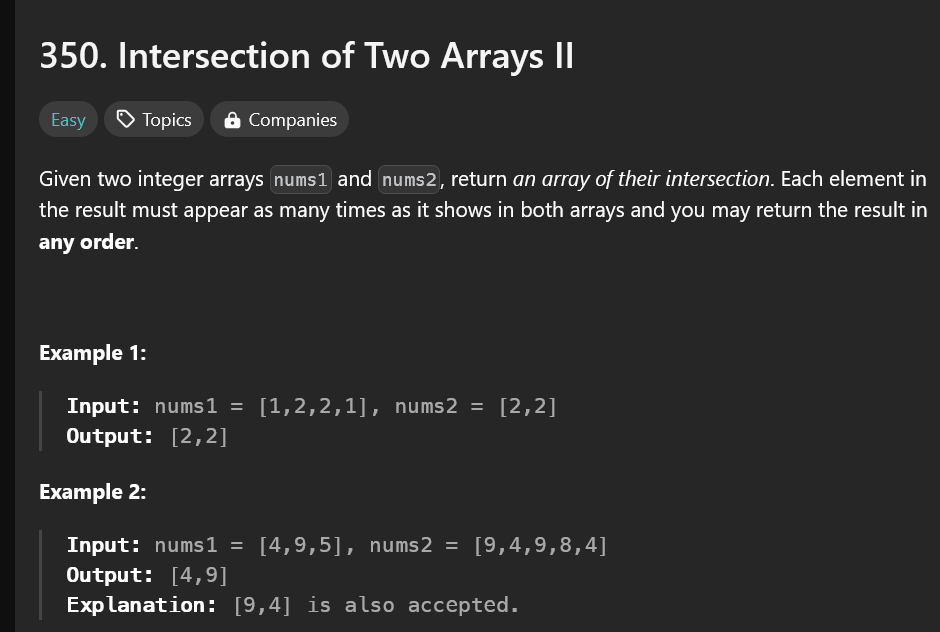
****

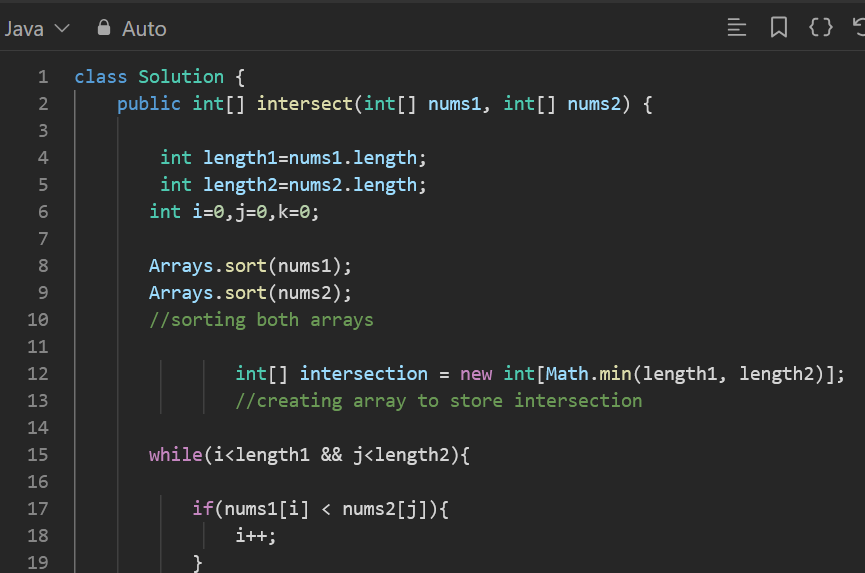


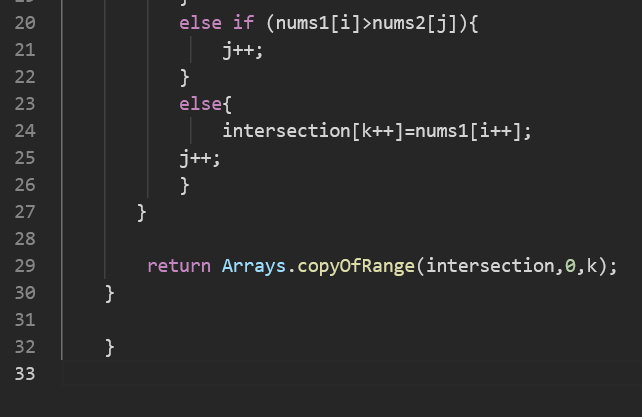
**SOLUTION:**

