

EXPERIMENT LIST FOR PROGRAMMING ABILITY AND LOGIC
BUILDING – 21

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BATCH : 2CSE5

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WEEK : 19/1/26 - 25/1/26

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 with the URL `geeksforgeeks.org/problems/reverse-an-array/1`. The page displays a C++ solution for reversing an array in place. The code is as follows:

```
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- }
13-
```

The output window shows the following details:

- Compilation Results: Custom Input, Y.O.G.I. (AI Bot)
- Compilation Completed
- Case 1
- Input: `arr[] =`
- 1 2 3 4
- Your Output: `[4, 3, 2, 1]`
- Expected Output: `[4, 3, 2, 1]`

The bottom of the IDE shows 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 web-based IDE interface for solving a problem. The browser address bar shows the URL: `geeksforgeeks.org/problems/find-minimum-and-maximum-element-in-an-array4428/1`. The IDE has a top navigation bar with links for Courses, Tutorials, Practice, and Jobs. The main area is divided into two panels. The left panel, titled 'Output Window', shows the 'Compilation Results' and 'Custom Input' sections. It indicates 'Compilation Completed' and shows the input array `arr[] = [1, 4, 3, 5, 8, 6]`. The 'Your Output' is `[1, 8]` and the 'Expected Output' is also `[1, 8]`. The right panel shows the Java code for the solution. The code is as follows:

```
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 }
```

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

EXPERIMENT 3

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

Note: The `k`th 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 displays the GeeksforGeeks 'Kth Smallest' problem interface. The left panel, titled 'Output Window', shows the 'Compilation Results' for 'Case 1'. The input is 'arr[] = 7 10 4 3 20 15' and 'k = 3'. The 'Your Output' is 7, and the 'Expected Output' is 7. The right panel shows the Java code for the solution:

```
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 }
9
```

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.

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geeksforgeeks.org/problems/union-of-two-arrays3538/1

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Problem | Editorial | Submissions | Comments

Output Window

Compilation Results | Custom Input

Compilation Completed

Case 1

Input:

a[] =
1 2 3 4 5

b[] =
1 2 3

Your Output:
[1, 2, 3, 4, 5]

Expected Output:
[1, 2, 3, 4, 5]

```
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 }
20
```

Java (21) | Start Timer

Custom Input | Compile & Run | Submit

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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geeksforgeeks.org/problems/largest-element-in-array4009/0?utm_source=youtube&utm_medium=collab_striver_ytdescription&utm_campaign=largest-eleme... Paused

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Problem Editorial Submissions Comments

Output Window

Compilation Results Custom Input

Compilation Completed

Case 1

Input:

arr[] =

1 8 7 56 90

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         return max;
9     }
10 }
11
```

Custom Input Compile & Run Submit