

**EXPERIMENT LIST FOR PROGRAMMING ABILITY AND LOGIC  
BUILDING – 21**

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**LECTURE : 1**

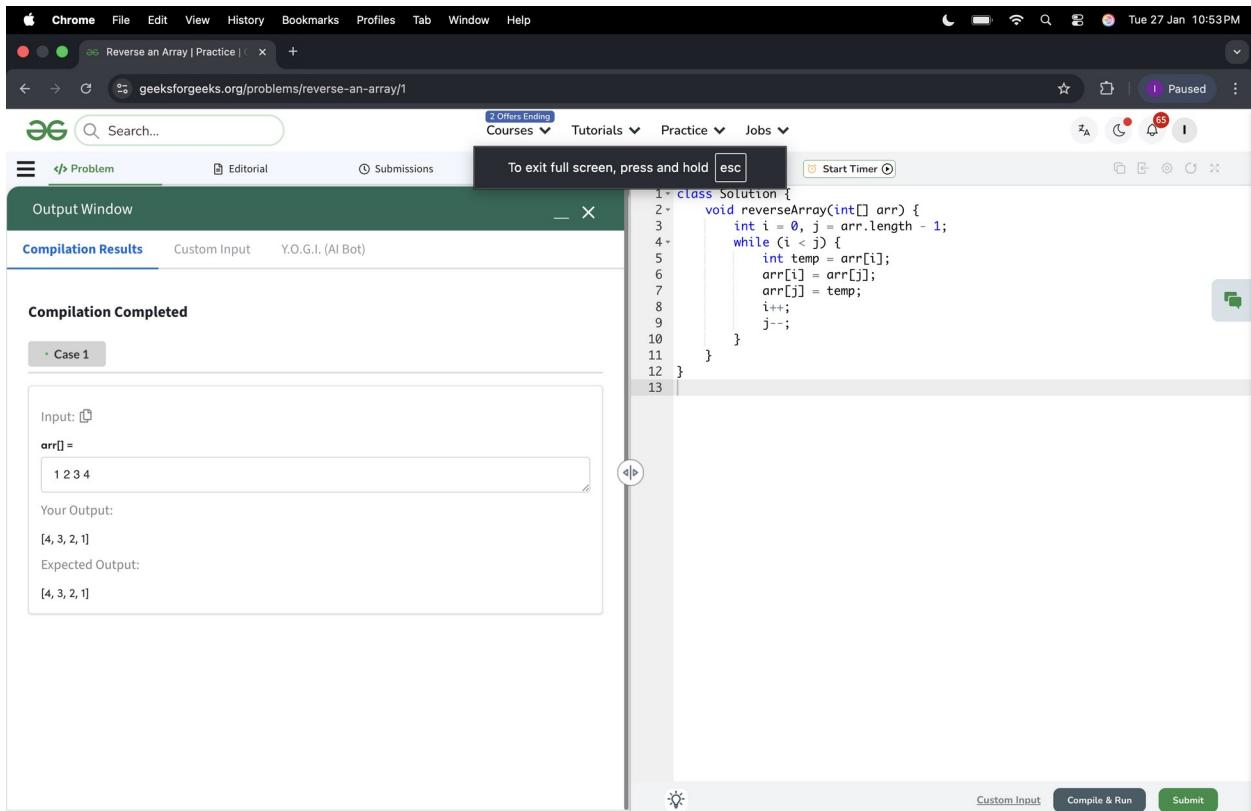
# EXPERIMENT 1

You are given an array of integers arr[]. You have to reverse the given array.

Note: Modify the array in place.

## EXAMPLE

INPUT arr = [1, 4, 3, 2, 6, 5]  
OUTPUT[5, 6, 2, 3, 4, 1]  
Explanation: The elements of the array are [1, 4, 3, 2, 6, 5]. After reversing the array, the first element goes to the last position, the second element goes to the second last position and so on. Hence, the answer is [5, 6, 2, 3, 4, 1].



The screenshot shows a web browser window for GeeksforGeeks. The URL is [geeksforgeeks.org/problems/reverse-an-array/1](https://www.geeksforgeeks.org/problems/reverse-an-array/). The page displays a Java code snippet for reversing an array. The code uses a while loop to swap elements from the start and end of the array until they meet in the middle. The code editor shows the following Java code:

```
1+ class Solution {
2-     void reverseArray(int[] arr) {
3-         int i = 0, j = arr.length - 1;
4-         while (i < j) {
5-             int temp = arr[i];
6-             arr[i] = arr[j];
7-             arr[j] = temp;
8-             i++;
9-             j--;
10-        }
11-    }
12-}
```

The "Output Window" section shows the "Compilation Results" tab. It indicates "Compilation Completed". The "Input:" field contains "arr[] = 1 2 3 4". The "Your Output:" field shows "[4, 3, 2, 1]". The "Expected Output:" field also shows "[4, 3, 2, 1]". At the bottom right, there are buttons for "Custom Input", "Compile & Run", and "Submit".

## EXPERIMENT 2

Given an array arr[]. Your task is to find the minimum and maximum elements in the array.