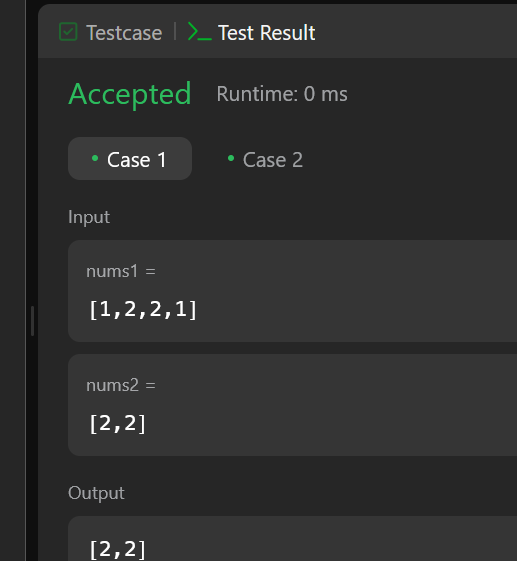
****

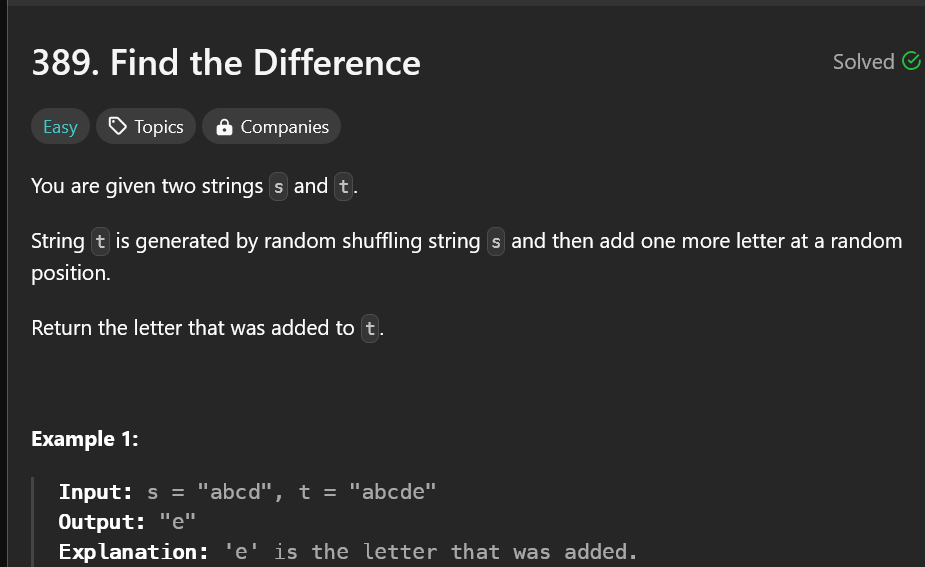
****

****

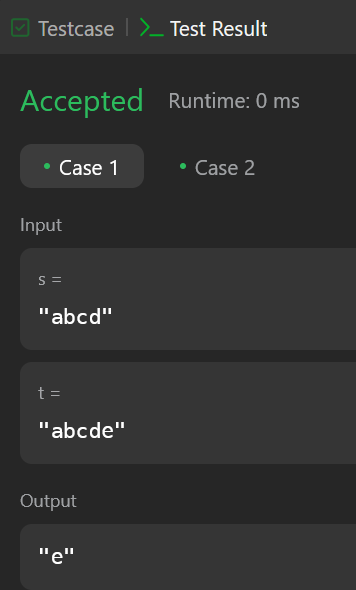
****

****

****

****

****

****