Examples:

Input: arr[] = [1, 4, 3, 5, 8, 6]  
Output: [1, 8]  
Explanation: minimum and maximum elements of array are 1 and 8.

The screenshot shows a Java code editor interface. The code is a class named Solution that contains a static method getMinMax. The method initializes variables min and max to the first element of the array. It then iterates through the array, comparing each element with min and max, and updating them if necessary. Finally, it returns a list containing min and max. The code editor includes tabs for Problem, Editorial, Submissions, Comments, Practice, and Jobs. The Practice tab is selected. The code is written in Java 21. There are buttons for Start Timer, Custom Input, Compile & Run, and Submit. The input field shows arr[] = [1, 4, 3, 5, 8, 6]. The output field shows [1, 8].

```
1- class Solution {  
2-     ArrayList<Integer> getMinMax(int[] arr) {  
3-         int min = arr[0];  
4-         int max = arr[0];  
5-  
6-         for (int i = 1; i < arr.length; i++) {  
7-             if (arr[i] < min)  
8-                 min = arr[i];  
9-             if (arr[i] > max)  
10-                max = arr[i];  
11-        }  
12-  
13-        ArrayList<Integer> res = new ArrayList<>();  
14-        res.add(min);  
15-        res.add(max);  
16-        return res;  
17-    }  
18-}  
19-
```

## EXPERIMENT 3

Given an integer array arr[] and an integer k, your task is to find and return the kth smallest element in the given array.

Note: The kth smallest element is determined based on the sorted order of the array.

Examples :

Input: arr[] = [10, 5, 4, 3, 48, 6, 2, 33, 53, 10], k = 4  
Output: 5  
Explanation: 4th smallest element in the given array is 5.

The screenshot shows a Java code editor interface on a web browser. The code is as follows:

```
Java (21) Start Timer
1 import java.util.Arrays;
2
3 class Solution {
4     public int kthSmallest(int[] arr, int k) {
5         Arrays.sort(arr);
6         return arr[k - 1];
7     }
8 }
```

The interface includes tabs for 'Output Window' and 'Compilation Results'. The 'Compilation Completed' section shows the input and output for a test case:

Case 1

Input:  
arr[] =  
7 10 4 3 20 15

k =  
3

Your Output:  
7

Expected Output:  
7

At the bottom, there are buttons for 'Custom Input', 'Compile & Run', and 'Submit'.

## EXPERIMENT 4

You are given two arrays  $a[]$  and  $b[]$ , return the Union of both the arrays in any order.

The Union of two arrays is a collection of all distinct elements present in either of the arrays. If an element appears more than once in one or both arrays, it should be included only once in the result.

Note: Elements of  $a[]$  and  $b[]$  are not necessarily distinct. Note that, You can return the Union in any order but the driver code will print the result in sorted order only.

Examples:

Input:  $a[] = [1, 2, 3, 2, 1]$ ,  $b[] = [3, 2, 2, 3, 3, 2]$  Output:  $[1, 2, 3]$  Explanation: Union set of both the arrays will be 1, 2 and 3.

The screenshot shows a Java code editor interface on a web browser. The URL is [geeksforgeeks.org/problems/union-of-two-arrays3538/1](https://geeksforgeeks.org/problems/union-of-two-arrays3538/1). The code is written in Java and finds the union of two integer arrays, `a` and `b`, by using a HashSet to store unique elements from both arrays and then returning a list of the results.

```
1+ import java.util.*;
2+
3+ class Solution {
4+     public static ArrayList<Integer> findUnion(int[] a, int[] b) {
5+         HashSet<Integer> set = new HashSet<>();
6+
7+         for (int x : a)
8+             set.add(x);
9+
10+        for (int x : b)
11+            set.add(x);
12+
13+        ArrayList<Integer> res = new ArrayList<>();
14+        for (int x : set)
15+            res.add(x);
16+
17+        return res;
18+    }
19+}
```

The input fields show `a[] = [1, 2, 3, 4, 5]` and `b[] = [1, 2, 3]`. The output section shows "Your Output: [1, 2, 3, 4, 5]" and "Expected Output: [1, 2, 3, 4, 5]".

## EXPERIMENT 5

Given an array `arr[]`. The task is to find the largest element and return it.

Examples:

Input: `arr[] = [1, 8, 7, 56, 90]`  
Output: 90  
Explanation: The largest element of the given array is 90.

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Largest in Array | Practice | geeksforgeeks.org/problems/largest-element-in-array4009/0?utm\_source=youtube&utm\_medium=collab\_striker\_ytdescription&utm\_campaign=largest-eleme...

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Output Window X

Compilation Results Custom Input

Compilation Completed

Case 1

Input: arr[] = 1 8 7 5 6 9 0

Your Output: 90

Expected Output: 90

Java (21) Start Timer

```
1- class Solution {  
2-     public int largest(int[] arr) {  
3-         int max = arr[0];  
4-         for (int i = 1; i < arr.length; i++) {  
5-             if (arr[i] > max)  
6-                 max = arr[i];  
7-         }  
8-     }  
9-     return max;  
10- }  
11- }
```

Custom Input Compile & Run Submit